

*Draft*



# **Bay Restoration Fund Advisory Committee**

**Gregory B. Murray, Chairman**

## **Annual Status Report January 2015 (10<sup>th</sup> Report)**

**Report to:**

**Governor Martin O'Malley**

**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 Environmental Matters Committee**

**The House Appropriations Committee**

## Bay Restoration Fund Advisory Committee Members

Committee Members	Affiliation
Gregory B. Murray	Washington County
Walid Saffouri	Maryland Department of the Environment
Delegate Barbara Frush	Maryland House of Delegates
James L. Hearn	Washington Suburban Sanitary Commission
Beth Lynn McGee, Ph.D.	Chesapeake Bay Foundation
Beverly Stinson, PhD	AECOM
William P. Ball, Ph.D.	Johns Hopkins University
Don William Bradley	Town of Hurlock
Joseph P. Gill	Maryland Department of Natural Resources
Richard E. Hall	Maryland Department of Planning
T. Eloise Foster	Maryland Department of Budget & Management
Earl F. Hance	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 Martin O'Malley and the Maryland Legislature, its tenth 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 July 30, 2014, the Comptroller of Maryland has deposited approximately \$620 million in the Maryland Department of the Environment (MDE) Wastewater Treatment Plant fund, \$83 million in the Maryland Department of Environment Septic Systems Upgrade fund, and \$64 million in the Maryland Department of Agriculture (MDA) Cover Crop Program fund, for a total of \$767 million 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 35 major facilities have been completed and are in operation. Upgrades to 20 other facilities are under construction, 10 are in design, and 2 are in planning.
- Most major sewage treatment plants including the largest plants (> 10 MGD) are expected to be completed by 2017. Less than five plants may not meet this deadline. However, if that occurs, it 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 before 2017 consistent with the Maryland Phase II Watershed Implementation Plan (WIP) for the Chesapeake Bay Total Maximum Daily Loading (TMDL). To date, two minor facilities completed the ENR upgrade, and three more are under construction.
- In addition to the five minor sewage plants (mentioned above) that are expected to be upgraded by 2017, MDE is encouraging other minor plants to apply for funding and initiate the planning for the ENR. To date four plants have progressed into design, and two more have initiated planning.

- MDE is also using BRF funds to upgrade septic systems with the Best Available Technology (BAT) for nitrogen removal. To date, BRF has funded 6,550 BAT upgrades throughout Maryland, of which 3,762 BAT upgrades were completed within Maryland's Critical Areas.
- The Maryland Department of Agriculture (MDA) dedicates its portion of BRF funds for the implementation of the statewide Cover Crop Program. In FY2014, farmers planted 423,213 acres attaining an estimated nutrient reduction of 2.5 million pounds of nitrogen and 85,000 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 FY2014 represents 106% of Maryland's 2015 Milestone goal.
- In FY2015 Maryland farmers applied to plant 631,375 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 2015 milestone goal of 386,000 acres.
- In 2015 MDA's funding increases proportionally with new BRF rates established by law. MDA is projected to receive \$10.4 million in BRF support in FY15. It is projected that BRF will provide financial assistance for approximately 216,000 acres of cover crops.
- Over the past four 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 (MDP) are continuing their efforts to implement the requirements of House Bill 893, which was passed in the 2006 legislative session and requires MDE and MDP, in consultation with local governments to report on the impact that an ENR upgraded wastewater treatment plant has on growth in the jurisdiction it serves. As part of this report, MDE and MDP evaluated the impact during 2013 as required by the legislation.

## **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 II 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. Therefore, the Committee will need to consider how best to prioritize/allocate future funding to the different sectors:

- Point Source, which includes major and minor municipal treatment plants. All major plants and 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 need to be upgraded after 2017 to assist in meeting the Final 2025 Target.
- Septic Systems: BRF funding will continue to be provided before and after 2017 for BAT septic systems to support local teams and MDE strategies.
- Stormwater: BRF funding can be provided after 2017 for stormwater BMPs to support local teams 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 projects remain on schedule and both the interim 2017 and final 2025 targets are achieved.
- MDE, in consultation with the BRF Advisory Committee will begin working on the development of priority system to prioritize/allocate future BRF funding to the different sectors by FY 2018.

## **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 has 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 has begun to audit billing authorities who are not collecting the BRF from federal agencies and will make assessments as appropriate against those billing authorities for those uncollected fees.

Additionally, the CoM is working with MDE to obtain historical flow data from billing authorities and users, which will be compared to returns filed by billing authorities and users to ensure accurate BRF returns have been filed and paid.

### **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 \$150 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 divisions: (1) the Bay Restoration Project Management Division; and (2) the Water and Wastewater Project Management Division.

### 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 permit 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.

Adjustments were been made to the program in 2009 and 2010 with a goal to maximizing program participation and water quality benefits. Eligibility requirements are consistent with findings from a

scientific panel under the auspices of BayStat. The incentive structure maximizes nutrient reductions emphasizing early planting, planting cover crops after corn or vegetables, planting cover crops on fields where manure has been used as a nutrient source, planting rye, using certain tillage methods and planting in priority watersheds. Base payment per acre rates are adjusted to offset costs for fuel and seed. Incentive payments ranged from \$25 per acre to a maximum of \$100 per acre if participants followed highly valued management practices.

Funding expenditures for FY2014 was approximately \$20.4 million, with \$10.4 million from BRF, and \$10.0 million from Chesapeake Bay 2010 Trust Fund.

In FY14, over 607,000 acres were enrolled preparing Maryland farmers to again exceed the 386,000 acre Chesapeake Bay 2015 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 is a statutory member of Bay Restoration Fund Advisory Committee. The Department's general mandate is to advise State agencies, local governments, the General Assembly, and others on planning matters. More specifically, the Department is focused on implementation of Smart Growth policies and programs at all levels of government. The BRF program supports State Planning and Smart Growth policies to the degree that WWTP capacity is allocated to serve existing and new development in locally identified growth areas within the State certified Priority Funding Areas (PFAs). In addition, 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. MDP 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 MDP 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 in another section.

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 MDP. 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

MDP assists the local governments in the preparation of amendments and revisions to the water and sewer planning document, when requested by the local governments. As part of our mandate to advise MDE and other branches of the State government on smart growth initiatives, it is important that the water and sewer plan be compiled according to State Law and that it supports the goals, policies and recommendations within the comprehensive plan and in turn with those goals and policies and recommendations for growth and public safety of the State's,

MDP 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)). This includes review for consistency with State Smart Growth policy. Evaluating local growth plans, goals, and policies, zoning allowances, and environmental concerns, MDP carries out this review and provides appropriate guidance to MDE for land use development impact considerations before MDE makes an approval decision on Water and Sewerage Plans or amendments.

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 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)

One element of the State Smart Growth policy is the designation of Priority Funding Areas. These 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, MDP indicates those portions as "comment areas" to indicate State funding is not eligible within those areas unless approved 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. The numbers of septic to sewer connections and percentages of those made inside and outside the PFA are very consistent from year to year for each upgraded ENR WWTP. It is noted that every WWTP had available capacity not restricted to the PFA criteria prior to the ENR upgrades, allowing for some use of public sewer outside of PFAs. Even though PFA law is not directly applicable to this capacity, in most cases it has been used for service connections within the PFA and/or for the remediation of failing septic systems for public health and safety reasons. MDP 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). If BRF septic funds are provided for these types of connections, local governments are guided and advised by MDE and MDP.

#### 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. MDP provides comments on all draft local Comprehensive Plans and amendments. Through the Clearinghouse review process, MDP 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.

MDP works closely with, and provides technical assistance to, local governments in the processes leading to adoption of local comprehensive plans. MDP advises them on facilities and resource planning matters to best support all State Agency Planning and Smart Growth policies and practices.

