

*Draft*



# **Bay Restoration Fund Advisory Committee**

**Gregory B. Murray, Chairman**

## **Annual Status Report January 2017 (12<sup>th</sup> Report)**

**Report to:**

**Governor Larry Hogan**

**The President of the Senate**

**The Speaker of the House**

**The Senate Education, Health, and Environmental Affairs Committee**

**The Senate Budget and Taxation Committee**

**The House Environment and Transportation Committee**

**The House Appropriations Committee**

## Bay Restoration Fund Advisory Committee Members

<b>Committee Members</b>	<b>Affiliation</b>
Gregory B. Murray	Washington County
Ben Grumbles	Maryland Department of the Environment
Delegate Barbara A. Frush	Maryland House of Delegates
James L. Hearn	Washington Suburban Sanitary Commission
Beth Lynn McGee, Ph.D.	Chesapeake Bay Foundation
Christopher P. Murphy	Anne Arundel County Department of Public Works
Kevin Barnaba	Harford County Health Department
William P. Ball, Ph.D.	Johns Hopkins University
Cheryl A. Lewis	Town of Oxford
Mark J. Belton	Maryland Department of Natural Resources
Wendi W. Peters	Maryland Department of Planning
David R. Brinkley	Maryland Department of Budget & Management
Joseph Bartenfelder	Maryland Department of Agriculture

## **PURPOSE OF THIS REPORT**

Section 1605.2 of Chapter 9 of the Environment Article requires that beginning January 2006, and every year thereafter, the Bay Restoration Fund (BRF) Advisory Committee must provide an update to the Governor and the General Assembly on the implementation of the BRF program, and report on its findings and recommendations.

## **EXECUTIVE SUMMARY**

The Bay Restoration Fund Advisory Committee (BRFAC) is pleased to present to Governor Larry Hogan and the Maryland Legislature, its twelfth annual Legislative Update Report. Great strides have been made in implementing this historic Bay Restoration Fund (BRF), but many challenges remain as we continue with the multi-year task of upgrading the State's wastewater treatment plants and onsite sewage disposal systems and the planting of cover crops to reduce nitrogen and phosphorus pollution in Chesapeake Bay.

### **Accomplishments**

- As of June 30, 2016, the Comptroller of Maryland has deposited approximately \$855 million in the Maryland Department of the Environment (MDE) Wastewater Treatment Plant fund, \$118 million in the Maryland Department of Environment Septic Systems Upgrade fund, and \$87 million in the Maryland Department of Agriculture (MDA) Cover Crop Program fund, for a total of \$1.06 billion in BRF fees (Wastewater and Septic Users).
- Enhanced Nutrient Removal (ENR) upgrades of the State's major sewage treatment plants are currently underway. Upgrades to 49 major facilities have been completed and are in operation. Upgrades to 14 other facilities are under construction, three are in design, and one is in planning.
- Most major sewage treatment plants including the largest plants (> 10 MGD) are expected to be completed by 2017. Possibly six plants may not meet this deadline. However, that will not prevent Maryland from meeting the load reduction goals because most upgraded plants are far exceeding their nutrient reduction goals.
- The 2012 BRF fee increase has allowed MDE to start targeting minor sewage treatment plants (less than 0.5 million gallons per day). The goal is to complete the upgrade of at least five minor plants by 2017 consistent with the Maryland Watershed Implementation Plan (WIP) for the Chesapeake Bay Total Maximum Daily Loading (TMDL). Four minor facilities completed the ENR upgrade and are in operation. Four more are under construction and can possibly be completed by 2017, which would allow Maryland to exceed its goal for minor facilities.

- In addition to the eight minor sewage plants (mentioned above) that may be upgraded by 2017, MDE is encouraging other minor plants to apply for funding and initiate the planning for the ENR. To date, 11 additional plants have signed the funding agreement progressed into planning or design.
- MDE is also using BRF funds to upgrade septic systems with the Best Available Technology (BAT) for nitrogen removal. As of August 2016, the BRF has funded 8,127 BAT upgrades throughout Maryland, of which 4,842 BAT upgrades were completed within Maryland's Critical Areas. An additional 214 homes were also connected to public sewerage using BRF.
- The Maryland Department of Agriculture (MDA) dedicates its portion of BRF funds for the implementation of the statewide Cover Crop Program. In FY2016, farmers planted 501,205 acres attaining an estimated nutrient reduction of 3 million pounds of nitrogen and 100 thousand pounds of phosphorus. Cover crops are one of the Best Management Practices (BMPs) comprising Maryland's Watershed Implementation Plan to meet nutrient reductions for TMDL. Goals are established in 2 year increments known as milestones. Cover crop implementation in FY2016 represents 121% of Maryland's 2017 Milestone goal.
- In FY2017 Maryland farmers applied to plant 686,434 acres of cover crops which is a record signup. Although farmers typically enroll more acreage than they complete planting, farmers are projected to exceed the 2016/2017 milestone goal of 417,014 acres.
- MDA is projected to receive \$11.2 million in BRF support in FY17. It is projected that BRF will provide financial assistance for approximately 228,000 acres of cover crops.
- Over the past five years, funding gaps for the Cover Crop Program have been addressed with funding from the 2010 Chesapeake Bay Trust Fund to support the increased level of participation required to meet TMDL goals.
- Cover crops are planted in the fall to tie up nitrogen that remains mobile in the soil after crop harvest. They are recognized as one of the State's most cost effective BMP available to prevent nitrogen movement to groundwater and subsequently the Bay. Cover crops also prevent soil erosion and improve soil quality.
- MDE and Maryland Department of Planning ("Planning") are continuing their efforts to implement the requirements of House Bill 893, which was passed in the 2007 Legislative Session and requires MDE and Planning, in concert with the BRFAC and consultation with local governments to report on the growth influences that ENR upgraded wastewater treatment plants may be having in the jurisdiction served. As part of this report, Planning is continuing its analyses and is reporting on all qualifying wastewater treatment plants, grouped by State Regions, found in Tables 1 and 2 on Pages 31 and 33 of this report.

## **Challenges**

- The United States Environmental Protection Agency (EPA), in coordination with the Bay watershed jurisdictions of Maryland, Virginia, Pennsylvania, Delaware, West Virginia, New York, and the District of Columbia (DC), developed and established the Total Maximum Daily Loading (TMDL) and a nutrient and sediment pollution diet for the Chesapeake Bay, consistent with Clean Water Act requirements. The Maryland Phase Watershed Implementation Plan (WIP) calls for specific strategies on how to achieve the interim target reduction of 60% of the Final Target by 2017, and ultimately achieving the Final 2025 Target. MDE will continue to use its Water Quality Integrated Priority System (IPPS) to prioritize/allocate future BRF funding to the different types of projects authorized under the statute. During 2016, MDE proposed changes to the IPPS, with greater emphasis on cost efficiency. The Committee will continue to monitor the project selections under this process and recommend changes to the process, if needed. All the following sectors, except Agriculture, are funded through MDE:
- Point Source: Point Sources include major and minor municipal sewage treatment plants. Most major plants and at least five additional minor plants will need to be upgraded to Enhanced Nutrient Removal (ENR) in order to achieve the interim target reduction of 60% by 2017. Additional minor plants, where cost-effective, will be upgraded after 2017 to assist in meeting the Final 2025 Target. The BRF is also authorized to fund rehabilitation of existing sewer systems including combined and separate sewer overflow controls.
- Septic Systems: BRF funding will continue to be provided before and after 2017 for BAT septic systems to support local TMDL and MDE strategies.
- Stormwater: BRF funding can be provided starting July 2017 for stormwater BMPs to support local initiatives, MS4 permit compliance and MDE strategies.
- Agriculture: Annual agricultural BMPs are set at about the same level in the interim as in the Final Target. Cover Crop activities being funded by BRF are essential to the success of the agricultural strategy.

## **Conclusions**

- MDE will continue to use the BayStat process to improve its benchmarks and tracking of implementation efforts to ensure that BRF funded projects remain on schedule to assist the State in meeting both the interim 2017 and final 2025 nutrient reduction targets.
- MDE and Department of Planning, in consultation with the BRF Advisory Committee have developed a priority system for the selection of minor WWTPs for ENR upgrades. In addition to funding ENR at minor WWTPs, MDE will use its updated (Nov 2016) water quality Integrated Project Priority System for the selection of BRF funded expanded use projects.

## **Programs and Administrative Functions**

### **Comptroller's Office:**

The role of the Comptroller of Maryland (CoM) is to act as the collection agent for the Bay Restoration Fund and make distributions to the Maryland Department of the Environment and the Maryland Department of Agriculture as required.

In the third year of administering the BRF, the CoM began the compliance phase of the fee administration. The law specifies that the BRF shall be administered under the same provisions allocable to administering the sales and use tax. Granted that authority, the CoM began the audit process for both filers and non-filers of BRF quarterly reports.

For non-filers, CoM begun contacting the billing authorities and users who have failed to file or pay the BRF and is obtaining sufficient documentation to make an assessment and begin collection activity. Federal government billing authorities and users have, to date, refused to participate in the BRF process. MDE secured an agreement with several defense organizations having wastewater treatment plants to upgrade their systems over a defined period of time and they were then exempted from the BRF by MDE. A copy of the agreement was provided by MDE to CoM, and those BRF accounts were subsequently placed on inactive status.

The CoM is continuing its audits of billing authorities to ensure fees are calculated correctly and are being collected. During 2016, the CoM settled with Baltimore City for a lump sum of approximately \$13.6 million in underpayments to the BRF resulting from an accounting error.

### **Maryland Department of the Environment:**

Three units within the Maryland Department of the Environment (MDE) are involved in the implementation of the Bay Restoration Fund.

#### ***I. Maryland Water Quality Financing Administration:***

The Maryland Water Quality Financing Administration (MWQFA) was established under Title 9, Subtitle 16 of the Maryland Code. MWQFA has primary responsibility for the capital budget development and financial management and fund accounting of the Water Quality Revolving Loan Fund, the Drinking Water Revolving Loan Fund and the Bay Restoration Fund. Specifically for the Bay Restoration Fund, the MWQFA is responsible for the issuance of revenue bonds, payment disbursements, and the overall financial accounting, including audited financial statements.

#### ***II. Engineering and Capital Projects Program:***

The Engineering and Capital Projects Program (ECP) manages the engineering and project management of federal capital funds consisting of special federal appropriation grants and state revolving loan funds for water quality and drinking water projects. The Program also manages projects funded by State grant programs, including Bay Restoration Fund, Special Water Quality/Health, Small Creeks and Estuaries Restoration, Stormwater, Biological Nutrient Removal, and Water Supply Financial Assistance. There may be as many as 250 active capital projects

ranging in levels of complexity at any given time. Individual projects range in value from \$10,000 to \$500 million. A single project may involve as many as eight different funding sources and multiple construction and engineering contracts over a period of three to ten years. ECPP is responsible for assuring compliance with the requirements for each funding source while achieving the maximum benefit of funds to the recipient and timely completion of the individual projects. ECPP consists of two regional project management divisions.

