SFY 2024

Maryland's CWA §319 Nonpoint Source Program Annual Report

Photo Credits: "Exploring Jug Bay" by Christina Olney, "October 2024 Aurora – Tilghman Island" by Anthony Burrows, "Snowy January Sunrise at Weverton Cliffs" by Andrew Rimel, and "Black Eyed Susan Sunrise" by Megan Curry. Source: Maryland Dept. of Natural Resources Flickr page.

May 28, 2025

Maryland
Department of
the Environment

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Acknowledgements

This report was written, published, and distributed by Maryland Department of the Environment's Watershed Protection, Restoration, and Planning Program.

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Main Document

Nonpoint Source Pollution in Maryland | Tracking and Mitigation

Nonpoint Source Pollution Threatens Maryland's Waterways

Water is inextricably tied to Maryland's identity and culture. The State is traversed by innumerable rivers and streams that provide residents with drinking water, places for recreation, and critically important habitat for Maryland's abundant wildlife. The Chesapeake Bay supports a vibrant fishing industry that provides over 50% of the annual United States blue crab harvest. The primary nonpoint source pollutants that threaten this resource are excess nitrogen and phosphorus.

Nonpoint Source (NPS) pollution threatens the health of Maryland's waterways and comes from both agricultural and developed areas (**Figure 1**). Natural loads include anthropogenic impacts within the natural system, like erosion flows from stormwater runoff that can scour stream banks, as well as true natural sources of nitrogen and phosphorus, such as forests and wetlands. While the NPS pollution focus for Maryland's Chesapeake Bay watershed includes nitrogen, phosphorus, and sediment, those same watersheds are also impaired by other NPS pollution, such as acid mine drainage and toxic contaminants. Approximately 95% of the land in Maryland is part of the Chesapeake Bay watershed.[1] Any nutrient and sediment loads from the other 5% are considered negligible and are not included in this report. Further information about those loads is reported by the Chesapeake Bay Program.

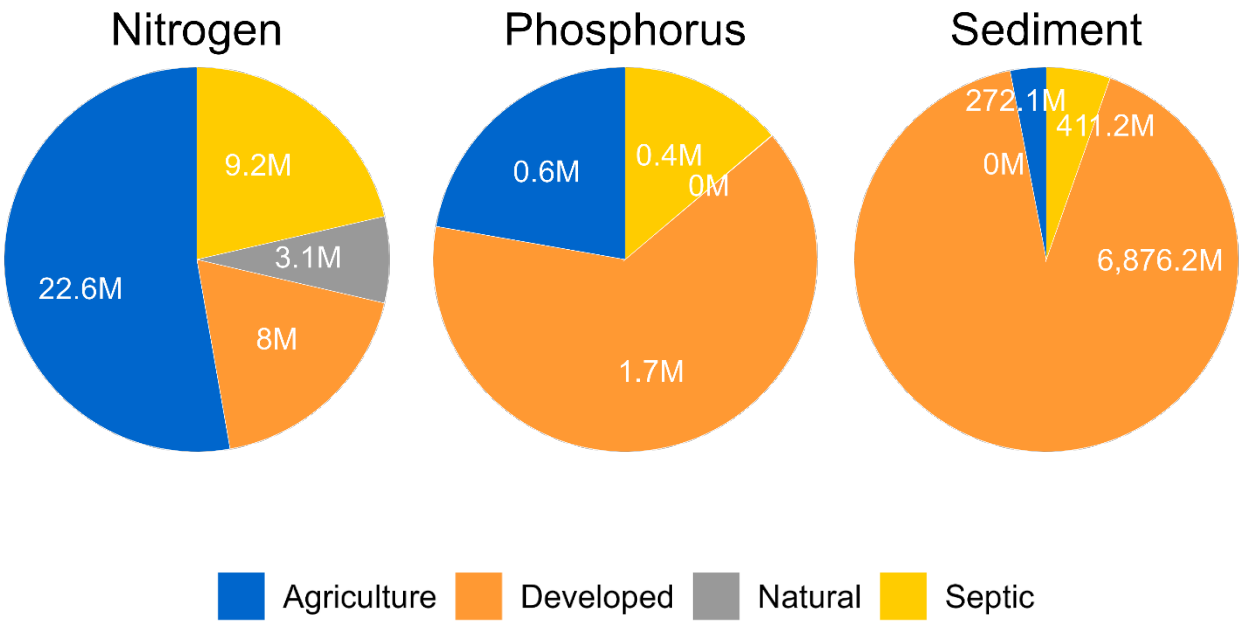


***Figure 1**: Maryland's nitrogen, phosphorus, and sediment loads from NPS delivered to Chesapeake Bay in 2024 (million pounds/year).*

[1] https://www.chesbay.us/library/public/documents/Fact-Sheets/Bay-Factoids-FINAL.pdf

NPS pollution is costly to manage because it originates from diffuse sources across wide areas. The high cost and difficulty of managing this pollution is challenging for local governments that must balance local needs with protecting and restoring aquatic resources.