#### **Monthly BayStat Review of the BRF:**

All BRF-funded ENR upgrades are closely monitored through planning, design, construction, and implementation by MDE, and are overseen monthly by the Governor through BayStat, a monthly meeting of cabinet-level state officials where updated Bay-related data are reviewed and discussed. MDE submits a monthly report to BayStat showing the status of each ENR upgrade; a recent BayStat ENR monthly report is available via this link:  
[http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/Water/cbwrf/wwtp\\_enr\\_upgrade.aspx](http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/Water/cbwrf/wwtp_enr_upgrade.aspx)

These monthly reports show expected completion dates for each step of the process at each location, and highlight delays and other key changes in status. BayStat meetings devote particular attention to those upgrades due to become effective during the current two-year Bay milestone period.

In addition, the Wastewater Permits Program submits a monthly BayStat report that includes the number of BAT installations by County and Critical Area as well as monthly revenue and expenditures.

## 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, 2014, is as follows:

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

<u>Sources:</u>		<u>Uses:</u>	
Cash Deposits	\$620,551,188*	Capital Grant Awards	\$954,723,085**
Cash Interest Earnings	\$ 25,001,972	Admin. Expense Allowance	\$ 9,308,268
Net Bond Proceeds	<u>\$165,666,414</u>	Bond DS Payments	<u>\$ 27,825,518</u>
Total	\$811,219,574	Total	\$991,856,871

*\* 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; additional revenue bonds issuance is projected as \$180M & \$100M in FY 2016& FY 2017 respectively.*

The grants under the Wastewater Fund are awarded toward 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.

<u>ENR PROJECT APPLICANTS</u>	<u>GRANT AWARD</u>
Aberdeen, Town of	\$14,982,000
Allegany County	12,208,518
Anne Arundel County	124,387,000
Baltimore City	299,922,000
Bowie, City of	8,668,492
Brunswick, City of	8,263,000
Cambridge, City of	8,944,000
Cecil County	10,977,120
Chesapeake Beach	7,080,000
Chestertown, Town of	1,490,854
Crisfield, City of	4,230,766
Cumberland, City of	25,654,866
Delmar, Town of	2,369,464
Denton, Town of	4,405,615
Easton, Town of	7,788,021
Elkton, Town of	7,403,154
Emmitsburg, Town of	5,581,000
Federalsburg, Town of	2,900,000
Frederick , City of	1,458,000
Frederick County	31,000,000
Fruitland, City of	4,809,000
Hagerstown, City of	10,191,836
Harford County	41,315,000
Havre de Grace, City of	10,474,820
Howard County	35,493,172
Hurlock, Town of	

	941,148
Indian Head, Town of	5,822,098
La Plata, Town of	9,378,000
Leonardtown, Town of	510,000
MD Environmental Services	713,000
Mount Airy, Town of	3,354,144
Perryville, Town of	3,888,168
Pocomoke, City of	3,214,878
Poolesville, Town of	223,132
Queen Anne's County	6,380,645
Queenstown, Town of	880,929
Salisbury, City of	3,406,877
Secretary, Town of	50,000
Snow Hill, Town of	3,416,000
St. Mary's County	9,896,000
Talbot County	1,978,699
Taneytown, City of	580,000
Thurmont, Town of	6,889,000
Washington County	350,000
Westminster, City of	1,020,000
WSSC	<u>177,160,803</u>
<b>ENR SUBTOTAL</b>	<u>932,051,219</u>
<b>SEWER Grants - Statewide</b>	19,711,306
<b>O&amp;M Grants - Statewide</b>	<u>2,960,560</u>
<b>TOTAL ENR, SEWER &amp; O&amp;M</b>	<u><u>\$954,723,085</u></u>

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

<u>Sources:</u>		<u>Uses:</u>	
Cash Deposits	\$83,363,914	Capital Grant Awards	\$79,763,429***
Cash Interest Earnings	\$ 2,539,644	Admin. Expense Allowance	\$ 6,669,113
Total	\$85,903,558	Total	\$86,432,542

\*\*\* Does not includes \$15 million of FY 2015 grant awarded in June 2014. Payment disbursements are made as BATs are installed and expenses are incurred.

SEPTIC GRANT APPLICANTS

GRANT AWARD

Allegany Co.	\$174,166
Anne Arundel Co.	11,908,040
Baltimore Co.	1,100,065
Calvert Co.	6,539,546
Caroline Co.	1,855,699
Carroll Co.	428,698
Cecil Co.	3,113,001
Charles Co.	2,046,885
Dorchester Co.	3,787,098
Frederick Co.	2,016,835
Garrett Co.	427,060
Harford Co	1,582,895
Howard Co.	444,982
Kent Co	3,294,377
Montgomery Co.	754,638
Prince George's Co.	180,200
Queen Anne's Co.	3,934,051
Somerset Co.	1,424,259
St. Mary's Co.	4,766,110
Talbot Co.	

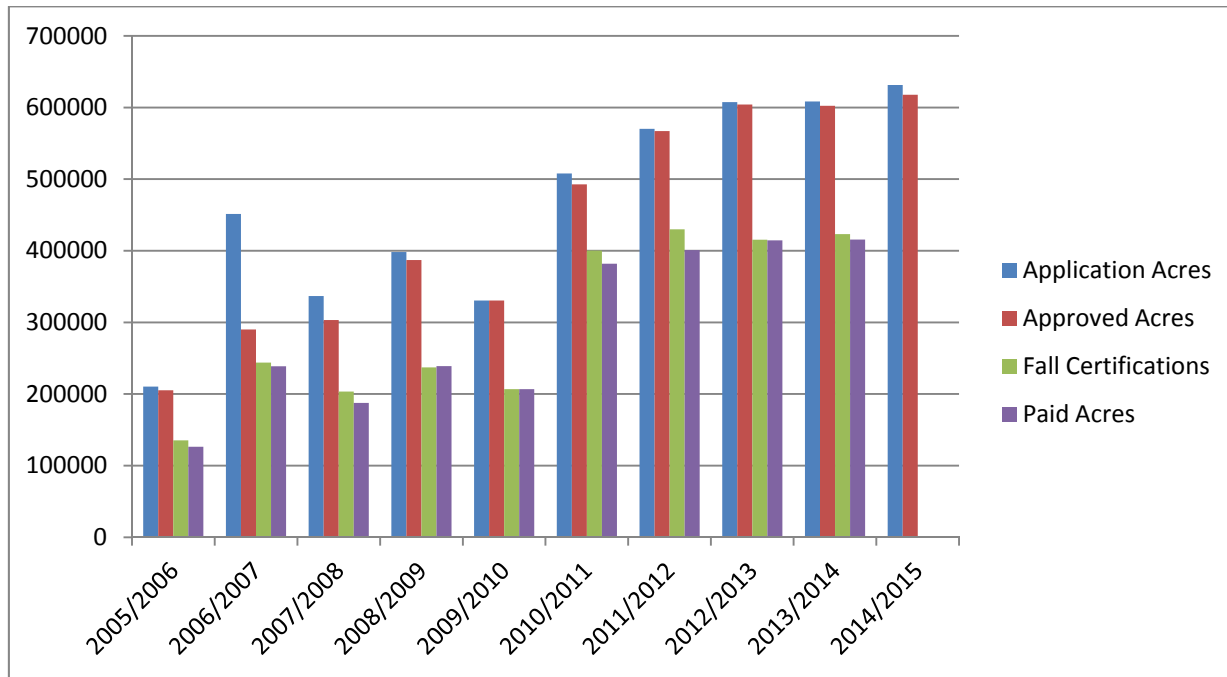
	3,840,992
Washington Co.	2,125,700
Wicomico Co	4,226,278
Worcester Co.	2,066,587
Individual Septic Grants (1344)	17,725,267
<b>TOTAL SEPTIC</b>	<b><u><u>\$79,763,429</u></u></b>

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

<u>Sources:</u>		<u>Uses:</u>	
Cash Deposits*	\$64,300,092	Grant Awards	\$58,115,919
		Admin. Expense	<u>\$ 1,797,400</u>
		Total	\$59,913,319

\*Cumulative revenue and expenditures as of 6/30/2014

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 generated approximately \$110 million in gross revenue, which along with \$280 million in future 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 six additional minor WWTPs by FY 2017. MDE's current estimate for ENR upgrade of the 67 majors and 6 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.