### III. Wastewater Permits Program:

The Wastewater Permits Program (WWPP) issues permits for surface and groundwater discharges from municipal and industrial sources and oversees onsite sewage disposal and well construction programs delegated to local approving authorities. Large municipal and all industrial discharges to the groundwater are regulated through individual groundwater discharge permits. All surface water discharges are regulated through combined state and federal permits under the National Pollutant Discharge Elimination System (NPDES). These permits are issued for sewage treatment plants, some water treatment plants and industrial facilities that discharge to State surface waters. These permits are designed to protect the quality of the body of water receiving the discharge.

Anyone who discharges wastewater to surface waters needs a surface water discharge permit. Applicants include industrial facilities, municipalities, counties, federal facilities, schools, and commercial water and wastewater treatment plants, as well as treatment systems for private residences that discharge to surface waters.

WWPP will ensure that the enhanced nutrient removal goals and/or limits are included in the discharge permits of facilities upgraded under the BRF. To accommodate the implementation of the Onsite Sewage Disposal System portion of the Bay Restoration Fund, the WWPP Deputy Program Manager has been designated as the lead for the onsite sewage disposal system upgrade program.

### **Maryland Department of Agriculture:**

The Maryland Department of Agriculture (MDA) delivers soil conservation and water quality programs to agricultural landowners and operators using a number of mechanisms to promote and support the implementation of best management practices (BMPs). Programs include information, outreach, technical assistance, financial assistance and regulatory programs such as Nutrient Management. Soil Conservation Districts are the local delivery system for many of these programs.

The Chesapeake Bay Restoration Fund provides a dedicated fund source to support the Cover Crop Program. In prior years, funding fluctuated and program guidelines were modified accordingly to try to get the best return on public investment. Results from past surveys of farm operators conducted by the Schaeffer Center of Public Policy at the University of Baltimore, indicated that changing Cover Crop Program eligibility guidelines and funding uncertainty discouraged participation.

For FY2016 incentive payments were added to the base payment for highly valued management practices. A maximum payment could have reached \$90/acre for those meeting all of the incentive criteria.

Funding expenditures for FY2016 was approximately \$24.6 million, with \$11.6 million from BRF, and \$13.0 million from Chesapeake Bay 2010 Trust Fund. *(includes expenditures for FY2017)*

For FY17, over 686,000 acres were enrolled preparing Maryland farmers to again exceed the 417,014 acre Chesapeake Bay 2017 Milestone goal for cover crops. MDA's outreach for the program included news releases, print ads, direct mail, posters, 25' outdoor banners at commercial grain facilities and equipment dealer facilities, cover crop field signs, seed testing bags, bumper stickers and educational displays targeted toward farmers. Additionally inclement weather impacts to crop productivity influenced farmer decisions to enroll additional acres since a projected early harvest allows additional time for cover crop planting.

MDA administers the Cover Crop Program through the Maryland Agricultural Water Quality Cost Share Program or MACS. The MACS program offers several incentive programs and provides financial assistance to farm operators to help them implement over 30 BMPs. Cover crops are one of the most cost effective methods for tying up excess nitrogen from the soil following the fall harvest of crops. They minimize nitrogen loss caused by leaching into nearby streams and aquifers, prevent soil erosion and improve soil quality.

### **Maryland Department of Planning:**

The Maryland Department of Planning ("Planning") is a statutory member of the Bay Restoration Fund Advisory Committee. HB 11 enacted by the 2014 legislative session allows for the use of BRF monies for the remediation of failing septic systems, outside of the PFA, connecting to qualified wastewater treatment plants. Such cases must meet certain conditions and gain approval from the Smart Growth Coordinating Committee prior to using Bay Restoration Funds. Planning works with the local governments to ensure that land use plans will maintain consistency with both local development goals and all state growth policies, in light of these external PFA sewer extensions to remediate failing septic systems.

Specific functions that Planning carries out that relate directly or indirectly to the BRF programs are summarized below. HB 893 enacted by the 2007 legislative session, added an additional BRF reporting responsibility which is discussed later in this report.

#### **1. State Clearinghouse Review**

All State and federal financial assistance applications, including those for BRF funds are required to be submitted for review through the State Clearinghouse which is part of Planning. The Clearinghouse solicits comments on these applications from all relevant State agencies and local jurisdictions. The applicant and funding agency are subsequently notified of any comments received. This review ensures that the interests of all reviewing parties are considered before a project is sent forward for final federal or State approval.

#### **2. County Water and Sewerage Plans and Amendments**

Planning assists the local governments in the preparation of amendments and revisions to the water and sewer planning document, when requested by the local governments.

Planning is directed by law to advise MDE regarding the consistency of County Water and Sewerage Plans and amendments with “local master plan and other appropriate matters” (Environment Article § 9-507 (b)(2)).

The law requires that County Water and Sewerage Plans and amendments be consistent with the local comprehensive plans. Therefore, if a plan or amendment is not consistent with a comprehensive plan, it is subject to disapproval, in whole or in part, by MDE. Since facility construction, discharge, and other permits must also be consistent with the County Water and Sewerage Plans, the legal chain, from comprehensive plans to water and sewerage plans to permits, helps to assure that all BRF projects are consistent with local comprehensive plans before funding and construction can begin.

### 3. Priority Funding Areas (PFA)

Priority Funding Areas are delineated by local governments in accordance with statutory criteria that focus on concentrating high density growth in and near existing communities. If the local PFA designations do not meet the legal requirements in the law, Planning indicates those portions as “comment areas” to indicate that not all requirements of the §5-7B-02 and 03 State Finance and Procurement Article (SFPA) are met and that “growth-related projects” are not eligible for certain State funding within those areas until SFPA requirements are met or unless an exception is granted by the Maryland Smart Growth Coordinating Committee.. The PFA statute lists the specific State financial assistance programs that are required to focus their funding on projects inside the PFA, with certain specified exceptions.

The BRF was enacted after PFA Law and is not included in the list of State financial programs subject to the PFA funding restrictions but is monitored so not to negatively affect the efforts of Smart Growth policies, namely support to new development at lower densities, especially outside of designated growth areas. Even though PFA law is not directly applicable to this capacity, as highlighted in Table 1 on Page 26 of this report, it appears that treatment capacity has been consistently used for service connections within the PFA. Planning will continue to monitor this activity, especially in areas where major failing septic systems are increasing in numbers as on Kent Island, in Anne Arundel County, and the Talbot County Region 2 Sewer Service Area (St. Michael’s), and other jurisdictions where the remediation of failing septic systems for public health and safety reasons is on the rise. Where BRF septic funds are provided for these types of connections, local governments are guided and advised by MDE and Planning.

### 4. Local Comprehensive Plan Review and Comment

Local Comprehensive Plans must be prepared by every county and municipality in Maryland, pursuant to the Land Use Article of the Annotated Code. Planning provides comments on draft local Comprehensive Plans and amendments. Through the Clearinghouse review process, Planning coordinates other State agency comments prior to being adopted by local governing bodies. In that, these plans are not subject to State approval, comments provided are advisory only. However, in most cases local governing bodies provide full consideration to the State advisory comments and work closely with the State in resolving any outstanding issue, especially when State funds may later be needed to implement specific recommendations of the local plans.

Planning works closely with, and provides technical assistance to, local governments in the processes leading to adoption of local comprehensive plans. Planning advises them on facilities and resource planning matters to support state policies and the Governor's Smart Growth Subcabinet agencies' plan, policies and programs.

## Bay Restoration Fund Status

The Bay Restoration Fund (BRF) fees collected from wastewater treatment plant users are identified as “Wastewater” fees and those collected from users on individual onsite septic systems as “Septic” fees. These fees are collected by the State Comptroller’s Office and deposited as follows:

- Wastewater fees (net of local administrative expenses) are deposited into MDE’s “Wastewater Fund.”
- Sixty percent (60%) of the Septic fees (net of local administrative expenses) are deposited into MDE’s “Septic Fund.”
- Forty percent (40%) of the Septic fees (net of local administrative expenses) are deposited into Maryland Department of Agriculture’s (MDA) “Septic Fund.”

The status of the deposits from the State Comptroller’s Office to MDE and MDA for each of the sub-funds identified above, as of June 30, 2016, is as follows:

### Wastewater Fund (MDE 100% for ENR, Sewer Infrastructure and O&M grants):

<u>Sources:</u>	<u>\$ Million</u>	<u>Uses:</u>	<u>\$ Million</u>
Cash Deposits	\$855*	Capital Grant Awards	\$1,219**
Cash Interest Earnings	\$ 27	Admin. Expense Allowance	\$ 13
Net Bond Proceeds	<u>\$362</u>	Bond DS Payments	<u>\$ 50</u>
Total	\$1,244	Total	\$1,282

*\* As part of the Budget Reconciliation and Financing Acts, \$290 million of BRF fee revenue was transferred to the general fund and the BRF was replenished with \$290 million in State General Obligation bonds.*

*\*\* Funds are awarded after construction bids have opened (except for planning/design) and payment disbursements are made as expenses are incurred; \$100M in additional revenue bonds issuance is projected for FY 2017.*

As of 6/30/2016, the grants under the Wastewater Fund were awarded to the following uses:

1. **ENR WWTP:** Over 90% of the fund is used toward planning, design, construction, and upgrade of wastewater facilities to achieve enhanced nutrient removal.
2. **Sewer Projects:** In FY2005 through 2009, up to \$5 million annually were used toward projects related to combined sewer overflows abatement, rehabilitation of existing sewers, and upgrading conveyance systems, including pumping stations.
3. **O&M:** In FY 2010 and thereafter, up to 10% of the Wastewater Fund is used annually toward the operation and maintenance cost related to the enhanced nutrient removal technology.

<b>ENR Projects</b>	<b>Grant Award</b>
Aberdeen ENR	14,581,773.00
Allegany Co/ Georges Creek ENR	9,875,136.00
Allegany Co/ Celanese ENR	2,333,382.00
Anne Arundel Co/ Annapolis WRF ENR	14,700,000.00
Anne Arundel Co/ Broadneck WRF	7,851,000.00
Anne Arundel Co/ Broadwater ENR	6,050,000.00
Anne Arundel Co/ Cox Creek WRF ENR Up	88,600,000.00
Anne Arundel Co/ MD City Facility ENR	3,473,000.00
Anne Arundel Co/ Mayo WRF BNR ENR	6,000,000.00
Anne Arundel Co/ Patuxent WRF ENR	3,713,000.00
Baltimore City/Back River WWTP ENR	300,885,432.00
Baltimore City/Patapsco ENR	158,922,000.00
Bowie ENR	8,668,492.00
Brunswick, City of/ WWTP ENR	8,263,000.00
Cambridge ENR	8,618,255.00
Cecil Co./Northeast River Adv WWTP ENR Up	10,977,120.00
Chesapeake Beach WWTP ENR Up	7,080,000.00
Chestertown ENR	1,490,854.14
Crisfield WWTP ENR	4,230,766.00
Cumberland WWTP ENR	25,654,866.00
Delmar WWTP ENR	2,369,464.00
Denton WWTP ENR	4,405,615.00
Easton WWTP ENR	7,788,021.00
Elkton ENR	7,403,154.00