Reducing NPS pollution is accomplished through implementing best management practices (BMPs). This generic name for pollution reduction practices covers a collection of actions, policies, and physical structures that are used to reduce pollution entering waterways[2]. Funding for BMPs comes from local, state, federal, and NGO funding sources, including the §319(h) Grant.

Watershed Modeling

Maryland uses the Chesapeake Assessment and Scenario Tool (CAST) outputs to estimate its load reductions/increases as more of a "real time" assessment of how our efforts are going. CAST uses several data inputs that can affect the loads in our watersheds, BMP implementation being only one of them. Consequently, even with increased BMP implementation the model may assign greater loads to a watershed which offset any reductions achieved through BMP implementation. This variability may be reflected in the tables, graphs, and watershed profiles in this report. In addition, previous reports utilized data from CAST-2019, which has since been updated. The newest version, CAST-2023, was released on May 21, 2024[3], and was utilized for this report. As such, calculated loads may have fluctuated from what was shown in previous reports.

The CAST load calculations used for this report include data from SFY23, which ended on June 30, 2023. Data from SFY24 is still being finalized at the time this report is due. As such, load calculations data from SFY24 will be reported in the next annual report. Typically, our model inputs submission is due Dec. 1st of the following SFY so that there is time allowed to collect information, provide adequate quality assurance/control of the data, and to make sure there are no errors in the modeling results.

Overall Load Reductions for Nitrogen, Phosphorus, and Sediment

Maryland has tracked nutrient and sediment reductions since 2010 to align with the Chesapeake Bay Restoration Blueprint. Decreases in nitrogen, phosphorus, and sediment loads can be attributed to land use changes and the implementation of BMPs, including BMPs funded by the §319(h) Grant (**Figure 2)**.

[2] Examples of BMPs – Maryland's Chesapeake Cleanup Center: https://mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/pollution-in-the-chesapeake.aspx

[3] More information on the history of upgrades to CAST: https://cast.chesapeakebay.net/About/UpgradeHistory

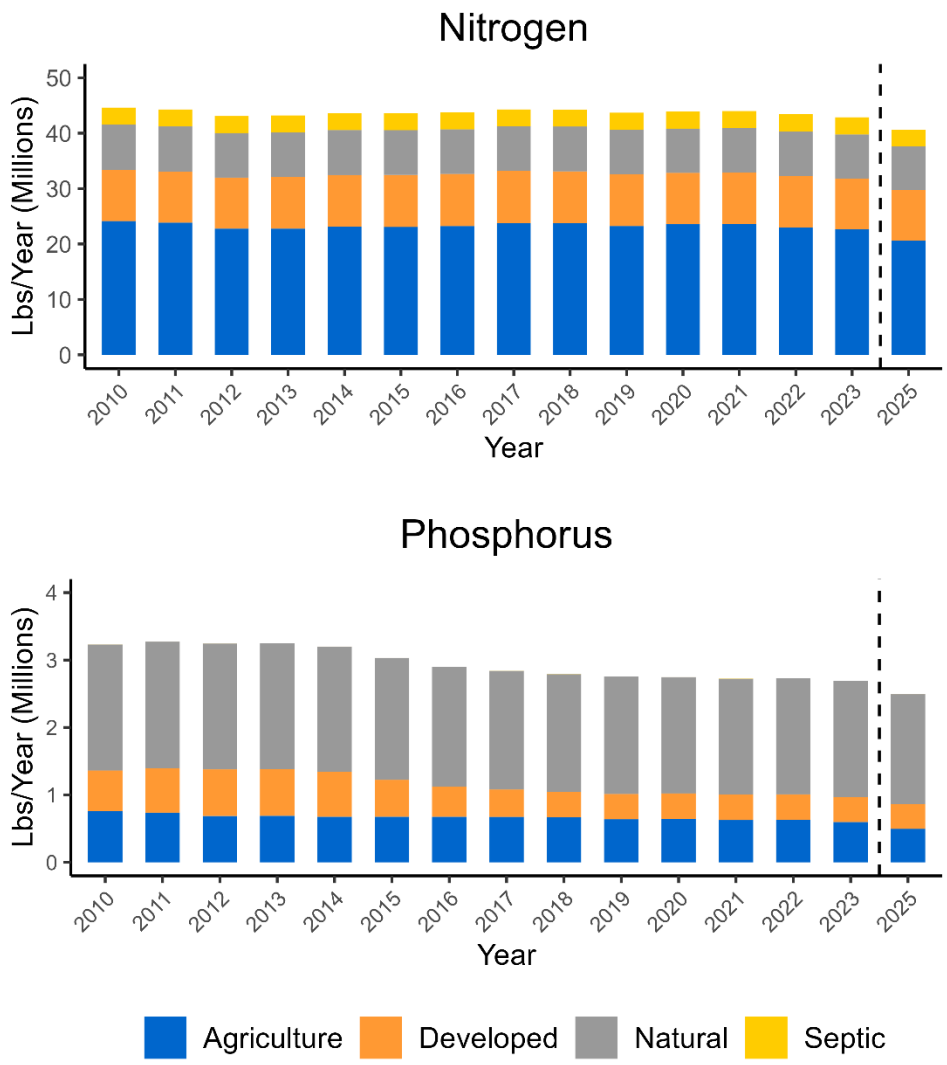


***Figure 2**: Maryland's total nitrogen and phosphorus reduction progress (NPS sources only) towards its 2025 Chesapeake Bay cleanup target*