Starting FY 2018, after payment of bond debt service, the WWTP fund is projected to have \$50M+ per year in fee revenue available for upgrade of additional minor (< 0.50 MGD) WWTPs with ENR, OSDS (septics) and Stormwater best management practices. Following on recommendations by the Septics Task Force, MDE, MDP, and DNR in consultation with the BRF Advisory Committee will begin working on the development of priority system to prioritize and allocate future BRF funding to the different sectors.



## **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 as “N” and Total Phosphorus (TP) at 0.3 mg/l as “P”, where feasible, for all significant 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 35 major facilities have been completed and are successfully in operation. 20 other facilities are under construction, 10 are in the design stage, and two are in the planning stage. Last year, MDE was successful in bringing the last remaining major facility (Hampstead, Carroll County) into the program by urging the facility to proceed with the ENR upgrade and by including nutrient loading limits and a compliance schedule in the proposed discharge permit.

### 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 MDP have been assisting the local governments in application for the Bay Restoration Fund (BRF) grants in order to proceed with the ENR upgrades. Currently, 2 treatment plants are ENR operational, 3 are under construction and 5 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:

<b>No.</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>
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 (Expanded Minor) <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	Federalsburg	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

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

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

No.	Minor 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	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

<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 41.04 million pounds of nitrogen per year and 3.04 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 segmentsheds 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 segmentsheds 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>Current Status</b>
Aberdeen Proving Ground – Aberdeen	The plant was designed and upgraded on 3/14/2006 to achieve seasonal ENR. However, since the upgrade the plant has been capable of meeting the ENR limits on annual basis possibly because the current average flow is less than half of the design capacity. The City of Aberdeen has assumed ownership of the plant and is currently evaluating the plant performance to identify additional improvements needed, if any, to allow the plant to continue to achieve year-round ENR at the design capacity.
Aberdeen Proving Ground – Edgewood	Construction started in March 2014
Fort Detrick	Construction was completed in June 2012. ENR upgrade is fully operational.
Fort Mead	American Water Group has assumed ownership of the plant. ENR upgrade is underway using the design-build project delivery process.
Naval Station – Indian Head	Construction was completed on 9/21/2011. ENR upgrade is fully operational.
Naval Support Activity – Annapolis	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 August 13, 2014, the Board of Public Works approved \$2,561,750 (under FY 2015 authorization) for facilities achieved ENR level of treatment during calendar year 2013.

MDE is requesting authorization for \$5 million in FY 2016. The upgraded facilities listed above that achieve ENR level of treatment in calendar year 2014 will be receiving O&M grants based above rate.

### House Bill 893 of 2007 Implementation

House Bill 893 requires that: “Beginning January 1, 2009, and every year thereafter, MDE and MDP 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, MDP 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, 2014:

Facility	Design Capacity (MGD)		Expansion During the Upgrade	
	Original	At Upgrade	(MGD)	% of Original Design Capacity
Celanese (North Branch), Allegany County	2.0	2.0	0	0%
Town of Easton, Talbot County	2.35	4.0	1.65	70%
Town of Hurlock, Dorchester County	2.0	1.65	-0.35	-18%
Kent Island (KNSG), Queen Anne's County	2.0	3.0	1.0	50%
City of Brunswick, Frederick County	0.7	1.4	0.7	100%
Town of Chestertown, Ken County	0.9	0.9	0	0%
Talbot Region II, Talbot County	0.5	0.66	0.16	32%
Town of Indian Head, Charles County	0.5	0.5	0	0%
Town of Elkton, Cecil County	2.7	3.05	0.35	13%
City of Havre De Grace, Harford County	1.89	3.3	1.41	75%
Town of Poolesville, Montgomery County	0.75	0.75	0	0%
Town of Federalsburg, Caroline County	0.75	0.75	0	0%
City of Crisfield, Somerset County	1.0	1.0	0	0%
Town of Mount Airy, Carroll County	1.2	1.2	0	0%
George's Creek, Allegany County	0.6	0.6	0	0%

Hagerstown, Washington County	8.0	8.0	0	0%
City of Cumberland, Allegany County	15.0	15.0	0	0%
City of Bowie, Prince George's County	3.3	3.3	0	0%
Town of Perryville, Cecil County	1.65	2.0	0.35	21%
City of Pocomoke City, Worcester County	1.47	1.47	0	0%
Town of Delmar, Wicomico County	0.65	0.85	0.2	31%
Town of Denton, Caroline County	0.8	0.8	0	0%
Little Patuxent, Howard County	25.0	29.0	4.0	16%
Damascus (WSSC), Montgomery County	1.5	1.5	0	0%
Town of Thurmont, Frederick County	1.0	1.0	0	0%
Piscataway (WSSC), Prince George's County	30.0	30.0	0	0%
Parkway (WSSC), Prince George's County	7.5	7.5	0	0%
Joppatowne, Harford County	0.95	0.95	0	0%
City of Cambridge, Dorchester County	8.1	8.1	0	0%

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 29 facilities listed above, only nine increased their capacity as part of the ENR upgrade. Expansion costs were identified for each of these projects and funded only by SRF loans. State grants were not allowed toward the expansion costs.

## 2015 BRF Analysis Findings

MDP's BRF Analysis provides information about the use of new WWTP capacity to support growth (per HB893 directive) made possible by the combination of ENR upgrades and WWTP nutrient discharge caps. As noted above, an ENR upgrade can create the possibility for capacity expansion beyond the original design capacity but the limitations of the WWTP nutrient discharge caps established by Maryland's Point Source Policy for the Bay<sup>1</sup>, ultimately dictate whether that possibility can become reality. As required by state regulation, all expansions thus far have been consistent with local adopted and approved comprehensive plans.

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<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.

Since 2007, MDP has performed land use analyses to monitor the impact of growth pertaining to ENR upgrades financed by Bay Restoration Fund. Due to MDP’s advancements in GIS data management, the department can perform more detail-oriented land use analyses. In the 2015 BRF Analysis, MDP utilized enhanced mapping of statewide sewer service areas to help identify all major wastewater treatment plants and their specific service areas (i.e., sewersheds). By using GIS-based mapping and visualizations, MDP can provide authoritative information to the BRF Advisory Committee on a number of matters concerning growth, policy recommendations and deployment of State resources.

Methodology

MDP examines each ENR upgraded facility and corresponding sewershed for changes in development activity (growth) over a given time period. MDP defines development as improved parcels that are less than 20 acres with improvement values of \$10,000 or more. Next, MDP determines the number of improved parcels within each wastewater treatment plant (WWTP) service area (sewershed) by presuming that improved parcels located inside of existing service areas (“S1”, service category in local water and sewer plans) ) are connected to the WWTP and improved parcels outside of the existing service area are on septic systems. This establishes the baseline for the analysis, which measures the annual changes in the number of connections. MDP also evaluates changes in growth as it relates to ENR upgrades by studying activity both inside and outside of Priority Funding Areas. HB893 determines the time period for the analysis by stating the beginning and endpoints, the calendar year before the year a major WWTP receives funding for ENR technology and the current reporting year. Additionally, official comprehensive plans and elements (such as, Comprehensive, Water and Sewerage, Water Resources, Land Use, Municipal Growth, etc.) are researched extensively to provide insight into a jurisdiction’s intent or policy for growth and to confirm sewer service area boundaries.