Emmitsburg WWTP ENR	5,517,848.00
Federalsburg ENR	2,900,000.00
Frederick, City of /Frederick Gas House	16,060,521.00
Fred. Co./ Ballenger Creek McKinney WWTP	31,000,000.00
Fruitland WWTP ENR Up	4,809,000.00
Galena WWTP ENR	1,847,832.00
Greensboro WWTP ENR	2,660,819.00
Hagerstown, City of /WWTP ENR II	10,191,836.00
Harford Co./ Joppatowne ENR	3,399,778.00
Harford Co./ Sod Run ENR	36,640,567.00
Havre de Grace WWTP ENR	10,474,820.00
Howard County/Little Patuxent ENR	35,493,172.00
Hurlock WWTP ENR	941,147.75
Indian Head ENR	5,822,098.00
La Plata ENR Upgrade	9,367,610.00
Leonardtown WWTP ENR	8,996,527.00
MD Env Serv/Freedom District WWTP ENR	7,716,359.00
MD Env Serv/Correctional Instit. WWTP ENR	6,504,691.00
MD Env Serv/Dorsey Run WWTP ENR	47,986.00
Mt Airy WWTP/ENR	3,354,144.00
Perryville ENR	3,888,168.00
Pocomoke WWTP ENR	3,214,878.00
Poolesville WWTP ENR	223,132.00
Preston WWTP ENR	56,500.00
Queen Anne's/ Kent Island ENR	6,380,645.09

Queenstown WWTP BNR ENR	880,929.00
Rising Sun, Town of/ BNR ENR WWTP	1,099,268.00
Salisbury WWTP ENR	2,553,876.86
Salisbury WWTP ENR (corrective action)	11,435,411.00
Secretary ,Town of/Twin Cities WWTP ENR Up	117,185.00
Snow Hill/BNR ENR	3,275,455.00
St. Mary's Co./Marlay Taylor Water Reclaim.	9,896,000.00
Sudlersville, Town of/ BNR ENR Upgrade	2,364,420.00
Talbot Co/St Michaels ENR	1,978,698.78
Taneytown/WWTP ENR Up Planning & Des	5,566,494.00
Thurmont WWTP ENR	6,680,679.00
Washington Co./Winebrenner	3,059,028.00
Westminster WWTP ENR	1,020,000.00
WSSC/Blue Plains WWTP ENR	138,036,769.00
WSSC/Damascus WWTP ENR	5,053,399.00
WSSC/Parkway WWTP ENR	14,271,803.00
WSSC/Piscataway WWTP ENR	6,324,000.00
WSSC/Seneca WWTP ENR Upgrade & Exp	6,221,000.00
WSSC/Western Branch WWTP ENR	39,109,000.00
<b>ENR SUBTOTAL</b>	<u><u>1,190,387,824.62</u></u>

<b>SEWER PROJECTS</b>
-----------------------

Allegany Co/ Braddock Run Interceptor	499,748.00
Balto City Gwynns Run Sewer	1,575,000.00
Balto. City Greenmount Br Sewer Interc.	2,300,000.00

Balto. City Greenmount Br Sewer Interc. II	1,000,000.00
Cumberland / CSO Elimination-Evitts Creek	1,319,889.00
Denton - Lockerman St. Lift Station	100,000.00
Emmitsburg/South Seton Ave Sewer Line	600,000.00
Federalsburg/Maple Ave Sewer	600,000.00
Frostburg Combined Sewer Overflow Phase IV	1,000,000.00
Frostburg CSO - Phase V	800,000.00
Frostburg CSO - Phase VI Elimination	1,100,000.00
Fruitland, City of Infiltration & Inflow Sewer	800,000.00
Hagerstown/ Collection System Rehab	800,000.00
Havre de Grace/ I&I Sewer Reduction	166,500.00
Mountain Lake Park - Sewer Rehab III	731,884.00
Port Deposit Inflow & Infiltration Reduction	178,199.00
Secretary/Gordon Street Lift Station	150,000.00
Secretary Infil/Inflow Reduction	172,068.00
St. Mary's METCOM/Evergreen Park Sewer	203,714.00
St. Mary's METCOM/Piney Pt. Sewer Repair	465,559.00
Talbot/St Michaels Sewer & Upgrade	1,000,000.00
Talbot/St Michaels Reg.II Sewer & Upgrade	450,000.00
Taneytown, City of /Balt St Water Main	200,000.00
Thurmont / Sewer Line Rehab	947,000.00
Washington Co. Halfway Inflow/Infil Reduction	200,000.00
Westernport CSO	936,000.00
Westernport CSO/ Elim Philos Ave Area	1,032,519.00

Williamsport, Town of /Inflow & Infiltration Red. 383,226.00

**SEWER SUBTOTAL** 19,711,306.00

**O&M PROJECTS**

Allegany Co./ North Celanese	252,000.00
Allegany Co./ George's Creek	10,800.00
AA Co./ Broadneck	135,000.00
AA Co./ MD City	50,000.00
AA Co./ Patuxent	225,000.00
Boonsboro, Town of	39,540.00
Bowie, City of	59,400.00
Brunswick, City of	159,600.00
Cambridge, City of	303,750.00
Charles Co./ Mattawoman	816,000.00
Chestertown, Town of	85,650.00
Crisfield, City of	18,000.00
Cumberland, City of	1,098,000.00
Delmar, Town of	40,000.00
Denton, Town of	50,000.00
Easton, Easton Utilities	504,000.00
Elkton, Town of	329,400.00
Federalsburg, Town of	103,500.00
Hagerstown, City of	864,000.00
Harford Co./ Aberdeen	120,000.00

Harford Co./Joppatowne	47,500.00
Harford Co./ Sod Run	225,000.00
Havre de Grace, City of	245,700.00
Howard Co./Little Patuxent	700,000.00
Hurlock, Town of	207,900.00
Indian Head, Town of	99,000.00
La Plata, Town of	37,500.00
MD Environmental Service/ Dorsey Run	120,000.00
MD Environmental Service/ ECI	30,000.00
Mt. Airy, Town of	93,600.00
Perryville, Town of	29,700.00
Pocomoke City, City of	52,920.00
Poolesville, Town of	13,500.00
Queen Anne Co./Kent Island	288,000.00
Snow Hill, Town of	40,000.00
Talbot Co. / Region II	104,850.00
Thurmont, Town of	60,000.00
WSSC, Damascus	90,000.00
WSSC, Parkway	356,250.00
WSSC, Piscataway	600,000.00

**O&M PROJECT SUBTOTAL**

8,705,060.00

TOTAL (ENR, SEWER and O&M)

1,218,804,190.62

**Septic Fund (MDE 60% for On-Site Disposal System upgrades except 22.4% in FY 2010):**

<u>Sources:</u>	<u>\$ Million</u>	<u>Uses:</u>	<u>\$ Million</u>
Cash Deposits	\$118.1	Capital Grant Awards	\$ 108.4***
Cash Interest Earnings	\$ <u>2.7</u>	Admin. Expense Allowance	\$ 9.5
		HB-12 Local Admin Grant	\$ 2.5****
<u>Total</u>	<u>\$120.8</u>	<u>Total</u>	<u>\$120.4</u>

\*\*\* Does not includes \$14 million of FY 2016 grant awarded in June 2015. Payment disbursements are made as BATs are installed and expenses are incurred.

\*\*\*\* HB-12 passed during the 2014 legislative session allows for up to 10% of the MDE septic fee allocation to be used for grants to local health departments to implement and enforce the septic regulations requiring BAT for nitrogen reduction from septic systems.

**SEPTIC GRANT APPLICANTS**

**Grant Awards**

---

Allegany Co.- Canaan Val Instit. (GY11-15)	225,273.85
Allegany Co.- Canaan Val Instit. (GY16)	100,000.00
Anne Arundel Co. (GY15)	14,608,807.20
Anne Arundel Co. (GY16)	2,881,000.00
Baltimore Co. (GY11-15)	1,765,008.85
Baltimore Co. (GY16)	652,000.00
Calvert Co. (GY08-15)	7,873,984.94
Calvert Co. (GY16)	1,228,000.00
Caroline Co. (GY08-15)	2,280,017.90
Caroline Co. (GY16)	356,000.00
Carroll Co. (GY11-15)	900,740.65
Carroll Co. (GY16)	437,000.00
Cecil Co. (GY09-15)	4,104,982.67
Cecil Co. (GY16)	875,000.00
Charles Co. (GY08-15)	2,275,730.60

Charles Co. (GY16)	513,000.00
Dorchester Co. (GY09-15)	4,380,094.05
Dorchester Co. (GY16)	712,000.00
Frederick Co (Canaan Valley Inst.) (GY08-15)	2,455,994.05
Frederick Co (Canaan Valley Inst.) (GY16)	410,000.00
Garrett Co. (GY11-15)	568,482.60
Garrett Co. (GY16)	163,000.00
Harford Co. (GY09-15)	2,014,135.05
Harford Co. (GY16)	447,000.00
Howard Co (Canaan Valley Inst.) (GY11-15)	639,172.75
Howard Co (Canaan Valley Inst.) (GY16)	223,000.00
Kent Co. (GY08-15)	3,829,091.89
Kent Co. (GY16)	456,000.00
Montgomery Co (Canaan Valley Inst.) (GY11-15)	837,586.00
Montgomery Co (Canaan Valley Inst.) (GY16)	405,000.00
Prince George's Co.(GY11-12&14-15)	69,336.50
Prince George's Co.(GY16)	146,000.00
Queen Anne's Co. (GY11-15)	5,012,519.89
Queen Anne's Co. (GY16)	983,000.00
Somerset Co. (GY11-15)	1,712,517.50
Somerset Co. (GY16)	303,000.00
St. Mary's Co. (GY11-15)	6,318,913.20
St. Mary's Co. (GY16)	1,400,000.00
Talbot Co. (GY15)	4,590,767.00
Talbot Co. (GY16)	880,000.00
Washington Co (Canaan Valley Inst.) (GY09-15)	2,424,289.55

Washington Co (Canaan Valley Inst.) (GY16)	266,000.00
Wicomico Co. (GY08-15)	4,851,873.72
Wicomico Co. (GY16)	554,000.00
Worcester Co. (GY08-15)	2,122,484.63
Worcester Co. (GY16)	360,000.00
<b><u>SEPTIC County Grants Total</u></b>	<b><u>90,611,805.04</u></b>

DIRECT SEPTIC GRANTS:  
Ind Septic Grants: Inception thru GY'11 Total 17,725,266.58

**SEPTIC Total Capital Grants** **108,337,071.62**

**HB 12 GRANT AWARDS:**

Allegany Co. (FY15/16)	35,000.00
Anne Arundel Co. (FY15/16)	75,000.00
Baltimore Co. (FY15/16)	140,000.00
Calvert Co. (FY15/16)	200,000.00
Caroline Co. (FY15/16)	200,000.00
Carroll Co. (FY15/16)	55,000.00
Cecil Co. (FY15/16)	75,000.00
Charles Co. (FY15/16)	140,000.00
Dorchester Co. (FY15/16)	200,000.00
Frederick Co. (FY15/16)	120,000.00
Garrett Co. (FY15/16)	75,000.00
Harford Co. (FY15/16)	120,000.00
Howard Co. (FY15/16)	55,000.00
Kent Co. (FY15/16)	200,000.00
Montgomery Co. (FY15/16)	30,000.00
PG Co.(FY15/16)	15,000.00