Progress toward nutrient reductions derived from NPS sources using the CAST model is separated by sector. The total 2025 target loads from NPS sources entering the Chesapeake Bay are 40,643,123 pounds per year and 2,494,483 pounds per year for nitrogen and phosphorus, respectively. Maryland has made strides toward these goals with loads from NPS sources for 2023 calculated to be 42,885,954 pounds per year for nitrogen and 2,688,815 pounds per year for phosphorus, which is 43.6% and 73.6% progress toward 2025 target loads, respectively.

Program Highlights | Maryland's NPS Management Program

Overview: Maryland's Clean Water Act Section 319 Nonpoint Source Management

Maryland's Nonpoint Source Management Program is required by the Federal Clean Water Act (CWA) Section 319 to protect the State's waterways from nonpoint source pollution. Maryland has aligned this program with its commitments and responsibilities in the Chesapeake Bay Agreement[4], the Chesapeake Bay Total Maximum Daily Load (TMDL)[5], and Maryland's Phase III Chesapeake Bay Watershed Implementation Plan (WIP)[6]. This annual FY24 report covers §319 project implementation from July 1, 2023, through June 30, 2024.

Program Administration

Maryland's NPS Management Program, including the §319(h) Grant Program, is administered by Maryland Department of the Environment (MDE) with the assistance of the Maryland Departments of Agriculture and Natural Resources; implementation is carried out by Maryland's local governments and non-governmental organizations MDE coordinates with local partners to provide grant funding for in-ground projects and report annual progress to EPA.

Annual Reporting for Maryland's 319 Program

EPA requires MDE to produce annual reports demonstrating progress of Maryland's 319 NPS Management Program that document how the State meets §319(h) Grant conditions. This report records the implemented BMPs and funding allocations for each project.

MDE simplified BMP accounting by tracking projects by funding date rather than project completion date. This report also tracks funds allocated to projects rather than project expenditures to more accurately reflect the funds given to a particular watershed for restoration.

This approach was approved in the FFY19 annual report submission. Our modeling/loading results only include actual implementation. In the future we will still do this for overall expenditures in watersheds, but actual reductions will be from completed projects.

Project Selection

To receive 319(h) Grant funding, projects must be implemented within a 319 Priority Watershed (**Figure 3**) that has an A-I Watershed Plan approved by the U.S. Environmental Protection Agency (EPA). A-I plans are submitted to EPA by any combination of Maryland State Agencies, local governments, and non-government organizations.

[4] Chesapeake Bay Agreement: https://www.chesapeakebay.net/what/what_guides_us/watershed_agreement
[5] Chesapeake Bay TMDL: https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-document
[6] MD P3 WIP: https://mde.maryland.gov/programs/Water/TMDL/TMDLImplementation/Pages/Phase3WIP.aspx

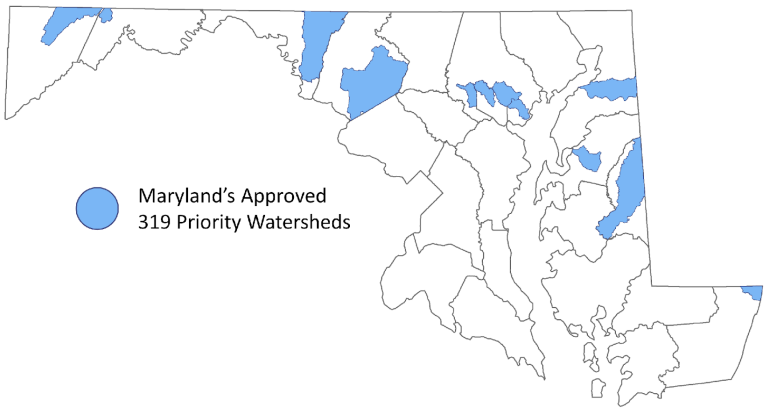


***Figure 3**: Maryland's §319 Priority Watersheds*

Funding: Federal and State Contributions

Over the past 19 years[7], the state of Maryland has spent approximately $66.2 million dollars in State funding along with about $14.6 million additional dollars from the 319(h) Grant to fund projects within §319 watersheds (**Figure 4**).