MDP’s 2015 BRF Analysis entailed examining twenty-nine (29) operational ENR upgraded wastewater treatment facilities and their corresponding sewersheds. Calculations were conducted to determine the percent of growth within the existing service area (“S1”) and number of connections inside and outside of the certified Priority Funding Area (“Before & After ENR Table”). Previous BRF annual reports highlighted the Town of Easton’s growth activity and found that the ENR upgrade provided an opportunity for the Town to continue to meet its growth goals under highly improved water quality standards. In Easton, new growth activity is contained within the Town and PFA Boundaries. This year, MDP has chosen to highlight the Havre de Grace Wastewater Treatment Plant whose design capacity has increased as part of an ENR upgrade, and the number of connections within the existing sewer service area has increased over 6.0 percent within its sewershed (between 2009 and 2014). MDP has analyzed this growth to assess the impact the new facility has and may have on growth both within and outside of the municipality. Havre de Grace is a good case study to observe because it is the fastest growing municipality located in Harford County, the sixth largest county in Maryland whose population is on the rise as well (Table 1).

Jurisdictions	2010	1990	Change 2010 - 1990	% Change
Havre de Grace	12,952	8,952	4,000	45%
Aberdeen	14,959	13,087	1,872	14%
Bel Air	10,120	8,860	1,260	14%

**Table 1** – Harford County Municipal Population  
Source: Maryland State Data Center

## Havre de Grace

The Havre de Grace Wastewater Treatment and sewage collection system is owned and operated by the Mayor and City Council of Havre de Grace. The facility was constructed in 1965 with a design capacity of 1.5 MGD. In 1987, the City of Havre de Grace renovated the WWTP to increase treatment efficiency and expanded design capacity to 1.9 MGD. By 2002, new Biological Nitrogen Removal Technology was incorporated into the facility, which increased capacity to 2.275 MGD. The latest upgrade occurred in 2007 to Enhanced Nutrient Removal capabilities with an expansion to the current design capacity of 3.3 MGD, as allowed for under Maryland's Point Source Policy for the Bay (Figure 1).



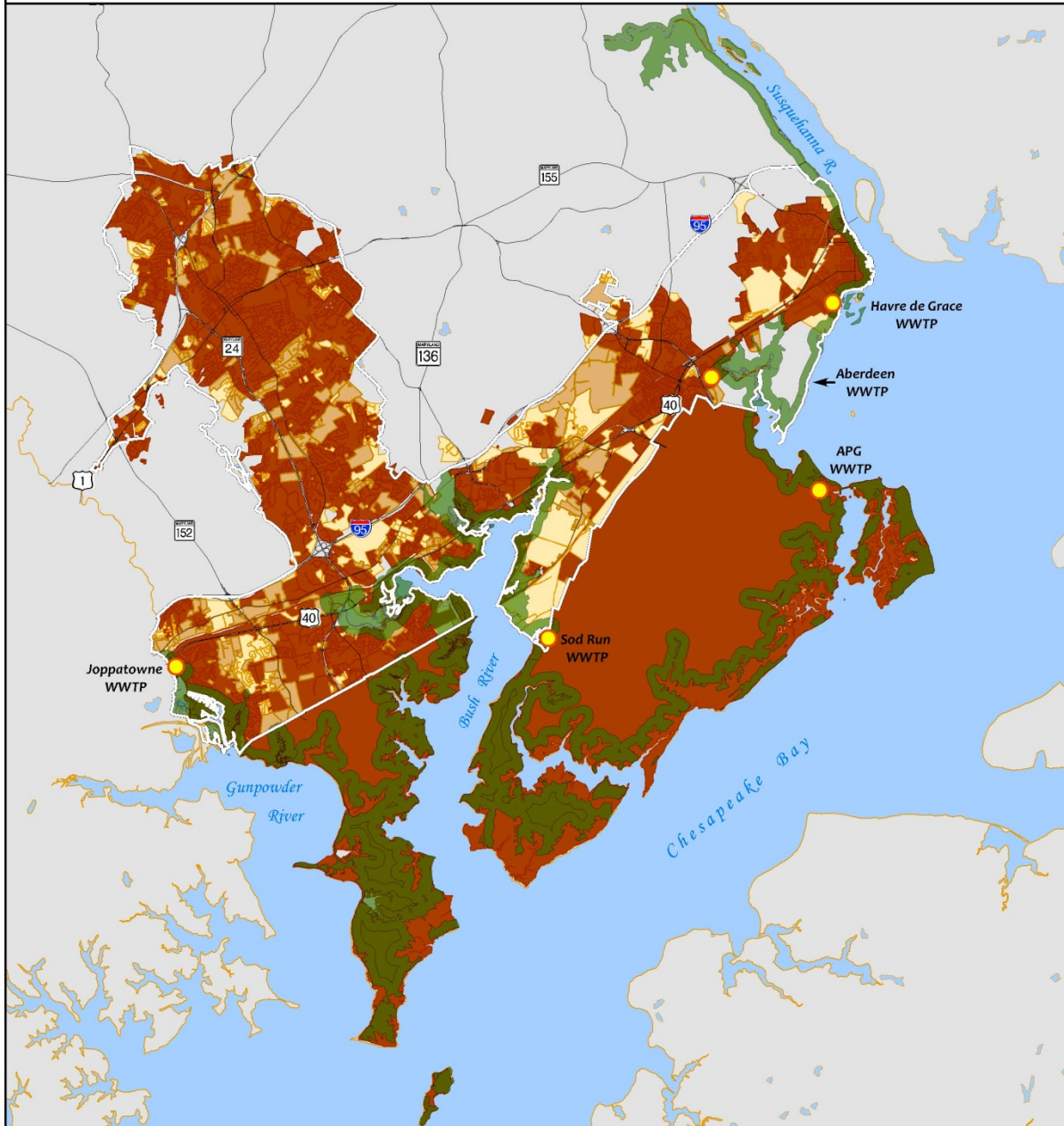
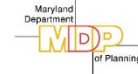
**Figure 1 - Havre de Grace WWTP**  
Source: Google Maps

The County identifies the “Development Envelope” as the most suitable area for development in Harford County and is where public water and sewer are available or programmed for service within the Designated Growth Area as identified by the Harford County planning documents. The County encourages the orderly expansion of water and sewerage systems to maintain “consistency” of implementation efforts with the local comprehensive plan’s Land Use goals and policies. The Havre de Grace Sewer Service Area is located within the eastern corner of the Harford County Development Envelope at the mouth of the Susquehanna River (Map 1).

The Havre de Grace Sewershed encompasses roughly 4,500 acres, consisting of the City’s incorporated limits and a 127 ac. agricultural parcel located just south of the City. The acreage comparison of the sewershed between the year before ENR upgrade in 2009, and the current reporting year, 2014, shows that the areas are almost identical (Table 2). The change in acreage, from S3 to S1, occurred between 2010 and 2012 in order to accommodate new development in the Greenway Farms Subdivision.



# Harford County Sewer Service Areas



**Legend:**

- Major WWTPs
- Development Envelope
- Harford County Critical Area

**Sewer Service Areas**

- Existing Service
- Planned Service (3 yrs.)
- Planned Service (5 yrs.)