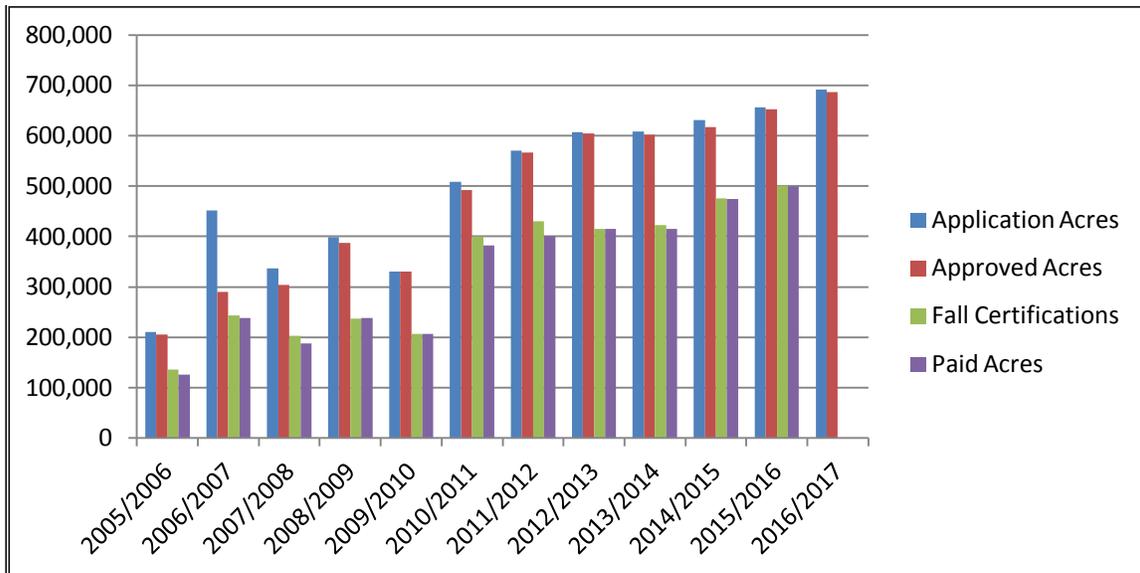
Queen Anne's Co. (FY15/16)	75,000.00
St. Mary's Co. (FY15/16)	200,000.00
Somerset Co. (FY15)	75,000.00
Talbot Co. (FY15/16)	200,000.00
Washington Co. (FY15/16)	65,000.00
Wicomico Co. (FY15/16)	75,000.00
Worcester Co. (FY15/16)	85,000.00
<b><u>HB 12 Grant Total</u></b>	<b><u>2,510,000.00</u></b>
<b><u>TOTAL BRF SEPTIC GRANTS</u></b>	<b><u>110,847,071.62</u></b>

**Septic Fund (MDA 40% for Cover Crops)**

<u>Sources:</u>		<u>Uses:</u>	
Cash Deposits*	\$87,479,203	Grant Awards	\$80,387,019
		Admin. Expense	<u>\$ 2,270,077</u>
		Total	\$82,657,096

\*Cumulative revenue and expenditures as of 6/30/2016

Historically there is attrition between acres enrolled and actual payments for cover crops planted under the Maryland Agricultural Water Quality Cost Share Program. The main cause of reduced acreage is one of time and labor availability in the fall planting of cover crops after harvest. Other causes include delays caused by weather and other uncontrolled factors. There is also a smaller reduction in acres planted and those paid that relates to conversions from traditional to commodity cover crops or removal of acres from the program. The chart below illustrates the “typical” program attrition profile.



**ENR Funding Status:**

Consistent with the BRF Advisory Committee recommendation from prior years, the State legislature during the 2012 Session, doubled the BRF fee from \$2.50 per month (\$30/year) per household or Equivalent Dwelling Unit (EDU) to \$5.00 (\$60/year) for most Marylanders. The fee remained unchanged for users that do not discharge sewage into the Chesapeake Bay or the Atlantic Bays watershed, which covers a portion of Garrett County, Cecil County and Ocean City area. The new increased fee will remain in place until FY 2030 and revert back to the lower level of \$2.50 per month starting in FY 2031. The increased fee generated approximately \$110 million in gross revenue, which along with \$280 million in revenue bond issuance will enable MDE to provide up to 100% in ENR eligible cost grant funding to finance the 67 major Wastewater Treatment Plants (WWTPs) and at least five additional minor WWTPs by FY 2017. MDE’s current estimate for ENR upgrade of the 67 majors and five minors is \$1.25 billion. This does not include non-ENR costs that the WWTP owners pay using local funds. Attachment 1 provides a cash flow and projects completion of ENR upgrades to the 67 major WWTPs by FY 2018. MDE is currently working with 15 Minor WWTPs that are considering ENR upgrades and expects to budget approximately \$10 million of BRF funds annually toward upgrading these facilities.

Starting FY 2018 (July 2017), after payment of bond debt service, the WWTP fund is projected to have \$50M+ per year in fee revenue available for capital projects. Based on the statutory changes during the 2015 legislative session (SB 133 & SB 863), the prioritization of project funds will be as follows:

1. Funding an upgrade of a wastewater facility to enhance nutrient removal at wastewater facilities with a design capacity of 500,000 gallons or more per day;
2. Funding for the most cost-effective enhanced nutrient removal upgrades at wastewater facilities with a design capacity of less than 500,000 gallons per day;

3. Funding any of the following types of projects selected based on water quality and public health benefits, as determined by the Department of the Environment:
  - (i) Combined sewer overflow abatement, rehabilitation of existing sewers, and upgrading conveyance systems, including pumping stations (starting FY 2016);
  - (ii) Nitrogen reduction from onsite sewage disposal systems/septic systems;
  - (iii) Stormwater projects being undertaken by local governments who have implemented a system of charges;
  - (iv) Stormwater alternative compliance plan, undertaken by an organization exempt from taxation under IRS regulations, if required by a local government because the organization has substantial financial hardship as a result of a local government stormwater remediation fee.

### **Wastewater Treatment Plant Upgrades With Enhanced Nutrient Removal (ENR)**

#### **Status of Upgrades:**

The Maryland Department of the Environment (MDE) has implemented a strategy known as Enhanced Nutrient Removal (ENR) and is providing financial assistance to upgrade wastewater treatment facilities in order to achieve ENR. The ENR Strategy and the Bay Restoration Fund set forth annual average nutrient goals of WWTP effluent quality of Total Nitrogen (TN) at 3 mg/l and Total Phosphorus (TP) at 0.3 mg/l, where feasible, for all major wastewater treatment plants with a design capacity of 0.5 million gallons per day (MGD) or greater. Other smaller wastewater treatment plants are currently being selected by the Department for upgrade on a case-by-case basis, based on the cost effectiveness of the upgrade, environmental benefits and land use factors. Primarily, the Maryland's 67 major sewage treatment facilities are targeted for the initial upgrades.

#### Major WWTPs:

ENR upgrades are underway at many plants, and to date, upgrades to 49 major facilities have been completed and are successfully in operation. 14 other facilities are under construction, three are in the design stage, and one are in the planning stage.

#### Minor WWTPs:

ENR upgrades are also underway at some minor WWTPs in order to meet Maryland Watershed Implementation Plan requirement to upgrade at least five minor WWTPs before FY 2018. MDE and Planning have been assisting the local governments in application for the Bay Restoration Fund (BRF) grants in order to proceed with the ENR upgrades. Currently, four minor plants are ENR operational, four are under construction and 10 are in design and planning phases.

As an estimate of the total benefit of the completed projects, the following load reductions were determined based on the difference between what would be the facility's load without the upgrade versus the load with the upgrade at the ultimate design capacity. These load reductions would allow the upgraded facilities to maintain their Tributary Strategy loading caps of nitrogen and phosphorus even after reaching their design capacity with the 20-year projected growth.

The following are the major facilities that have completed the upgrade and are in operation:

#	Major Facility	Design Flow In Million Gallons Per Day (MGD)	Date Completed	Nitrogen Load Reduction At Design Flow (Lbs/year)	Phosphorus Load Reduction At Design Flow (Lbs/year)
1	Hurlock	1.65	May 2006	70,000	8,500
2	Celanese (North Branch)	2.00	Nov 2006	85,000	10,300
3	Easton	4.00	June 2007	170,000	20,700
4	Kent Narrows	3.00	Aug 2007	128,000	15,500
5	APG-Aberdeen (Federal) <sup>1</sup>	2.80	Mar. 2006	119,000	14,500
6	Swan Point <sup>1</sup>	0.60	May 2007	25,000	3,100
8	Mattawoman <sup>1</sup>	20.00	Nov 2007	853,000	0
7	Chestertown	0.90	June 2008	64,000	7,800
9	Brunswick	1.40	Sept 2008	60,000	7,200
10	St. Michaels	0.66	Oct 2008	28,000	3,400
11	Indian Head	0.50	Jan 2009	21,000	2,600
12	Elkton	3.05	Dec 2009	130,000	15,800
13	Havre De Grace	2.275	May 2010	28,000	11,800
14	Poolesville	0.75	Jul 2010	9,000	3,900
15	Federalburg	0.75	Aug 2010	32,000	3,900
16	Crisfield	1.00	Aug 2010	43,000	5,200
17	George's Creek	0.60	Nov 2010	25,000	3,100
18	Mount Airy	1.20	Nov 2010	15,000	6,200
19	Perryville	1.65	Dec 2010	70,000	8,500
20	Hagerstown	8.00	Dec 2010	97,000	41,400
21	Cumberland	15.0	Feb 2011	183,000	77,700
22	Bowie	3.30	Feb 2011	40,000	7,000
23	Delmar	0.85	Sept 2011	36,000	4,400
24	Pocomoke City	1.47	Oct 2011	18,000	7,600
25	Denton	0.80	May 2012	10,000	4,100
26	Little Patuxent	25.00	Sept 2012	304,000	53,200
27	Damascus	1.50	Feb 2013	18,000	7,700
28	Thurmont	1.00	April 2013	12,000	5,100
29	Piscataway	30.00	May 2013	365,000	0
30	Cetnreville <sup>1</sup>	0.50	July 2013	6,000	2,500
31	Parkway	7.50	July 2013	91,000	15,900
32	Dorsey Run <sup>1</sup>	2.00	Oct 2013	24,000	4,200
33	Joppatowne	0.95	Nov 2013	11,000	4,900
34	Cambridge	8.1	Dec 2013	98,000	41,900
35	Snow Hill	0.5	June 2014	21,000	2,500
36	La Plata	1.5	Dec 2014	18,000	7,700
37	Sod Run	20.0	Feb 2015	243,000	103,500
38	Aberdeen	4.0	March 2015	48,000	20,700
39	Patuxent	7.5	March 2015	91,000	15,900

40	Maryland City	2.5	March 2015	30,000	5,300
<b>#</b>	<b>Major Facility</b>	<b>Design Flow In Million Gallons Per Day (MGD)</b>	<b>Date Completed</b>	<b>Nitrogen Load Reduction At Design Flow (Lbs/year)</b>	<b>Phosphorus Load Reduction At Design Flow (Lbs/year)</b>
41	Broadneck	6.0	May 2015	73,000	31,000
42	Emmitsburg	0.75	March 2016	31,000	3,800
43	Annapolis	13.0	April 2016	158,000	67,300
44	Seneca	20.0	April 2016	243,000	0
45	Broadwater	2.0	April 2016	24,000	10,300
46	Western Branch	30.0	April 2016	365,000	63,900
47	Blue Plains (MD Portion)	169.6	April 2016	7,230,000	0
48	Ballenger Creek	6.0	April 2016	73,000	31,000
49	Taneytown	1.1	August 2016	13,000	5,600