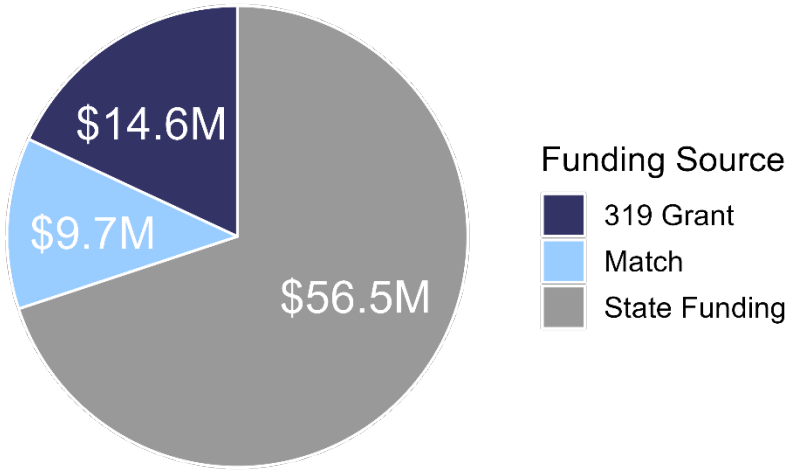


***Figure 4**: Funding spent on NPS pollution in §319 watersheds from SFY2004 - SFY2024.*

While the §319(h) Grant is a small part of Maryland's total spending on NPS pollution (**Figure 5**), it helps local governments leverage limited funds. Helping local governments maximize their potential resources is a core component of Maryland's Chesapeake Bay Phase III WIP, which was designed to be locally driven and achievable. For detailed funding information, see the *Priority Watersheds* section of this

[7]Maryland's first A-I Plan (*Corsica River)* was accepted in 2004.

report (*page 9*). Maryland also receives other sources of federal funding to implement nonpoint source pollution best management practices. This year alone, the state of Maryland has spent $126.5 million on projects to address nonpoint source pollution with $2.3 million of that coming from the §319(h) Grant.

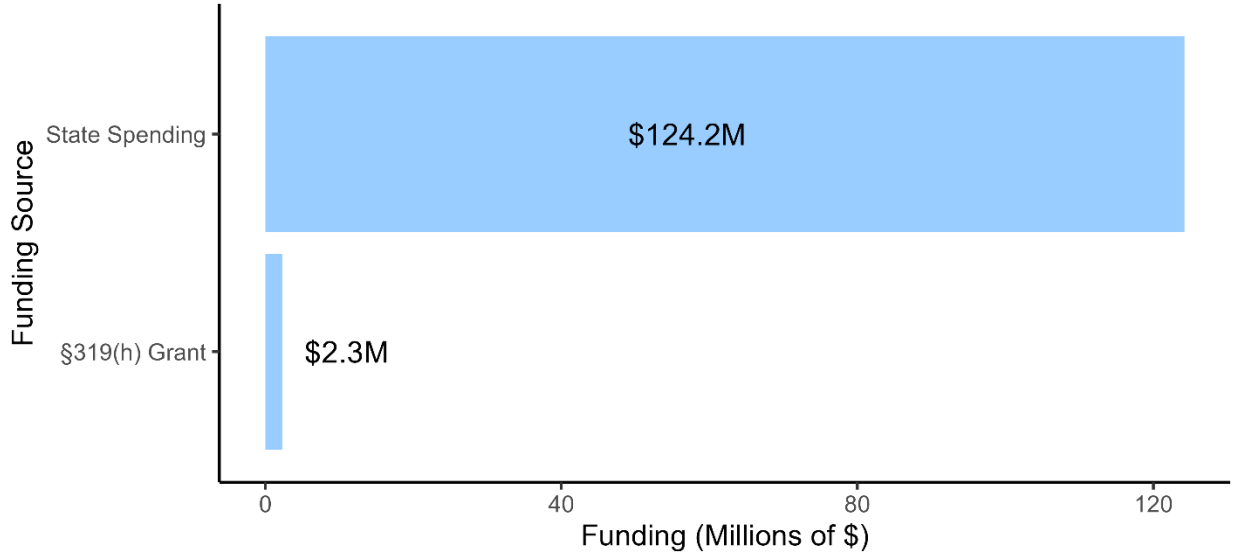


***Figure 5**: Funding spent on projects addressing NPS pollution across the state of Maryland in SFY2024.*

Incorporation of Changing Environmental Conditions in Maryland's NPS Management Program

The §319(h) Grant Program has integrated changing environmental conditions into the criteria that is used to rank and select project proposals.

Progress | Maryland's §319 NPS Management Program

How Maryland Tracks Progress for its NPS Management Program

The State's §319 Priority Watersheds continue to make steady progress in reducing nitrogen and phosphorus loads (**Table 1**); **Appendix A** tracks all NPS pollution in greater detail. For detailed information on individual watershed progress, please see the *Priority Watersheds* section of this report (*page 9*).