**Other**

- Land
- Water
- Major Roads



Smart Growth Planning & Analysis Division,  
Angela Butler, October 2014

**Map 1 – Harford County Sewer Service Area**

Havre de Grace 2009 ServCat	ACRES	% of Total SSA	Havre de Grace 2014 ServCat	ACRES	% of Total SSA
S1	2,834	63%	S1	2,840	63%
S3	1,029	23%	S3	1,013	22%
S5	32	1%	S5	35	1%
S6	634	14%	S6	634	14%
<b>Total</b>	<b>4,528</b>	<b>100%</b>	<b>Total</b>	<b>4,521</b>	<b>100%</b>

**Table 2 – Havre de Grace Sewershed Acreage Summary Comparison**  
Source: Maryland Department of Planning

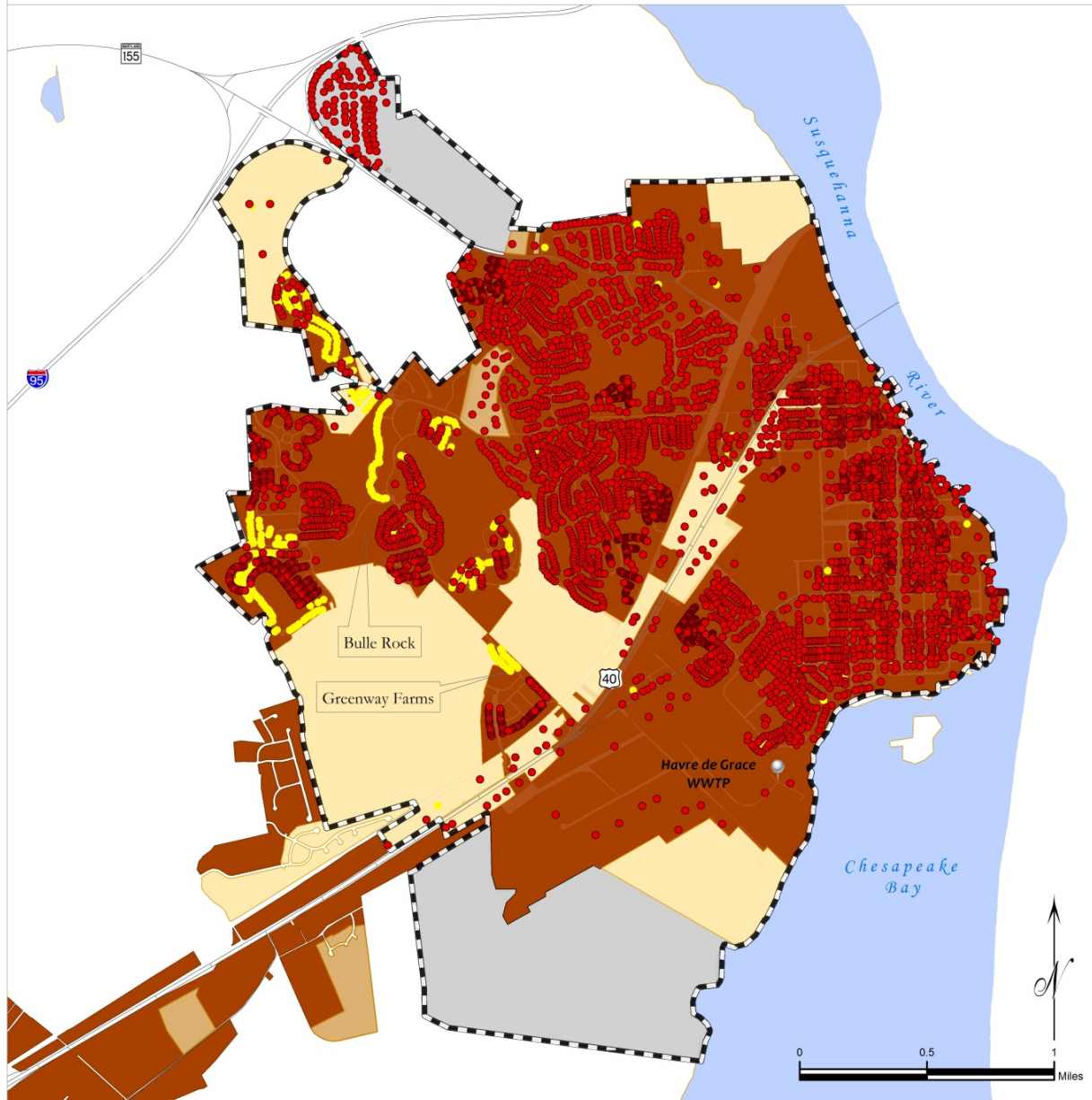
MDP’s analysis reveals that from 2009 to 2014, the total number of improved parcels within the Havre de Grace Existing Service Area (“S1”) increased from 4,900 to approx. 5,200 (Table 3). This reflects a 6.0% increase in growth. The 310 newly improved parcels reflect residential development in the Bulle Rock and Greenway Farms Subdivisions (Map 2). The Bulle Rock Subdivision (including the Meadow and Parkway Areas) is a major planned adult community project, which features 551 acres and over 2,100 units. It is the city’s largest mixed-use residential community, which will provide a community center, restaurants and access to the Bulle Rock Golf Course. The Greenway Farms Subdivision is a 151 ac. mixed-use developing parcel located in the Havre de Grace Phased Growth Area. The parcels affiliated with the aforementioned subdivisions were annexed into the City’s corporate limits in phases, between 1997 and 2004.

Havre de Grace 2009 ServCat	Improved Parcels 2009	% of Total SSA	Havre de Grace 2014 ServCat	Improved Parcels 2013	% of Total SSA
S1	4,900	96%	S1	5,210	96%
S3	91	2%	S3	100	2%
S5	16	0%	S5	16	0%
S6	91	2%	S6	91	2%
<b>Total</b>	<b>5,098</b>	<b>100%</b>	<b>Total</b>	<b>5,417</b>	<b>100%</b>

**Table 3 – Havre de Grace Improved Parcel Count Comparison**  
Source: Maryland Department of Planning

Havre de Grace is seeking growth by marketing the development with Smart Growth ideals. These new projects feature high and medium-density residential options, mixed-use amenities, preserved green spaces, waterfront revitalization, public services and access to expanded commercial development.

# Havre de Grace Sewershed Improved Parcels in 2009 & 2013



**Legend:**

- |  |   |              |
|--|---|--------------|
| Havre de Grace WWTP                                  | <b>Sewer Service Areas</b>              | <b>Other</b> |
| Havre de Grace SSA Boundary                          | Existing Service                        | Land         |
| 2009 Total Improved Parcels in "S1" (Total = 4,900)  | Planned Service (3 yrs.)                | Water        |
| Newly Improved Parcel w/n "S1" in 2013 (Total = 310) | Planned Service (5 yrs.)                | Major Roads  |
| (Note: 2013 Total Improved Parcel in "S1" = 5,210)   | Possible Future Service (11 to 20 yrs.) |              |

Maps prepared by Smart Growth Planning & Analysis Division, Angela Butler, November 2014

**Map 2 - Havre de Grace Improved Parcels 2009 & 2013**

## New Growth and Population

The U.S. Census Bureau reports that during the period from 1980 to 2000, Havre de Grace grew in population from 8,763 to 11,331 (Table 4). This represents a population increase of approx. 30% within Havre de Grace and 50% for the County; equaling 72,660 additional residents for Harford County. In the decade from 2000 to 2010, Havre de Grace experienced an additional 14% increase (Table 5).

Jurisdictions	2000	1980	Change 2000 - 1980	% Change
Harford County	218,590	145,930	72,660	50%
Havre de Grace	11,331	8,763	2,568	29%

**Table 4 – Population**  
Source: U.S. Census Bureau

Jurisdictions	2010	2000	Change 2010 - 2000	% Change
Harford County	244,826	218,590	26,236	12%
Havre de Grace	12,952	11,331	1,621	14%

**Table 5 - Population 2000 – 2010**  
Source: U.S. Census Bureau

Similarly, this growth trend is evident in the total number of housing units reported by the Census during 2000 and 2010. The total number of housing units in the City went from 4,904 to 5,875, indicating a 20% increase (Table 6). This consistent growth pattern is indicative of what is occurring in Harford County.