The following are the minor facilities that have completed the upgrade and are in operation:

<b>No.</b>	<b>Minor Facility</b>	<b>Design Flow In Million Gallons Per Day (MGD)</b>	<b>Date Completed</b>	<b>Nitrogen Load Reduction At Design Flow (Lbs/year)</b>	<b>Phosphorus Load Reduction At Design Flow (Lbs/year)</b>
1	Boonsboro <sup>1</sup>	0.53	Oct 2009	22,000	2,700
2	Worton <sup>1</sup>	0.25	Dec 2012	10,000	1,200
3	Eastern Correctional Facility <sup>1</sup>	0.50	May 2015	21,000	2,500
4	Rising Sun	0.5	April 2016	21,000	2,500

<sup>1</sup> No BRF funding was provided

### Chesapeake Bay TMDL Implications:

In early November, 2009, the US Environmental Protection Agency (EPA) officially transmitted the Watershed Implementation Plan (WIP) guidance. EPA, in coordination with the Bay watershed jurisdictions of Maryland, Virginia, Pennsylvania, Delaware, West Virginia, New York, and the District of Columbia (DC), developed and, on December 29, 2010, established the Total Maximum Daily Loading (TMDL) and a nutrient and sediment pollution diet for the Chesapeake Bay, consistent with Clean Water Act requirements. Current model estimates are that the States' Bay water quality standards can be met at basin-wide loading levels of 200 million pounds of nitrogen per year and 15 million pounds of phosphorus per year. Maryland's current target loads are 41 million pounds of nitrogen per year and 3 million pounds of phosphorus per year by 2025.

To meet the established Chesapeake Bay TMDL, Maryland developed its Phase II Watershed Implementation Plan (dated October 26, 2012). The Phase II Plan builds up upon Phase I WIP (dated December 3, 2010) and provides a more detailed series of proposed strategies that will exceed Maryland 2017 target (60% of the total implementation needed to meet the water quality standards). Phase II also has significantly more local input, thereby providing the additional detail at the local level and increased reasonable assurance of successful implementation.

Maryland’s strategy in developing segment-shed waste load allocations (WLA) is to assume that point source cap will achieve the WLAs through the ENR upgrades. To ensure the success of Maryland’s TMDL strategy and to allow for attaining 60% load reductions by 2017, ENR upgrades for major facilities need to be completed before that year. In addition, as WLAs are further developed, some minor facilities within certain segment-sheds may be required to upgrade to ENR.

**Update on Federal Facilities**

On July 19, 2006, the State of Maryland and the Department of Defense (DoD) signed a Memorandum of Understanding (MOU) to resolve a dispute regarding the applicability of the Bay Restoration Fee to DoD. The State’s legal position is that the federal government is not exempt from paying the Bay Restoration Fund (BRF) fee; however, the DoD asserts that the BRF fee is a tax and that the State may not tax the federal government. With the advice of counsel, the State chose to settle the matter with DoD rather than to litigate. In the MOU, neither party concedes any legal position with respect to the BRF fee. The MDE has agreed to accept DoD’s proposal to undertake nutrient removal upgrades at certain DoD-owned wastewater treatment plants at its own expense in lieu of paying the BRF fee. No other Federal agency is exempt from paying the BRF fee under this MOU.

MDE continues to work with DoD to upgrade the targeted DoD facilities as specified in the MOU. Specifically, the following are the targeted DoD facilities with their current ENR upgrade status:

<b>DoD Facility</b>	<b>Status</b>	<b>Remark</b>
Aberdeen Proving Ground – Aberdeen	Operation	The plant was designed and upgraded on 3/14/2006 to achieve seasonal ENR. However, through operational improvements the plant has been capable of meeting the ENR limits on annual basis.
Aberdeen Proving Ground – Edgewood	Operation	Construction was completed in March 2016. ENR upgrade is fully operational.
Fort Detrick	Operation	Construction was completed in June 2012. ENR upgrade is fully operational.
Naval Station – Indian Head	Operation	Construction was completed on 9/21/2011. ENR upgrade is fully operational.
Fort Mead	Under Construction	American Water Group has assumed ownership of the plant. ENR upgrade is underway using the design-build project delivery process.
Naval Support Activity – Annapolis	Design Complete with No Construction	MDE approved the design for Phase I of the project (Denitrification Filter) on 9/9/2013. The project did not proceed to construction and is on hold due to federal budgetary issues.

### **Annual Operation and Maintenance Grants for the Upgraded Facilities:**

Starting in fiscal year 2010 (FY 2010), the BRF legislation allows up to 10 percent of the annual fee generated from users of wastewater treatment facilities to be earmarked to provide grants toward the operation and maintenance (O&M) costs of the enhanced nutrient removal technology. To ensure that each upgraded facility receives a reasonable and fair amount of grant, MDE, in consultation with the Advisory Committee, is allocating the grants at the following rates:

- Minimum annual allocation per facility (for design capacity  $\leq$  1 MGD) = \$30,000
- For facility with design capacity between 1 and 10 MGD = \$30,000 per MGD
- Maximum allocation per facility (for design capacity  $\geq$  10 MGD) = \$300,000

On July 6, 2016, the Maryland Board of Public Works approved \$4,777,400 (under FY 2017 authorization) for facilities that achieved ENR level of treatment during calendar year 2015.

MDE is requesting authorization for \$7 million in FY 2018. The upgraded facilities listed above that achieve ENR level of treatment in calendar year 2016 will be receiving O&M grants based above rates.

## House Bill 893 of 2007 Implementation

House Bill 893 requires that: “Beginning January 1, 2009, and every year thereafter, MDE and Planning shall jointly report on the impact that a wastewater treatment facility that was upgraded to enhanced nutrient removal during the calendar year before the previous calendar year with funds from the Bay Restoration Fund had on growth within the municipality or county in which the wastewater treatment facility is located.”

As required by this legislation, Planning and MDE have advised the Bay Restoration Fund Advisory Committee regarding the best available information and the analysis of that data to address this mandate.

### Available Capacity:

This report addresses the following Bay Restoration Fund financed facilities that were upgraded to ENR with Bay Restoration Fund and were completed prior to January 1, 2016:

Facility	Design Capacity (MGD)		Flow in CY 2015	
	Original	At Upgrade	(MGD)	% of Original Design Capacity
North Branch, Allegany County	2.0	2.0	1.440	72%
Town of Easton, Talbot County	2.35	4.0	2.605	111%
Town of Hurlock, Dorchester County	2.0	1.65	1.199	60%
Kent Island (KNSG), Queen Anne's County	2.0	3.0	1.991	99%
City of Brunswick, Frederick County	0.7	1.4	0.498	71%
Town of Chestertown, Ken County	0.9	0.9	0.688	76%
Talbot Region II, Talbot County	0.5	0.66	0.348	70%
Town of Indian Head, Charles County	0.5	0.5	0.378	76%
Town of Elkton, Cecil County	2.7	3.05	1.860	69%
City of Havre De Grace, Harford County	1.89	3.3	1.975	104%
Town of Poolesville, Montgomery County	0.75	0.75	0.535	71%
Town of Federalsburg, Caroline County	0.75	0.75	0.321	43%
City of Crisfield, Somerset County	1.0	1.0	0.507	51%
Town of Mount Airy, Carroll County	1.2	1.2	0.735	61%
George's Creek, Allegany County	0.6	0.6	0.870	145%
Hagerstown, Washington County	8.0	8.0	6.735	84%
City of Cumberland, Allegany County	15.0	15.0	8.440	56%
City of Bowie, Prince George's County	3.3	3.3	1.569	47%

Facility	Design Capacity (MGD)		Flow in CY 2015	
	Original	At Upgrade	(MGD)	% of Original Design Capacity
Town of Perryville, Cecil County	1.65	2.0	0.827	50%
City of Pocomoke City, Worcester County	1.47	1.47	1.074	73%
Town of Delmar, Wicomico County	0.65	0.85	0.610	94%
Town of Denton, Caroline County	0.8	0.8	0.408	51%
Little Patuxent, Howard County	25.0	29.0	19.880	79%
Damascus (WSSC), Montgomery County	1.5	1.5	0.810	54%
Town of Thurmont, Frederick County	1.0	1.0	0.647	65%
Piscataway (WSSC), Prince George's County	30.0	30.0	24.901	83%
Parkway (WSSC), Prince George's County	7.5	7.5	6.538	87%
Joppatowne, Harford County	0.95	0.95	0.762	80%
City of Cambridge, Dorchester County	8.1	8.1	2.492	31%
Town of Snow Hill, Worcester County	0.5	0.5	0.298	60%
Town of La Plata, Charles County	1.5	1.5	1.129	75%
Sod Run, Harford County	20.0	20.0	11.736	59%
City of Aberdeen, Harford County	4.0	4.0	1.901	47%
Patuxent, Anne Arundel County	7.5	7.5	5.310	71%
Maryland City, Anne Arundel County	2.5	2.5	1.146	46%
Broadneck, Anne Arundel County	6.0	6.0	4.599	77%

ENR upgrades may have created the possibility for capacity expansion beyond the original design capacity by significantly reducing nitrogen loads. However, given the limitations of the WWTP nutrient discharge caps, only a few of the plants could expand to take advantage of this possibility. Of the 36 facilities listed above, to date only three exceeded their original design capacity. At least one (George's Creek) was due to excessive infiltration and inflow (I/I) into the sewer system.

### 2016 BRF Analysis Findings

The Maryland Department of Planning (Planning) conducts a BRF Analysis as directed by HB893 (Bay Restoration Fund - Wastewater Treatment Facilities Upgrades - Reporting Requirements). The purpose is to provide the Bay Restoration Fund Advisory Committee (BRFAC) and Maryland's legislature with information on the impact that a wastewater treatment facility that was upgraded to Enhanced Nutrient Removal (ENR) during the calendar year with funds from BRF may have on growth within the municipalities and counties in which the facility is located. Growth is measured before and after ENR upgrades within existing and planned sewer service area boundaries and Priority Funding Areas (PFAs), using Geographical Information System (GIS) mapping software.

These findings help assess changes in growth patterns, the capacity of the upgraded facility to meet the demands of current and future users, and possible changes in development patterns that could be influenced by upgrades.

An ENR upgrade can create the possibility for capacity expansion beyond the original design capacity. However, the limitations of the WWTP nutrient discharge caps established by Maryland's Point Source Policy for the Bay<sup>1</sup> heavily influence whether that possibility can become reality, notwithstanding new treatment technologies or the use of multiple discharge means or wastewater reuse. As required by state regulations guiding County Water and Sewer Plans, to date, all ENR upgrades and any plant expansions have been found consistent with local adopted and approved comprehensive plans. Also, the imposed nutrient discharge caps following the ENR upgrades have not had any noted compromising effects to development that have been reported locally or otherwise noted in our analyses.