Table 1: Overall 2023 NPS pollution reductions and percent progress toward target reductions in §319 Priority Watersheds (Million Pounds/Year)[8]

	Target Reduction	Current Reduction	Percent Progress
Nitrogen	1.73M	0.15M	8%
Phosphorus	0.11M	0.08M	68%
Sediment	216.15M	13.55M	6%

Overall, Maryland and its partners made significant progress in addressing the seven programmatic NPS goals identified in the 2021-2025 Maryland Nonpoint Source Pollution Management Plan. This includes citing pollutant load reductions of 145,400 pounds per year of nitrogen, 76,454 pounds per year of phosphorus, and 13,545,892 pounds per year of sediment resulting from the implementation of all reported structural best management practices (BMPs) in 319 priority watersheds with EPA-accepted watershed-based plans (WBPs), regardless of funding source. These totals include data only for 319 priority watersheds whose WBPs address nutrients and sediment (excludes Casselman River and Upper Jennings Run watersheds).

§319 Success Story

Section 319 nonpoint source pollution success stories highlight water bodies identified by states as being primarily nonpoint source-impaired and having achieved documented water quality improvements. Projects leading to Success Stories received funding from CWA §319 and/or other funding sources dedicated to solving NPS impairments. These stories also describe innovative strategies used to reduce NPS pollution, the growth of partnerships, and a diversity of funding sources.

The success stories offer an opportunity for states to highlight where their restoration efforts have resulted in water quality improvements in NPS-impaired water bodies. Developing the stories also

[8] This is not solely an evaluation of installed BMPs that were funded by the §319(h) grant but an assessment of all modeled aspects of a watershed, including land use change, animal numbers, septic counts, etc. CAST was used to produce these data. This includes everything nonpoint source related that is also within CAST and specifically for the watersheds identified in this report. The reductions shown are for FY23, as FY24 progress is not made available until after this report is due.

allows EPA to track the number of NPS-impaired water bodies that are partially or fully restored—which is a key measure in the effort to document how NPS restoration efforts are improving water quality on a segment basis across the nation.

Each year, Maryland is required to demonstrate a minimum of one successful watershed restoration project. The two FY24 success stories that Maryland submitted were entitled, "Muddy Creek Restoration at Smithsonian Environmental Center Reduces Nutrients with Partial Biodiversity Improvement" and "Broad Creek Park Offers Revitalized Greenspace." These can be found posted, once available, on MDE's §319 website or on EPA's national website.

Additional Funding Information

In addition to §319(h) Grant funds, Maryland supplies significant State resources to finance programs and projects designed to reduce NPS pollution. In particular, Maryland's Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) is one of the State's primary funding sources for reducing NPS pollution. Maryland's Trust fund provides grant money to local governments and nonprofit organizations for implementing NPS pollution water quality restoration projects. For further information, see the Chesapeake and Atlantic Coastal Bays Trust Fund website.

Maintenance of Effort (MOE) vs Federal §319(h) Grant Funds

Maryland contributes more State funds to NPS pollution reduction on an annual basis compared to what it receives through §319(h) Grant funding. In SFY 2024, Maryland's NPS pollution control expenditures totaled over $124 million which is much greater than EPA's required minimum of $8.4 million in Maintenance of Effort spending. See **Table 2** for more information on historic §319 Grant Funding.

Table 2: *State and Federal funding contributing to Maryland's §319 Grant each year*

State Fiscal Year	§319(h) Grant	Non-Federal Match	Total State and Federal Funds
1990 - 2003	$24,876,369	$16,584,247	$41,460,616
2004	$1,343,290	$895,527	$2,238,817
2005	$1,852,568	$1,235,045	$3,087,613
2006	$2,675,598	$1,783,730	$4,459,328
2007	$2,666,655	$1,777,776	$4,444,431
2008	$2,598,600	$1,732,401	$4,331,001
2009	$2,653,500	$1,769,000	$4,422,500
2010	$2,575,782	$1,717,188	$4,292,970
2011	$2,922,783	$1,948,522	$4,871,305
2012	$2,283,639	$1,522,426	$3,806,065
2013	$2,090,997	$1,393,998	$3,484,995
2014	$1,990,999	$1,327,333	$3,318,332
2015	$2,119,118	$1,412,745	$3,531,863
2016	$2,084,277	$1,389,518	$3,473,795
2017	$2,109,728	$1,406,486	$3,516,214
2018	$2,236,500	$1,491,000	$3,727,500

2019	$2,129,000	$1,419,335	$3,548,335
2020	$2,129,000	$1,419,335	$3,548,335
2021	$2,241,500	$1,494,334	$3,735,834
2022	$2,272,200	$1,514,800	$3,787,000
2023	$2,271,300	$1,514,200	$3,785,500
2024	$2,277,700	$1,518,467	$3,796,167
Post 2004 Totals	**$47,524,734**	**$31,683,166**	**$79,207,900**

Maryland's §319 Priority Watersheds

MDE tracks progress for §319(h) Grant implementation funding and NPS pollution reductions in its §319 Priority Watersheds. As of SFY 2024, twelve watersheds had accepted A-I Watershed Plans and were eligible for §319(h) Grant funding. An additional three watersheds are developing A-I plans to be eligible for future funding through the §319(h) Grant Program. Four watersheds received §319(h) Grant Project funding in SFY 2024: Assawoman Bay, Upper Back River, Upper Choptank, and Lower Choptank.