Jurisdictions	2010	2000	Change 2010 - 2000	% Change
Harford County	95,554	83,146	12,408	15%
Havre de Grace	5,875	4,904	971	20%

**Table 6 - Housing Units 2000 – 2010**  
Source: U.S. Census Bureau

## Priority Funding Area Analysis

The 1997 Priority Funding Area Law establishes a focus area for targeting State investment in infrastructure. The Law directs the use of State funding for roads, water and sewer plants, economic development and other growth-related needs in order to achieve the State's Smart Growth policies. While PFA criteria and restrictions do not apply to BRF funding, tracking growth both inside and outside of the PFA addresses the growth impact reporting directives in HB893. Tables 7 and 8 compare growth and development activity within the Priority Funding Area portion of the Havre de Grace Sewershed between 2009 and 2014. The findings reveal that in 2009 and 2014, the majority of all of parcels located in the sewershed are improved and in the PFA. Upon closer examination, improved parcels located in the Existing Service Area and PFA, increased from 80%

to 83%, from 2009 to 2014. The improved residential parcels identified in this group have an average lot size that is less than a .25 ac., a preferable density under PFA criteria.

Havre de Grace 2009 Sewershed within PFA Total Parcel Status	Parcel Count	% of Universe Set	Havre de Grace 2014 Sewershed within PFA Total Parcel Status	Parcel Count	% of Universe Set
Universe Set (All Improved and Unimproved Parcels located in PFA)	6017	100%	Universe Set (All Improved and Unimproved Parcels located in PFA)	6261	100%
Improved Parcels located in PFA	4915	82%	Improved Parcels located in PFA	5323	85%
Improved Parcels located in "S1" & PFA	4824	80%	Improved Parcels located in "S1" & PFA	5206	83%
Improved Residential Parcels located in "S1" & PFA	4412	73%	Improved Residential Parcels located in "S1" & PFA	4776	76%

**Table 7-** Havre de Grace PFA Parcel Summaries  
Source: Maryland Department of Planning

The acreage comparison of 2010 and 2014 (Table 8) shows that the City of Havre de Grace is focused on growth within the certified Priority Funding Area Boundary.

Havre de Grace 2014 PFA Acres	Havre de Grace 2010 PFA Acres	Change: 2014 - 2010 (Acres)	% Change
3,753	3,641	112	3%

**Table 8 –** Havre de Grace PFA Acreage Summary  
Source: Maryland Department of Planning

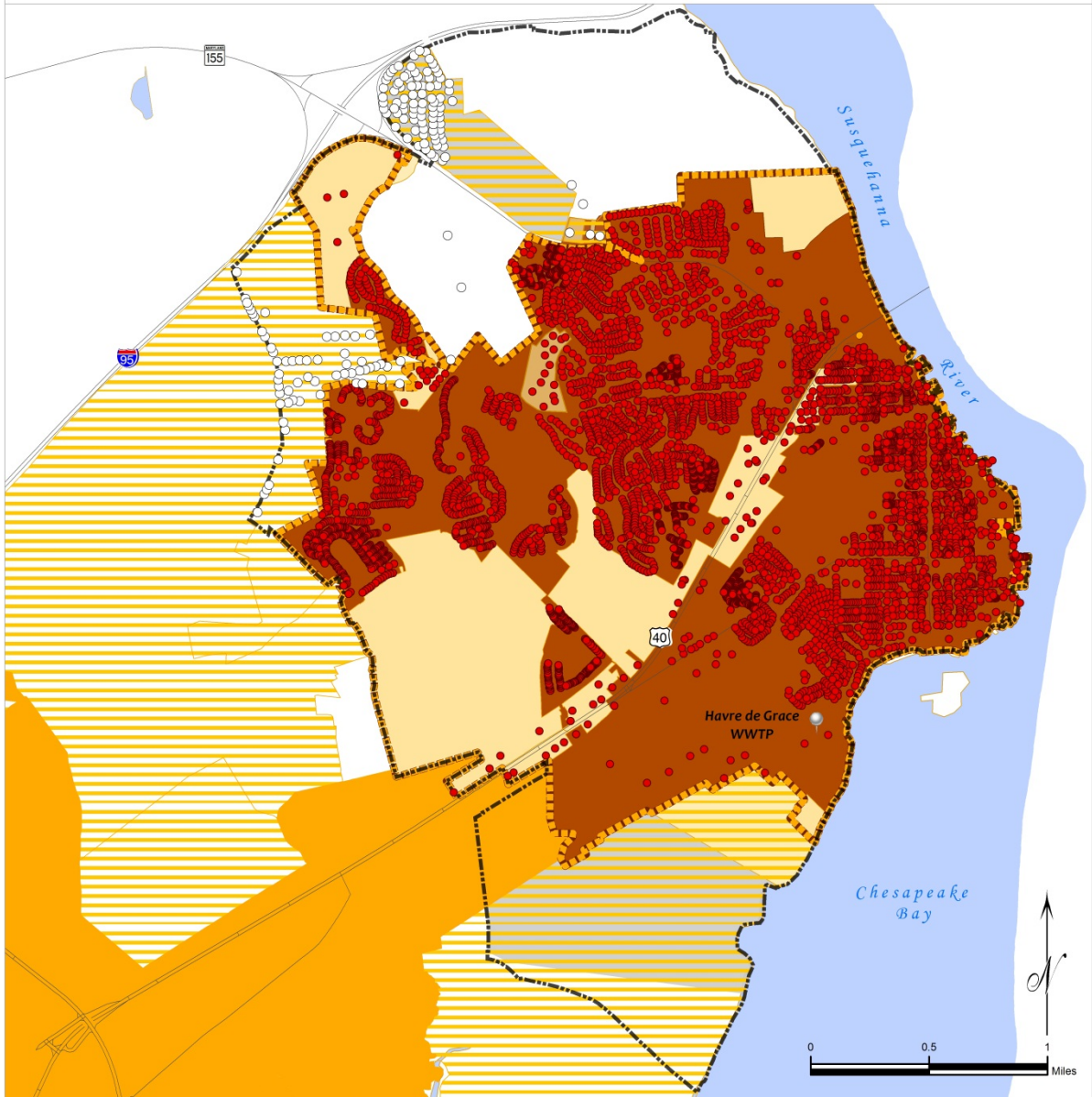
Activity Outside of PFA

In 2009, the Havre de Grace Sewershed had 75 improved parcels located within the Existing Service Area (“S1”) but outside of the certified PFA. Most of these parcels represent the Havre de Grace Heights and Shawnee Brooke Subdivisions, and a group of nine parcels located along the north side of Chapel Road. Five years later, MDP notes that these improved parcels are now inside of the PFA Boundary but still set outside of the Municipality. Currently, a very small number (less than 5) of improved parcels remain outside of PFA but within S1.

Future Growth Opportunities

The annexation process may continue to facilitate future growth opportunities in the county or municipal growth areas. The 2010 Havre de Grace Municipal Growth Element envisions higher density development for its growth areas, which therefore should be eligible for PFA certification. MDP will continue to monitor planned development in future sewer service areas that fall outside of the PFA. Map 3 shows that there are currently 174 improved parcels located outside of PFA, but within the Havre de Grace Future Sewer Service Growth Area. MDP believes that these improved parcels are on septic and present an opportunity for connection and nutrient reduction.