Planning works with every county and many municipalities to maintain and annually update our sewer service data layers to ensure as accurate representation as possible. For this report, the Department reviewed 35 ENR upgrades (Sod Run and Joppatowne are reviewed together) completed within the timeframe as specified in HB893. Five additional WWTPs, all within the Baltimore Region—Aberdeen, Broadneck, Maryland City, Sod Run, and Patuxent—were added to the review this year: the ENR upgrades for these facilities are now completed and the plants are operational.

Table 1 summarizes all of the ENR upgrades that are completed and operational to date (upgrades completed since the last reporting period are indicated as “new”). The table shows the starting point for each plant's reporting as the calendar year prior to the start of ENR funding as well as the year in which the upgrade was completed and became operational. It then summarizes information on a) Connections before ENR Funding, and b) Current Number of Total Connections, which includes connections to new development on sewer as well as connections of existing septic systems to sewer. The information allows for comparisons between the two periods of time for each WWTP to help assess possible changes in growth patterns and development in and outside PFAs, as well as the use of plant capacity for new growth versus septic hook ups.

PFAs are important to the analysis because they are geographies fundamental to Maryland's Economic Growth, Resource Protection, and Planning Policy.

PFAs are designated by local governments and recognized by the State as areas in which to concentrate growth and development due to the presence of existing or planned infrastructure. BRF funding is not restricted to PFAs, but PFAs provide a useful geographic frame of reference for reviewing possible effects of BRF upgrades on growth.

---

<sup>1</sup> Annual nutrient load caps for major WWTPs were based on an annual average concentration of 4.0 mg/l total nitrogen and 0.3 mg/l total phosphorus, at the approved design capacity of the plant. Design capacity for major WWTPs met both of the following two conditions: (1) A discharge permit was issued based on the plant capacity, or MDE issued a letter to the jurisdiction with design effluent limits based on the new capacity as of April 30, 2003; (2) Planned capacity was either consistent with the MDE-approved County Water and Sewer Plan as of April 30, 2003, or shown in the locally-adopted Water and Sewer Plan Update or Amendment to the County Water and Sewer Plan, which were under review by MDE as of April 30, 2003 and subsequently approved by MDE.

Table 1 shows that for each WWTP, the percentages of connections of improved parcels inside PFAs before and after ENR upgrades are very similar; within a few percentage points in every case. To see this, compare the % of Connections Located in “S-1” (Existing Service Areas) and PFA (Before ENR Funding) with the % Total Improved Parcels Located in “S-1” within PFA (Total Connections).

**Table 1. Connections to Wastewater Treatment Facilities Upgraded to ENR**

ENR WWTP	County	ENR Upgrade Completed and Operational (Month-Year)	Connections Before ENR Funding					Current Number of Total Connections		
			Column A: Reporting Year before ENR Funding	Column B: Number of Improved Parcels in the Sewershed	Column C: Number of Improved Parcels in Existing Service Area ("S1")	Column D: Number of Improved Parcels in "S1" within PFA	% of Connections Located in "S1" & PFA (Column D ÷ C)	Column F: Total Improved Parcels in S1	Column G: Total Improved Parcels in S1 & PFA	% Total Improved Parcels Located in "S1" within PFA (Column G ÷ F)
<b>Western Region</b>										
Celanese	ALLE	Nov-06	2005	1,913	1,801	1,794	99.6%	1,858	1,840	99.0%
George's Creek	ALLE	Nov-10	2009	2,069	1,938	1,876	96.8%	1,997	1,938	97.0%
Cumberland	ALLE	Feb-11	2010	17,656	16,412	16,243	99.0%	16,797	16,643	99.1%
Hagerstown	WASH	Dec-10	2009	21,975	18,825	17,769	94.4%	19,991	19,717	98.6%
<b>Western Region Total</b>				<b>43,613</b>	<b>38,976</b>	<b>37,682</b>	<b>97%</b>	<b>40,643</b>	<b>40,138</b>	<b>99%</b>
<b>Washington Region</b>										
Brunswick	FRED	Sep-08	2007	2,446	1,957	1,957	100.0%	2,267	2,267	100.0%
Thurmont	FRED	Apr-13	2012	2,385	2,345	2,204	94.0%	2,350	2,217	94.3%
Poolesville	MONT	Jul-10	2009	1,742	1,719	1,651	96.0%	1,721	1,652	96.0%
Damascus	MONT	Feb-13	2012	3,997	3,793	3,437	90.6%	3,793	3,437	90.6%
Bowie	PRIN	Feb-11	2010	20,712	20,559	20,269	98.6%	20,949	20,478	97.8%
Parkway	PRIN	Jul-13	2012	15,470	15,394	15,383	99.9%	15,450	15,439	99.9%
Piscataway	PRIN	May-13	2012	56,296	55,007	51,954	94.4%	56,060	52,481	93.6%
<b>Washington Region Total</b>				<b>103,048</b>	<b>100,774</b>	<b>96,855</b>	<b>96%</b>	<b>102,590</b>	<b>97,971</b>	<b>95%</b>
<b>Upper Eastern Shore Region</b>										
Elkton	CECI	Dec-09	2008	6,000	4,926	4,925	100.0%	5,092	5,090	100.0%
Perryville	CECI	Dec-10	2009	1,704	1,509	1,509	100.0%	1,547	1,544	99.8%
Chestertown	KENT	Jun-08	2007	1,772	1,742	1,562	89.7%	1,885	1,695	89.9%
Kent Island	QUEE	Aug-07	2006	6,590	6,401	5,974	93.3%	7,134	6,757	94.7%
Denton	CARO	May-12	2011	1,508	1,097	1,095	99.8%	1,490	1,486	99.7%
Federalsburg	CARO	Aug-10	2009	881	827	817	98.8%	860	849	98.7%
Easton	TALB	Jun-07	2006	5,810	5,831	5,822	99.8%	6,429	6,423	99.9%
Talbot Region II	TALB	Oct-08	2007	2,289	2,214	1,981	89.5%	2,413	2,145	88.9%
<b>Upper Eastern Shore Total</b>				<b>26,554</b>	<b>24,547</b>	<b>23,685</b>	<b>96%</b>	<b>26,850</b>	<b>25,989</b>	<b>97%</b>
<b>Lower Eastern Shore Region</b>										
Cambridge	DORC	Dec-13	2012	5,861	5,418	5,293	97.7%	5,433	5,308	97.7%
Hurlock	DORC	May-06	2005	769	703	703	100.0%	798	798	100.0%
Delmar	WICO	Sep-11	2010	1,107	932	824	88.4%	951	841	88.4%
Pocomoke	WORC	Oct-11	2010	1,893	1,607	1,585	98.6%	1,613	1,592	98.7%
Crisfield	SOME	Aug-10	2009	2,495	2,044	1,735	84.9%	2,108	1,828	86.7%
Snow Hill	WORC	Jun-14	2013	900	930	882	94.8%	930	882	94.8%
<b>Lower Eastern Shore Total</b>				<b>13,025</b>	<b>11,634</b>	<b>11,022</b>	<b>95%</b>	<b>11,833</b>	<b>11,249</b>	<b>95%</b>
<b>Baltimore Region</b>										
Mount Airy	CARR/FRED	Nov-10	2009	3,336	3,145	3,145	100.0%	3,338	3,338	100.0%
Joppatowne/ Sod Run (new)	HARF	Nov-13	2012	51,174	48,459	48,195	99.5%	48,563	48,299	99.5%
Havre De Grace	HARF	May-10	2009	5,098	4,898	4,782	97.6%	5,262	5,259	99.9%
Little Patuxent	HOWA	Sep-12	2011	56,997	50,848	50,833	100.0%	51,140	51,125	100.0%
Aberdeen (new)	HARF	Mar-15	2014	5,098	4,524	4,443	98.2%	4,524	4,443	98.2%
Broadneck (new)	ANNE	May-15	2014	30,847	21,150	20,355	96.2%	21,150	20,355	96.2%
Maryland City (new)	ANNE	Mar-15	2014	4,522	4,394	4,376	99.6%	4,394	4,376	99.6%
Patuxent (new)	ANNE	Mar-15	2014	24,037	22,886	22,440	98.1%	22,886	22,440	98.1%
Facilities Upgraded During Reporting Period				115,678	101,413	99,809	98%	101,517	99,913	98%
<b>Baltimore Region Total</b>				<b>181,109</b>	<b>160,304</b>	<b>158,569</b>	<b>99%</b>	<b>161,257</b>	<b>159,635</b>	<b>99%</b>
<b>Southern Maryland Region</b>										
Indian Head	CHAR	Jan-09	2008	1,409	1,317	1,317	100.0%	1,400	1,400	100.0%
La Plata	CHAR	Dec-14	2013	3,164	3,213	3,132	97.5%	3,335	3,254	97.6%
<b>Southern Maryland Total</b>				<b>4,573</b>	<b>4,530</b>	<b>4,449</b>	<b>98%</b>	<b>4,735</b>	<b>4,654</b>	<b>98%</b>
<b>Statewide</b>										
Facilities Upgraded During Reporting Period				115,678	101,413	99,809	98%	101,517	99,913	98%
<b>Statewide Totals</b>				<b>371,922</b>	<b>340,765</b>	<b>332,262</b>	<b>98%</b>	<b>347,908</b>	<b>339,636</b>	<b>98%</b>

Notes:

(new) = Facilities upgraded to ENR during the reporting period.

In a few instances, the number of improved parcels in Column F is less than in Column C. The difference is due to service boundary discrepancies between old and new GIS data.

Table 2 provides data regarding new connections for each ENR-upgraded WWTP.

Compared to last year's BRF analysis, there was an increase of 25 percent in the amount of new connections to ENR-upgraded WWTPs. Last year's analysis indicated 5,690 total new connections since receiving BRF funds for ENR-upgraded WWTPs; this year's analysis indicates an increase of 1,453 for 7,143 total new connections. The largest annual increase in new connections to ENR-upgraded WWTPs, compared to last year's BRF analysis occurred in the Washington (952 to 1,816) and Upper Eastern Shore (1,947 to 2,303) Regions, with the largest increases within the Piscataway (448 to 1,053) and Bowie (110 to 390) WWTP service areas.

A large majority of new development served by ENR WWTPs is occurring within PFAs. For example, for the ENR-upgraded WWTPs with a total of more than 100 new connections since BRF funds were received (16 WWTPs), an average of 85.7 percent of the total new connections (whether new development or existing septic hook-ups) have occurred within the PFA. The two exceptions to this are the Bowie and Piscataway WWTPs in the Washington Region, which had 48 percent and 50 percent of new connections (excluding septic system connections) within the PFA.

This year Planning also analyzed connections of existing development served by septic systems to ENR-upgraded WWTPs (see "Total Septic System Hook-ups"). Since the BRF funds were received, about 2,400 households and businesses have abandoned their septic systems and are now connected to a WWTP with ENR capabilities. To some degree, these new connections from former septic systems have offset the development of housing associated with the installation of new septic systems.

The WWTPs that have connected the largest number of former septic systems were within the Western (889), Upper Eastern Shore (775) and Washington (532) Regions (these regions also had the highest connections of new development). In the Western Maryland region, more than half of the new connections since the BRF funds were received were former septic system connections (889 of 1,667), while for the Upper Eastern Shore (775 of 2,303) and Washington (532 of 1,816) regions, about one-third and more than one-quarter, respectively, of total new connections were comprised of septic hook-ups.