MDE tracks nitrogen, phosphorus, and sediment reductions for all watersheds regardless of the watershed plan specifications; for all NPS pollution tracking and detailed nitrogen, phosphorus, and sediment loads tracking, see **Appendix A**. For specific information on load reductions for each §319(h) Grant funded project, see EPA's Nonpoint Source (NPS) Watershed Projects Data Explorer, which is an interface for data uploaded to the Grants Reporting and Tracking System (GRTS).

§319(h) Grant Funding

Maryland tracks annual §319(h) Grant federal vs state contributions since 1990 (**Table 3**). However, tracking Priority Watershed progress did not begin until the first watershed plan for Corsica River was approved in 2004.

Table 3[9]: *Cumulative spending by funding source for each §319 Priority Watershed*

Priority Watershed	Plan Start Date	Chesapeake and Atlantic Bays Trust Fund	State Revolving Fund	Total Non-319 Funds	319(h) Grant	Total Funds
Antietam Creek	2012	$1,693,635	$424,600	$2,118,235	$3,923,809	$6,042,044
Assawoman Bay	2020	-	-	-	$96,000	$96,000
Back River: Tidal	2010	$8,905,742	$0	$8,905,742	$556,443	$9,462,185
Back River: Upper	2008	$0	$12,724,100	$12,724,100	$1,698,905	$14,423,005
Casselman River	2011	$6,440	$0	$6,440	$83,619	$90,059
Choptank River: Upper	2010	$2,003,748	$0	$2,003,748	$2,665,892	$4,669,640
Corsica River	2004	$1,659,485	$0	$1,659,485	$2,137,406	$3,796,891
Gwynns Falls: Middle	2014	$4,920,936	$9,546,741	$14,467,677	$1,383,944	$15,851,621
Jennings Run: Upper	2019	-	-	-	-	-
Jones Falls: Lower	2008	$6,853,684	$100,664	$6,954,348	$462,309	$7,416,657
Monocacy River: Lower	2008	$2,743,529	$0	$2,743,529	$1,143,305	$3,886,834
Sassafras River	2009	$4,893,316	$0	$4,893,316	$425,748	$5,319,064
Watershed Totals		**$33,680,515**	**$22,796,105**	**$56,476,620**	**$14,577,380**	**$71,054,000**

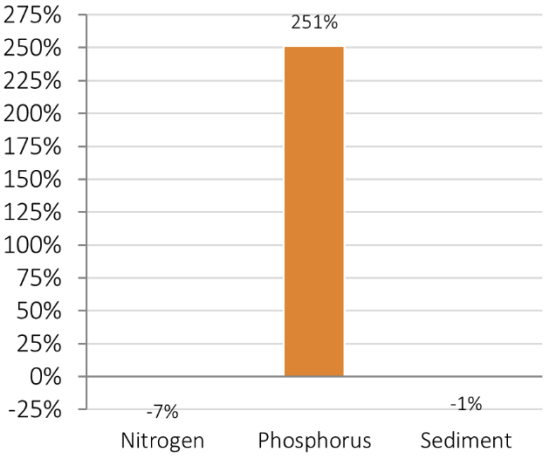
[9] The funding for Back River: Tidal and Upper is linked due to project overlap, even though it is separated in this table.

Watershed Profile

Antietam Creek

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



*Watershed plan includes bacteria – See Appendix B

Land Use

Total Acres | **119K**

Agriculture | **39%**

Developed | **22%**

Natural | **38%**

NPS Reduction Progress

From 2012 to 2023, Antietam Creek is -7% toward its 71K lbs/yr nitrogen reduction goal, 251% toward its 5K lbs/yr phosphorus reduction goal, and -1% toward its 68.8 M lbs/yr sediment reduction goal.

Watershed Funding | SFY12 – SFY24

Cumulative NPS Reductions

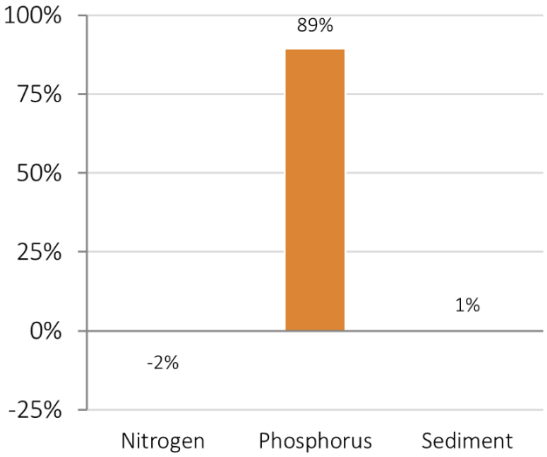
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	1.9K	1.0K	0.0M
All Else	-6.7K	12.1K	-0.5M
Total	**-4.8K**	**13.1K**	**-0.5M**

Watershed Profile

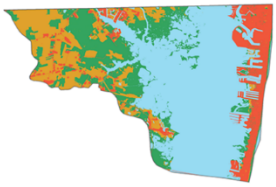
Assawoman Bay

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use



Total Acres | **6K**

Agriculture | **21%**

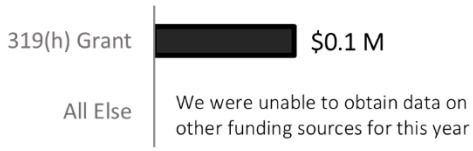
Developed | **34%**

Natural | **45%**

NPS Reduction Progress

From 2020 to 2023, Assawoman Bay is -2% toward its 25K lbs/yr nitrogen reduction goal, 89% toward its 0.5K lbs/yr phosphorus reduction goal, and 1% toward its 2.3 M lbs/yr sediment reduction goal.