# Havre de Grace Sewershed Proposed Future Sewer Service Consideration



**Legend:**

- |   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li> Havre de Grace WWTP</li> <li> Havre de Grace Proposed Future Sewer Service Growth Area</li> <li>Improved Parcels Location:           <ul style="list-style-type: none"> <li> SSA Boundary and PFA (Total = 5323)</li> <li> Growth Area Outside of PFA (Total =174)</li> </ul> </li> </ul> | <p>Priority Funding Areas</p> <ul style="list-style-type: none"> <li> Havre de Grace Certified PFA</li> <li> Certified Priority Funding Area</li> <li> Comment Area</li> </ul> | <p>Sewer Service Areas</p> <ul style="list-style-type: none"> <li> Existing Service</li> <li> Planned Service (3 yrs.)</li> <li> Planned Service (5 yrs.)</li> <li> Possible Future Service (11 to 20 yrs.)</li> </ul> | <p>Other</p> <ul style="list-style-type: none"> <li> Land</li> <li> Water</li> <li> Major Roads</li> </ul> |
|---|--|--|--|

Maps prepared by Smart Growth Planning & Analysis Division, Angela Butler, November 2014

**Map 3 - Havre de Grace Proposed Future Service Map**

ENR WWTP	County	Start of Operation Date	Calendar Year before ENR Funding	Connections Before Year of ENR Funding		Connections After ENR Funding (MDPV 2013-14)		Sewershed Activity in Certified Priority Funding Area			Activity Outside of PFA
				Number of Improved Parcels in the Sewershed	Number of Improved Parcels in the Existing Service Area or 'S1'	Current Number of Improved Parcels in Sewershed	Current Number of Improved Parcels in Existing Service Area or 'S1'	Number of Improved Parcels in PFA	Number of Improved Parcels in Planned and Programmed Service Categories in PFA	Number of Improved Parcels located in 'S1' & PFA	
Celanese	ALLE	Nov-06	2005	1,896	1,805	1,836	1,836	1,818	1,818	0	18
George's Creek	ALLE	Nov-10	2009	2,044	1,951	1,921	1,919	1,867	1,867	0	52
Cumberland	ALLE	Feb-11	2010	17,676	16,584	17,075	16,725	16,783	16,490	293	235
Hagerstown	WASH	Dec-10	2009	21,662	18,769	22,257	19,745	19,472	19,472	2,318	273
<b>Western Region Total</b>				43,278	39,109	43,089	40,225	42,258	39,647	2,611	578
Brunswick	FRED	Sep-08	2007	2,446	1,972	2,542	2,236	2,518	2,236	282	0
Thurmont	FRED	Apr-13	2012	2,467	2,304	2,491	2,320	2,185	2,164	21	156
Poolesville	MONT	Jul-10	2009	1,742	1,714	1,774	1,674	1,705	1,605	100	69
Damascus	MONT	Feb-13	2012	3,997	3,792	4,006	3,790	3,434	3,434	214	356
Bovine	PRIN	Feb-11	2010	20,712	20,492	20,832	20,613	20,464	20,260	204	353
Parkway	PRIN	Jul-13	2012	15,470	15,386	15,481	15,400	15,472	15,393	79	7
Piscataway	PRIN	May-13	2012	56,296	54,622	56,820	55,162	52,657	51,861	796	3,301
<b>Washington Region Total</b>				103,130	100,282	103,946	101,195	98,649	96,953	1,696	4,242
Elkton	CECI	Dec-09	2008	6,007	4,979	6,105	5,092	5,926	5,085	841	7
Perryville	CECI	Dec-10	2009	1,704	1,511	1,736	1,541	1,694	1,540	154	1
Chestertown	KENT	Jun-08	2007	1,772	1,722	1,921	1,869	1,680	1,680	0	189
Kent Narrows	QUEE	Aug-07	2006	6,590	6,428	7,156	7,000	6,695	6,640	55	360
Denton	CARO	May-12	2011	1,508	1,477	1,513	1,483	1,505	1,477	28	6
Federalburg	CARO	Aug-10	2009	881	836	882	824	813	813	38	11
Easton	TALB	Jun-07	2006	5,810	5,649	6,495	6,368	6,406	6,361	45	7
Talbot Region II	TALB	Oct-08	2007	2,289	2,255	2,409	2,405	2,134	2,134	1	0
<b>Upper Eastern Shore Total</b>				26,561	24,857	28,217	26,582	26,892	25,730	1,162	581
Cambridge	DORC	Dec-13	2012	5,860	5,459	5,872	5,419	5,463	5,163	300	256
Hurlock	DORC	May-06	2005	901	826	796	793	793	793	0	0
Delmar	WICO	Sep-11	2010	1,016	880	1,122	947	833	833	58	114
Pocomoke	WORC	Oct-11	2010	1,660	1,393	1,880	1,607	1,717	1,589	128	18
Crisfield	SOME	Aug-10	2009	2,581	1,902	2,338	2,102	1,829	1,822	7	280
<b>Lower Eastern Shore Total</b>				12,018	10,460	12,008	10,868	10,693	10,200	493	668
Mount Airy	CARR/FRED	Nov-10	2009	3,325	3,153	3,393	3,311	3,377	3,311	66	0
Joppatowne/Sod Run	HARF	Nov-13	2012	49,216	46,709	49,547	46,809	49,206	46,547	2,659	262
Havre De Grace	HARF	May-10	2009	5,098	4,900	5,417	5,210	5,323	5,206	117	4
Little Paxunent	HOWA	Sep-12	2011	56,997	50,737	57,408	50,702	56,683	50,687	5,996	15
<b>Baltimore Region Total</b>				114,636	105,499	115,765	106,032	114,589	105,751	8,838	
Indian Head	CHAR	Jan-09	2008	1,393	1,152	1,436	1,396	1,436	1,396	40	0
<b>Southern Maryland Total</b>											

Note: The 2015 BRF Analysis findings for changes in the number of improved parcels "Before and After ENR Technology" are reasonable approximations. Older GIS datasets used in the analysis represent the best available data to MDP at a given time with quality that varied from county to county. The current GIS datasets reflect a more up-to-date, improved and accurate database with data aligned to parcel polygons.

Source: Maryland Property View 2005 - 2014, County Water & Sewerage Comprehensive Plans and other official planning documentation Table prepared by Angela Butler, Smart Growth and Analysis Division, Maryland Department of Planning, November 2014

Table 9 - "Before & After ENR Technology Table"

## Summary

Much of the city's growth is the result of annexations of large land tracts. Since 1997, the city has annexed over 1300 acres for new subdivisions, some of which are not yet completed. It is evident that the development activity occurring in Havre de Grace is planned growth at PFA densities. The growth is contained within the County's Development Envelope and well documented in the Harford County Master Water and Sewerage Plan and other official planning documentation.

Due to the ENR upgrade and discharge cap, the Havre de Grace WWTP has increased 75% beyond its original design capacity of 1.89 MGD (Table, p.20). According to the 2014 annual average wastewater flow data, the Havre de Grace WWTP flows are operating at 70% of its original design capacity. This means that the WWTP has sufficient capacity to meet the City's existing demand and is currently not using reserve capacity gained by the ENR upgrade. Therefore, the Havre de Grace WWTP has capacity to accommodate new residential and commercial growth, and infill/redevelopment opportunities within the City areas. Overall, the reserve capacity puts the City in a unique position to serve future higher-density growth areas (outlined in the 2004 City of Havre de Grace Comprehensive Plan/2010 Municipal Growth Element) and significantly reduce nitrogen loads.



## 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 September of 2013 approximately 1,050 installers have been certified by MDE and 150 service providers have been certified by MDE.

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 2015 is available on the web site at:

<http://www.mde.state.md.us/programs/Water/QualityFinancing/Documents/FY%202015%20FINAL%20Program%20Guidance.pdf>

<b>Summary of BAT Installations State Fiscal Years 2008 through 2013</b>						
	<b>SFY 2008</b>	<b>SFY 2009</b>	<b>SFY 2010</b>	<b>SFY 2011</b>	<b>SFY 2012</b>	<b>SFY 2013</b>
Total BAT Upgrades	292	901	1115	651	652	870
Critical Area BAT Upgrades	189	418	551	569	540	583
Allegany Co.				1	2	2
Anne Arundel Co.	44	72	0	134	135	186
Baltimore Co.				9	16	18
Calvert Co.	35	49	55	79	63	91
Caroline Co.	10	17	7	9	24	19
Carroll Co.				3	2	3
Cecil Co.		1	26	23	34	60
Charles Co.	19	16	51	1	5	5
Dorchester Co.		11	5	68	69	34
Frederick Co.	14	17	0	11	16	37
Garrett Co.				7	5	8
Harford Co.			45	1	7	4
Howard Co.				3	7	7
Kent Co.	12	28	2	21	42	46
Montgomery Co.				4	8	9
Prince George's Co.				0	0	0
Queen Anne's Co.				71	59	73
St. Mary's Co.				58	49	111
Somerset Co.				23	28	38
Talbot Co.	49	52	10	31	21	37
Washington Co.		16	25	20	22	39
Wicomico Co.	48	19	77	51	30	32
Worcester Co.	8	34	61	23	8	11

In addition to grant disbursements information, Attachment 2 shows BRF funded BAT installations and sewer connections for SFY 2014.