More than 90 percent of the former septic system connections in the Western and Upper Eastern Shore regions were within the PFA, while 66 percent of septic system connections in the Washington region were in the PFA. Overall across the state, most septic hook ups to ENR-upgraded WWTPs have occurred within the PFA. The one exception is the Bowie WWTP, where 27 percent of the new septic system connections occurred within the PFA.

As indicated in the Available Capacity table, Easton (111 percent of original capacity) and Havre De Grace (104 percent) are the only BRF-funded WWTPs that have exceeded their original design capacity and are now using expanded hydraulic capacity that was enabled through the combination of the ENR upgrade and an expanded nutrient discharge cap (note: the 145 percent figure for George's Creek is due to stormwater infiltration and inflow). In previous years' BRFAC reports, Planning highlighted county planning and growth patterns at the Easton and Havre de Grace WWTPs. We note that almost 100 percent of the total new connections for these two systems have been within the PFA since BRF funds were received.

**Table 2. Activity after ENR Upgrade for Wastewater Treatment Facilities**

ENR WWTP	Activity after ENR Upgrade							
	Total New Connections		New Development			Observed Septic System Activity		
	Total Increase Improved Parcels in S1 (Total Number New Connections)	% Total Improved Parcels in "S1" within PFA	Newly Improved Parcels in S1 (New Development built since upgrade)	Newly Improved Parcels in S1 & PFA	% of Newly Improved Parcels in S1 & PFA	Total Septic System Hook-ups	Septic System Hook-ups in PFA	% Of Septic Hook-ups in PFA
<b>Western Region</b>								
Celanese	57	98.2%	47	46	97.9%	10	10	100.0%
George's Creek	59	78.0%	28	24	85.7%	31	22	71.0%
Cumberland	385	88.8%	119	116	97.5%	266	226	85.0%
Hagerstown	1,166	98.9%	584	573	98.1%	582	580	99.7%
<b>Western Region Total</b>	<b>1,667</b>	<b>95.8%</b>	<b>778</b>	<b>759</b>	<b>97.6%</b>	<b>889</b>	<b>838</b>	<b>94.3%</b>
<b>Washington Region</b>								
Brunswick	310	100.0%	27	27	100.0%	283	283	100.0%
Thurmont	5	100.0%	5	5	100.0%	0	0	n/a
Poolesville	2	50.0%	2	1	50.0%	0	0	n/a
Damascus	0	n/a	0	0	n/a	0	0	n/a
Bowie	390	34.9%	141	68	48.2%	249	68	27.3%
Parkway	56	100.0%	56	56	100.0%	0	0	n/a
Piscataway	1,053	50.0%	1,053	527	50.0%	0	0	n/a
<b>Washington Region Total</b>	<b>1,816</b>	<b>57.0%</b>	<b>1,284</b>	<b>684</b>	<b>53.3%</b>	<b>532</b>	<b>351</b>	<b>66.0%</b>
<b>Upper Eastern Shore Region</b>								
Elkton	166	100.0%	144	144	100.0%	22	22	100.0%
Perryville	38	94.7%	32	32	100.0%	6	4	66.7%
Chestertown	143	93.0%	129	119	92.2%	14	14	100.0%
Kent Island	733	93.2%	600	576	96.0%	133	107	80.5%
Denton	393	99.5%	18	18	100.0%	375	373	99.5%
Federalsburg	33	100.0%	6	6	100.0%	27	27	100.0%
Easton	598	99.2%	531	531	100.0%	67	62	92.5%
Talbot Region II	199	78.4%	68	60	88.2%	131	96	73.3%
<b>Upper Eastern Shore Total</b>	<b>2,303</b>	<b>95.1%</b>	<b>1,528</b>	<b>1,486</b>	<b>97.3%</b>	<b>775</b>	<b>705</b>	<b>91.0%</b>
<b>Lower Eastern Shore Region</b>								
Cambridge	15	100.0%	15	15	100.0%	0	0	n/a
Hurlock	95	100.0%	35	35	100.0%	60	60	100.0%
Delmar	19	57.9%	19	11	57.9%	0	0	n/a
Pocomoke	6	100.0%	6	6	100.0%	0	0	n/a
Crisfield	64	92.2%	45	41	91.1%	19	18	94.7%
Snow Hill	0	n/a	0	0	n/a	0	0	n/a
<b>Lower Eastern Shore Total</b>	<b>199</b>	<b>93.5%</b>	<b>120</b>	<b>108</b>	<b>90.0%</b>	<b>79</b>	<b>78</b>	<b>98.7%</b>
<b>Baltimore Region</b>								
Mount Airy	193	100.0%	103	103	100.0%	90	90	100.0%
Joppatowne/ Sod Run (new)	104	100.0%	104	104	100.0%	0	0	n/a
Havre De Grace	364	100.0%	351	351	100.0%	13	13	100.0%
Little Patuxent	292	100.0%	292	292	100.0%	0	0	n/a
Aberdeen (new)	0	n/a	0	0	n/a	0	0	n/a
Broadneck (new)	0	n/a	0	0	n/a	0	0	n/a
Maryland City (new)	0	n/a	0	0	n/a	0	0	n/a
Patuxent (new)	0	n/a	0	0	n/a	0	0	n/a
<b>Baltimore Region Total</b>	<b>953</b>	<b>100.0%</b>	<b>850</b>	<b>850</b>	<b>100.0%</b>	<b>103</b>	<b>103</b>	<b>100.0%</b>
<b>Southern Maryland Region</b>								
Indian Head	83	100.0%	46	46	100.0%	37	37	100.0%
La Plata	122	100.0%	122	122	100.0%	0	0	n/a
<b>Southern Maryland Total</b>	<b>205</b>	<b>100.0%</b>	<b>168</b>	<b>168</b>	<b>100.0%</b>	<b>37</b>	<b>37</b>	<b>100.0%</b>
<b>Statewide</b>								
<b>Statewide Totals</b>	<b>7,143</b>	<b>86.3%</b>	<b>4,728</b>	<b>4,055</b>	<b>85.8%</b>	<b>2,415</b>	<b>2,112</b>	<b>87.5%</b>

## **Onsite Sewage Disposal System (OSDS) Upgrade Program**

### **Program Implementation**

Starting July 1, 2010, the Bay Restoration Fund Septic Best Available Technology (BAT) upgrade program was implemented locally at the county level and MDE no longer took direct applications from homeowners.

The Bay Restoration (Septic) Fund statute (Annotated Code of Maryland under 9-1605.2) requires that funding priority for BAT installations be “first given to failing septic systems and holding tanks in the Chesapeake and Atlantic Coastal Bays Critical Areas and then to failing septic systems that the Department (MDE) determines are a threat to public health or water quality. Senate Bill 554 approved in the 2009 legislative session, requires new and replacement septic systems serving property in the Critical Areas to include the best available technology for removing nitrogen (BAT). In addition Code of Maryland Regulation 26.04.02.07 effective January 1, 2013 requires all OSDS installed in the Chesapeake Bay and Coastal Bay watersheds to serve new construction to include BAT. In addition, all BAT must be inspected and have the necessary operation and maintenance performed by a certified service provider at a minimum of once per year for the life of the system. The Regulation also requires that both individuals that install BAT and individuals perform operation and maintenance complete a course of study approved by MDE. As of May of 2016 approximately 1,240 installers and 220 service providers have been certified by MDE.

The Maryland Department of the Environment has drafted a regulatory change to the Code of Maryland Regulations (COMAR) 26.04.02.07. The purpose of this action is to reform the universal requirement that BAT units be installed outside of the Chesapeake Bay and Atlantic Coastal Bays critical area for all new construction, unless the local jurisdiction enacts code in order to protect public health or waters of State, or the system design is 5,000 gallons per day or greater. These draft changes were submitted to the Administrative, Executive and Legislative Review committee (AELR) on August 22, 2016. The AELR committee will review the proposed changes and will be published to the Maryland Register for 45 days, which includes a 30 day public comment period. The proposal to change the regulations may take several months; a final date is not known at this time.

Consistent with the above, MDE is requiring all new grant recipients to prioritize application for financial assistance based on the following:

1. Failing OSDS or holding tanks in the Critical Areas
2. Failing OSDS or holding tanks not in the Critical Areas
3. Non-Conforming OSDS in the Critical Areas
4. Non-conforming OSDS outside the Critical Areas
5. Other OSDS in the Critical Areas, including new construction
6. Other OSDS outside the Critical Areas, including new construction

The Program guidance for FY 2017 is available on the web site at:

<http://www.mde.state.md.us/programs/Water/QualityFinancing/Documents/FY%202016%20Final%20Program%20Guidance.pdf>

Attachment 2 shows BRF funded BAT installations and sewer connections for SFY 2016. During this fiscal year, 1021 BAT installations and 81 septic systems were eliminated by connecting the dwellings to public sewer.

MDE Approved BAT for Nitrogen Removal: MDE currently has approved 19 BAT for nitrogen removal of which nine are field verified BAT technologies. Consistent with HB 347 (2011 Session), effective June 1, 2011, and every 2-years thereafter, MDE is required to provide on its website an Evaluation and Ranking of all best available nitrogen removal technologies for on-site sewage disposal systems. The evaluation will include for each BAT technology:

1. Total Nitrogen Reduction
2. Total cost including Operation, Maintenance and Electricity
3. Cost per pound of Nitrogen Reduction

The following are the currently nine field-verified BAT technologies in Maryland:

Model	Manufacturer	Effluent TN Concentration	% TN Removal	Cost of Purchase, Installation and 5 Years Operation & Maintenance	Operation and Maintenance Cost per year*	Electricity cost and Usage**
Hoot® BNR	Hoot Aerobic Systems, Inc. <a href="http://www.hootsystems.com">www.hootsystems.com</a>	21 mg/L	64%	\$12,677	\$175	\$92/year or 766 kWh/year
Advantex® AX20	Orenco Systems®, Inc. <a href="http://www.orenco.com">www.orenco.com</a>	17 mg/L	71%	\$13,235	\$200	\$40/year or 336 kWh/year
Advantex® RT	Orenco Systems®, Inc. <a href="http://www.orenco.com">www.orenco.com</a>	14 mg/L	76%	\$15,054	\$300	\$40/year or 336 kWh/year
Singulair TNT	Norweco, Inc. <a href="http://www.norweco.com">www.norweco.com</a>	27 mg/L	55%	\$10,895	\$175	\$118/year or 980 kWh/year
Singulair Green	Norweco, Inc. <a href="http://www.norweco.com">www.norweco.com</a>	27 mg/L	55%	\$10,926	\$175	\$118/year or 980 kWh/year
SeptiTech®	SeptiTech, Inc. <a href="http://www.septitech.com">www.septitech.com</a>	20 mg/L	67%	\$13,272	\$300	\$209/year or 1741 kWh/year
RetroFast	Bio-Microbics, Inc. <a href="http://www.biomicrobics.com">www.biomicrobics.com</a>	25 mg/L	57%	\$10,092	\$175	\$168/year or 1402 kWh/year
AquaKlear AK6S245	AquaKlear, Inc. <a href="http://www.aquaklear.net">www.aquaklear.net</a>	27 mg/L	54%	\$10,616	\$100	\$36/year or 299 kWh/year
Hydro Action AN	Hydro-Action Industries <a href="http://www.hydro-action.com">www.hydro-action.com</a>	20 mg/L	66%	\$12,910	\$300	\$188/year or 1565 kWh/year

\* Does not include cost of pumping septage.