Watershed Funding | SFY20 – SFY24



Cumulative NPS Reductions

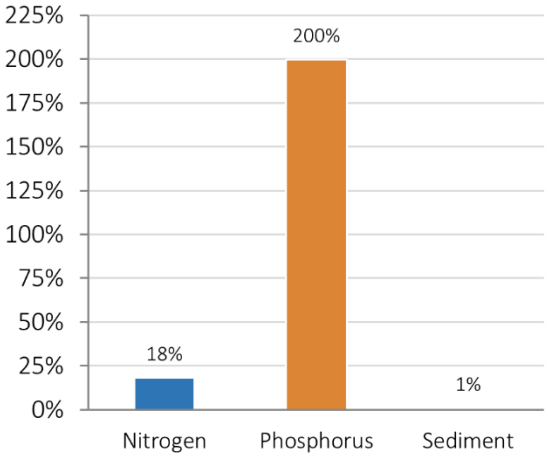
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	0.1K	0.0K	0.0M
All Else	-0.5K	0.4K	0.0M
Total	**-0.4K**	**0.4K**	**0.0M**

Watershed Profile

Back River: Tidal

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use

Total Acres | **16K**

Agriculture | **3%**

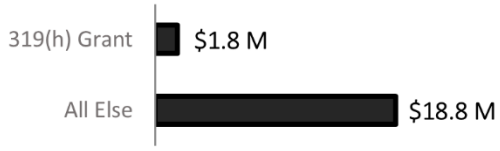
Developed | **65%**

Natural | **33%**

NPS Reduction Progress

From 2010 to 2023, Back River (Tidal) is 18% toward its 15K lbs/yr nitrogen reduction goal, 200% toward its 2K lbs/yr phosphorus reduction goal, and 1% toward its 12.8 M lbs/yr sediment reduction goal.

Watershed Funding* | SFY10 – SFY24



*Funding linked to Back River: Upper due to project overlaps

Cumulative NPS Reductions

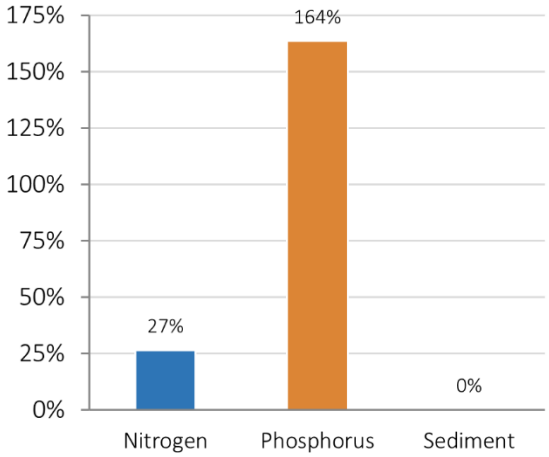
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	0.3K	0.1K	0.0M
All Else	2.4K	3.5K	0.1M
Total	**2.7K**	**3.6K**	**0.1M**

Watershed Profile

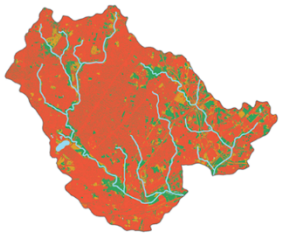
Back River: Upper

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use



Total Acres | **20K**

Agriculture | **0%**

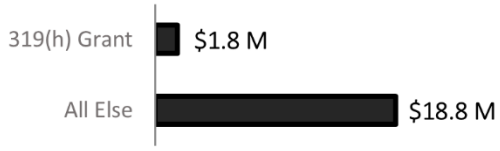
Developed | **85%**

Natural | **15%**

NPS Reduction Progress

From 2008 to 2023, Upper Back River is 27% toward its 25K lbs/yr nitrogen reduction goal, 164% toward its 2K lbs/yr phosphorus reduction goal, and 0% toward its 32.5 M lbs/yr sediment reduction goal.

Watershed Funding* | SFY08 – SFY24



*Funding linked to Back River: Tidal due to project overlaps

Cumulative NPS Reductions

Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	1.4K	0.7K	0.0M
All Else	5.2K	2.8K	0.0M
Total	**6.6K**	**3.5K**	**0.0M**

Watershed Profile

Casselman River

NPS Reduction Progress

The watershed-based plan for the Casselman River only addresses pH impairment. From 2011 to 2024, there has only been one project funded in this watershed greater than $10k, which was the implementation of limestone sand in multiple locations to address pH impairment. The cause of any reductions in nitrogen, phosphorus, and sediment loads is unknown and may result from natural variations or projects that were funded by organizations not recorded in this report. MDE is working to establish relationships with the local government and other organizations in Garrett County to pursue future projects that may be funded by the §319(h) grant.