MDE Approved BAT for Nitrogen Removal: MDE currently has approved 15 BAT for nitrogen removal of which seven 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:

Total Nitrogen Reduction  
 Total cost including Operation, Maintenance and Electricity  
 Cost per pound of Nitrogen Reduction

The details are available on the MDE web site at:

[http://www.mde.state.md.us/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/Water/cbwr/osds/brf\\_bat.aspx](http://www.mde.state.md.us/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/Water/cbwr/osds/brf_bat.aspx)

The following are the currently seven 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%	\$11,954	\$150	\$84/year or 766 kWh/year
Advantex® - AX20	Orenco Systems®, Inc. <a href="http://www.orenco.com">www.orenco.com</a>	17 mg/l	71%	\$12,300	\$200	\$37/year or 336 kWh/year
Advantex® - RT	Orenco Systems®, Inc. <a href="http://www.orenco.com">www.orenco.com</a>	14 mg/l	76%	\$12,300	\$200	\$37/year or 336 kWh/year
Singulair TNT	Norweco, Inc. <a href="http://www.norweco.com">www.norweco.com</a>	27 mg/l	55%	\$11,079	\$300	\$108/year or 980 kWh/year
Singulair Green	Norweco, Inc. <a href="http://www.norweco.com">www.norweco.com</a>	27 mg/l	55%	\$11,079	\$300	\$108/year or 980 kWh/year
SeptiTech®	SeptiTech, Inc. <a href="http://www.septitech.com">www.septitech.com</a>	20 mg/l	67%	\$13,056	\$300	\$213/year or 1935 kWh/year
RetroFast	Bio-Microbics, Inc. <a href="http://www.biomicrobics.com">www.biomicrobics.com</a>	25 mg/l	57%	\$9,405	\$300	\$284/year or 2584 kWh/year

\* Does not include cost of pumping septage.

\*\* Based on a rate of \$0.11 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. AquaKlear
3. Bionest SOLO OT-60
4. Hoot ANR
5. Nitrex
6. EcoPod
7. HydoAction
8. Clear Rex Bubbler

## **Cover Crop Activities**

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

In FY2014, MDA continued to implement a targeting strategy to maximize nutrient reduction effectiveness of cover crops. This year MDA eliminated aerial seeding for double crop soybeans due to lesser than desired crop performance. Current year's program includes 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 and vegetables
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
5. use small grains such as rye to maximize nutrient uptake
6. target watersheds with greatest nutrient loading potential

MDA has applied these criteria the last five 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 \$58,115,919 as of June 30, 2014. In FY 2014, \$10.4 million in BRF were supplemented by an additional \$10 million from the 2010 Chesapeake Bay Trust Fund to fund the Cover Crops Program.

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





**ATTACHMENT 2 – Details of BFR Septic Grant Disbursements (FY 2014)**



Water Quality Financing Administration  
 Details of BRF Septic Grant Disbursements  
 FY 2014

	FY 2014 Grant Awards	Septic System, BAT's	# BAT Units	# of Draft Fields	Drainfield \$	# of Holding Tanks	# Holding Tanks	# of Sewer Connections	# Sewer Connections	Outside PFA Sewer Conn. \$	# Sewer Conn. Outside PFA	Admin. M. Lease \$	TOTAL GRANT DISBURSED	TOTAL GRANT RIVERBOND
Allegheny Co	100,000	12,919	1	0	0	0	0	33,817	2	0.0	0.0	3,390	50,126	49,874
Anna Arundel Co	3,187,000	2,152,792	193	1	3,250	0	0	303,100	43	0.0	0.0	259,504	2,720,646	443,353
Baltimore Co	503,000	233,027	17	2	11,273	0	0	225,208	11	0.0	0.0	29,379	498,889	4,112
Chesert Co	1,317,000	1,110,735	85	0	0	59,620	5	0	0	0.0	0.0	146,645	1,317,000	-
Caroline Co	642,000	521,400	32	6	43,389	0	0	0	0	0.0	0.0	75,311	642,000	-
Carroll Co	248,000	224,301	19	2	8,474	0	0	0	0	0.0	0.0	13,275	246,050	1,950
Cecil Co	1,179,000	1,019,721	99	2	11,800	14,973	3	0	0	0.0	0.0	122,184	1,188,689	10,120
Charles Co	517,000	176,468	19	0	0	3,540	1	0	0	0.0	0.0	28,400	208,408	308,592
Dorchester Co	1,189,000	844,527	82	17	171,794	0	0	0	0	0.0	0.0	100,052	1,116,372	52,628
Frederick Co/ CVI	482,000	401,849	30	0	0	0	0	0	0	0.0	0.0	35,310	437,159	44,841
Garrett Co	144,000	116,340	11	1	2,750	0	0	0	0	0.0	0.0	11,767	130,857	13,143
Harford Co	623,000	489,802	41	1	8,200	0	0	32,916	3	0.0	0.0	35,475	566,393	56,007
Howard Co/ CVI	205,000	87,082	8	0	0	0	0	64,771	5	0.0	0.0	15,301	187,104	37,897
Kent Co	854,000	733,814	61	3	43,010	0	0	0	0	0.0	0.0	73,871	830,715	3,383
Montgomery Co/ CVI	525,000	182,113	16	0	0	0	0	0	0	0.0	0.0	18,832	200,945	324,055
Prince Georges Co	176,000	0	0	0	0	0	0	0	0	0.0	0.0	0	0	176,000
Queen Annes Co	1,344,000	1,094,687	115	9	74,855	0	0	0	0	0.0	0.0	157,180	1,324,722	19,279
Somerset Co	303,000	232,939	22	1	35,489	0	0	0	0	0.0	0.0	24,089	292,517	10,483
St Mary's Co	1,860,000	1,619,321	148	0	0	18,106	4	0	0	0.0	0.0	222,376	1,839,803	187
Talbot Co	1,109,000	480,533	60	1	9,500	0	0	330,795	22	0.0	0.0	88,270	909,098	191,903
Washington Co/ CVI	441,000	401,430	30	0	0	0	0	0	0	0.0	0.0	35,310	436,740	4,260
Woomco Co	869,000	750,162	80	7	30,745	0	0	0	0	0.0	0.0	77,832	858,739	10,261
Worcester Co	403,000	223,768	22	1	10,950	0	0	0	0	0.0	0.0	18,425	233,143	149,857
TOTALS	\$ 18,174,000	\$ 13,109,677	1211	54	\$ 465,401	96,241	13	992,607	86	0.0	0.0	\$ 1,592,178	\$ 16,256,103	\$ 1,917,897

NOTE: Talbot Co, Thornton Road County Sewer Line pd with FY13 grant for 53 qualifying homes, House Connection Res pd with FY 14 grant

Avg Cost/BAT	\$ 10,825	Avg Cost/D-Field	\$ 8,619	Avg Cost/H-Tank	\$ 7,403	Avg Cost/Sewer	\$ 11,542	Avg Admin/unit	\$ 1,215	Grant Utilization	89%
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