\*\* Based on a rate of \$0.12 per kWh and unit size for 3 to 4 bedrooms.

The following BAT technologies have been approved to enter a field verification period:

1. MicroFast
2. Fuji Clean CEN
3. Nitrex
4. Norweco Hydro-Kinetic
5. Ecoflo Coco Filter ECDn

### **Chesapeake Bay States - Data Sharing**

On April 16, 2015, the states of Delaware, Maryland, Pennsylvania, Virginia and West Virginia signed a Memorandum of Cooperation to share data developed to document the performance of advanced onsite pretreatment units for nitrogen reduction and, therefore, to simplify and expedite the approval processes for these technologies in each individual state, as well as reduce costs to residents and manufacturers. Prior to this MOC, all states nationwide approved systems on an individual basis and many did not take into account data collected by other state programs. To learn more about data sharing, visit the [Chesapeake Bay Program website](#).

### **BEST AVAILABLE TECHNOLOGY CLASSIFICATION DEFINITIONS**

Effective on July 1, 2015 there are five different classifications of BAT. Each of these classifications works in conjunction with Regulation 26.04.02 for the reduction of Nitrogen on-site sewage disposal systems. This classification is intended only to classify the use of BAT systems on domestic wastewater usage. Domestic wastewater is defined by the BAT Technical Review Committee (BAT TRC) as having a total nitrogen (TN) influent concentration of 60mg/L. Supporting documents that clearly and concisely define the methods in which each of these classifications can be used are on MDE BRF webpage for reference.

**BAT Class I** systems are stand alone units that are approved through Maryland Department of the Environment (MDE) protocols as BAT units capable of reducing total nitrogen to 30 mg/L or less. These units are currently on the approved BAT list and have successfully completed the Maryland field verification. The flow chart for approval of BAT Class I units is available on the MDE website. Units that are still under field verification are listed as BAT Class II (*previously titled, "Field Verified Units"*) and upon successful completion of the field verification will become BAT Class I.

**BAT Class II** systems are stand alone units that are undergoing field verification for BAT Class I. Upon successful completion of the field verification, they will become BAT Class I. All requirements and guidance for BAT Class I apply to BAT Class II technologies. Technologies that do not reduce the effluent nitrogen to 30 mg/l or less will be either removed from the BAT listing, enter a modified field verification process (contingent on prior approval from BAT TRC), or be classified as BAT Class III at the discretion of the BAT TRC and working with the manufacturer's representative.

**BAT Class III** systems are pre-treatment technologies approved by MDE as capable of reducing nitrogen to 48 mg/L effluent. **These technologies may only be installed as BAT when paired with a BAT Class IV soil disposal system.** BAT Class III technologies must have one of the following

certifications: NSF 245, NSF 40 Class I, CAN/BNQ 3680-600, CEN Standard 12566-3 or equivalent. Technologies proposed as BAT Class III, must first apply to MDE for BAT classification using the technology application found within the MDE website. The application needs to be accompanied by the final report of the verification organization. Once submitted to the BAT TRC, analysis of the data and the application will begin. The BAT TRC will analyze for the TN reduction capabilities of the unit. If the analysis of data concludes the unit will not reduce total nitrogen to 48 mg/L, the technology will be denied entry into the BAT program.

**BAT Class IV** systems are on-site sewage disposal systems that are installed above, at, or just below (12-inch maximum depth) grade and are thus capable of reducing effluent TN by 30 percent. For inclusion as a BAT in Maryland, these units are to be paired with a BAT Class III, Class II or Class I system. No modification of this is authorized unless applied for and approved by the Department on a case by case basis.

BAT Class IV systems, installed under the BAT classification, must be maintained on the same frequency as any BAT in accordance with COMAR Regulation 26.04.02.07. Since no specific manufacturer is tied to this type of system, the operation and maintenance provider of the BAT Class III, II, or I unit must successfully complete the MDE-approved course for the Installation and Operation and Maintenance of the specific system.

Sand Mound, At Grade Systems, and Low Pressure Dosing are addressed in Code of Maryland Regulation 26.04.02.05. All practices and criteria listed in this regulation must be applied when installing these as BAT. All installation contractors of sand mounds must be certified by the Department. The MDE Design and Construction Manual for Sand Mound Systems and the Construction Manual for At Grade systems is to be utilized for the latest and best installation practices for these systems. Information sheets are available for each system type.

- **SAND MOUNDS** – An elevated sand mound system is an on-site sewage disposal system that is elevated above the natural soil surface in a suitable sand fill material. Gravel-filled absorption trenches or beds are constructed in the sand fill, and the effluent is pumped into the absorption area through a pressure distribution network. Pretreatment of sewage occurs either in a septic tank or advanced pretreatment unit, and additional treatment occurs as the effluent moves downward through the sand fill and into the underlying natural soil. The sand mound must be installed over a natural surface, A or B horizon. No BAT credit is given to sand mounds installed over sand or loamy sand soils. Please refer to, “BAT Class IV: Sand Mound,” for exact details as to what is needed to qualify for BAT Classification.
- **AT-GRADE SYSTEMS** – The at-grade system is an on-site sewage disposal system that utilizes a raised bed of gravel or stone over the natural soil surface with a pressure distribution system constructed to equally distribute the pretreated effluent along the length of the gravel bed. The purpose of the design is to overcome site limitations that prohibit the use of conventional trench or seepage pit on-site sewage disposal systems. Please refer to, “BAT Class IV: At-Grade Mound Systems,” for exact details as to what is needed to qualify for BAT Classification.
- **SHALLOW PLACED LOW PRESSURE DISTRIBUTION** – Shallow-placed pressure dosing allows for uniform distribution of effluent at a depth not to exceed 12 inches across the entire dispersal field. Dosing allows for the creation of fluctuating aerobic/anoxic environments, which sets up the conditions for nitrification and denitrification to occur. Please refer to, “BAT Class IV: Shallow-Placed Pressure-Dosed Dispersal,” for exact details as to what is needed to qualify for BAT Classification.

**BAT Class V** systems are technologies that mitigate the impact of TN on groundwater but do not fit into any of the above BAT classifications. As systems are identified that will apply to be identified as Class V, the BAT TRC will develop a concise plan for the unit to enter the BAT classification. Examples include, but are not limited to, waterless toilets and individually engineered peat systems.

## **Cover Crop Activities**

### **Recent Program Streamlining and Targeting to Achieve Maximum Nutrient Reduction:**

In FY2016, MDA continued to implement a targeting strategy to maximize nutrient reduction effectiveness of cover crops. MDA eliminated aerial seeding for non-irrigated, double-crop soybeans due to lesser than desired crop performance. The 2016 program included incentives to:

1. plant cover crops as early as possible in the fall,
2. plant after crops that need higher fertilizer rates, such as corn, vegetables and tobacco,
3. use cover crops on fields that were fertilized using manure,
4. use planting methods that maximize seed to soil contact to assure germination and early growth, and
5. use small grains such as rye to maximize nutrient uptake.

MDA has applied these criteria for the last seven fiscal years by structuring the incentive payments to reward farmers who adhered to one or more of these priorities. They are based both on four separate surveys of farm operators' opinions to streamline and adapt the program to be responsive, and recommendations from the BayStat Scientific Panel to maximize water quality benefits.

### **Status of Implementation of BRF for Cover Crop Activities:**

The Maryland Department of Agriculture cumulative portion of BRF is \$87,479,203 as of June 30, 2016. In FY 2016, \$11.6 million in BRF were supplemented by an additional \$13.0 million from the 2010 Chesapeake Bay Trust Fund to fund the Cover Crops Program.(includes expenditures for FY2017)

**ATTACHMENT 1 – BRF WWTP FUND CASH FLOW**





**ATTACHMENT 2 – Details of BFR Septic Grant Disbursements (FY 2016)**

Water Quality Financing Administration  
 Detail of BRF County Septic Grant Disbursements  
 GY 2016

	Septic System/ BAT \$		# BAT units	# of Drainfields		# Holding Tanks		# Holding Tanks	PFA Sewer Connection \$		(EDU)# Sewer Conn.		Admin/ Mileage \$	TOTAL GRANT DISB.	
	Drainfield \$	# of Drainfields		Holding Tanks \$	# Holding Tanks	PFA Connection \$	(EDU)# PFA		Outside PFA Sewer Conn.	(EDU)# Sewer Conn. Outside PFA	\$	\$			
Allegheny Co/CVI	14,581.00		1										0.00	1,262.00	15,843.00
Anne Arundel Co	2,585,105.00		225						13,700.00		2			280,686.00	2,879,491.00
Baltimore Co	174,414.00		16						417,133.71		31			57,022.75	648,570.46
Calvert Co	915,300.00		73			101,480.00	9							145,960.00	1,162,740.00
Caroline Co	297,069.00		37											55,503.00	352,572.00
Carroll Co	373,006.00		33											30,713.01	403,719.01
Cecil Co	618,283.00		57			50,670.00	9		70,000.00		3			83,909.42	822,862.42
Charles Co	363,404.50		35											49,700.00	413,104.50
Dorchester Co	514,731.00		54	65,580.00	6									61,664.00	641,975.00
Frederick Co/ CVI	362,544.00		27											34,752.50	397,296.50
Garrett Co	140,250.00		15	2,500.00	1									15,813.52	158,563.52
Harford Co	311,490.00		26	2,177.18	1				92,788.85		5			27,125.00	433,581.03
Howard Co/CVI	79,088.00		8						105,323.00		6			19,216.00	203,627.00
Kent Co	377,371.00		33	23,510.00	2	6,800.00	2							41,412.00	449,093.00
Montgomery Co/CVI	296,297.50		27	6,390.00	1				20,000.00		1			37,114.00	379,801.50
Prince Georges Co	75,918.00		6						17,175.00		1			9,863.00	102,956.00
Queen Annes Co	848,972.00		83											130,310.00	979,282.00
Somerset Co	275,353.72		24											25,143.36	300,497.08
St Mary's Co	1,227,174.00		107	4,700.00	1									168,126.00	1,400,000.00
Talbot Co	429,904.00		45	54,167.00	5				234,411.75		21			55,880.00	774,362.75
Washington Co/CVI	227,477.00		17	4,125.00	1									21,454.00	253,056.00
Wicomico Co	389,731.00		48	86,700.00	9									49,211.03	525,642.03
Worcester Co	254,112.00		24	8,071.56	1	10,195.00	1		10,000.00		1			20,100.00	348,512.83
TOTALS	\$11,151,575.72		1021	\$257,920.74	28	\$169,145.00	21	\$980,532.31	\$66,034.27		10	\$1,421,940.59		\$14,047,148.63	

NOTE: Talbot Co: Royal Oak/Thorneton Road Sewer Line Extension pd with FY13 grant for 53 qualifying homes; Individual House County Connection Fees pd with FY 14 & 15 grants( and future grants)  
 Thorneton/Royal Oak Sewer County Connection fees: 22 Connections paid for in FY14, 18 paid for in FY15 & 5 paid for in (FY16), total reimbursed 45, 8 Connections Remaining)