Land Use

Total Acres | **59K**

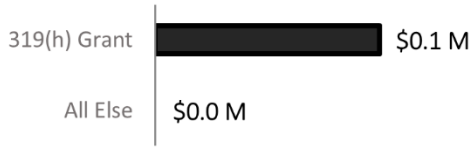
Agriculture | **17%**

Developed | **9%**

Natural | **74%**

Snyder Sand Application Site
Photo courtesy of MDE, Abandoned Mine Lands Division

Watershed Funding | SFY11 – SFY24

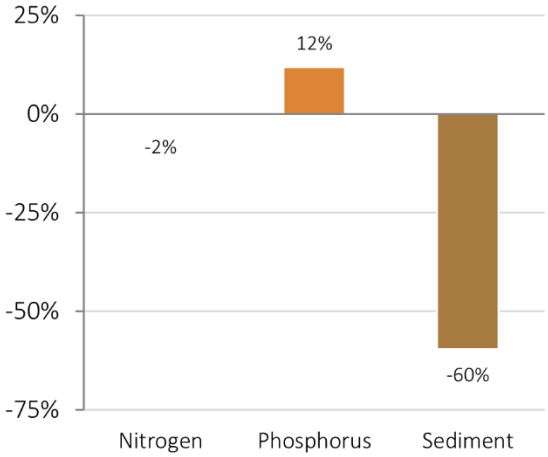


Watershed Profile

Choptank River: Upper

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use

Total Acres | **154K**

Agriculture | **54%**

Developed | **11%**

Natural | **36%**

NPS Reduction Progress

From 2010 to 2023, Upper Choptank River is -2% toward its 1.1M lbs/yr nitrogen reduction goal, 12% toward its 28K lbs/yr phosphorus reduction goal, and -60% toward its 24.0 M lbs/yr sediment reduction goal.

Watershed Funding | SFY10 – SFY24

Cumulative NPS Reductions

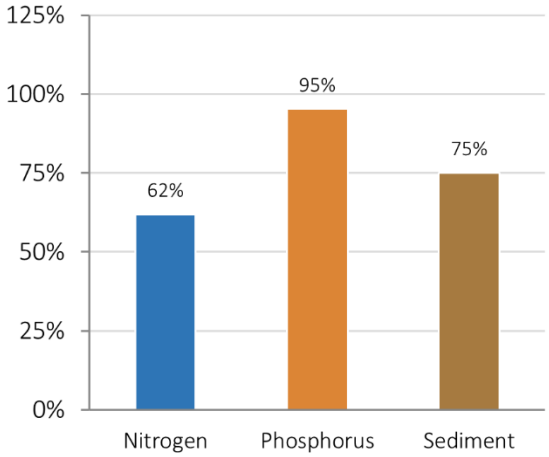
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	1.6K	0.6K	0.0M
All Else	-20.4K	2.7K	-14.3M
Total	**-18.8K**	**3.3K**	**-14.3M**

Watershed Profile

Corsica River

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use

Total Acres | **23K**

Agriculture | **55%**

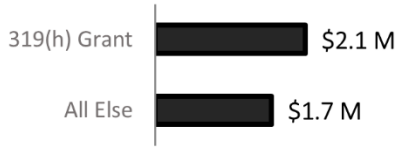
Developed | **12%**

Natural | **33%**

NPS Reduction Progress

From 2004 to 2023, Corsica River is 62% toward its 64K lbs/yr nitrogen reduction goal, 95% toward its 7K lbs/yr phosphorus reduction goal, and 90% toward its 2.0 M lbs/yr sediment reduction goal.

Watershed Funding | SFY04 – SFY24



Cumulative NPS Reductions

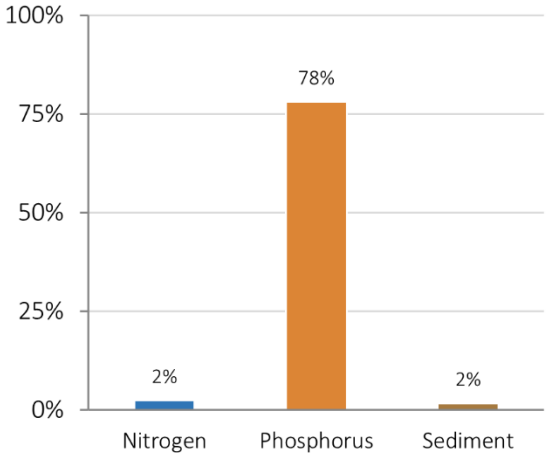
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	4.9K	0.5K	0.0M
All Else	35.0K	6.7K	1.5M
Total	**39.8K**	**7.1K**	**1.5M**

Watershed Profile

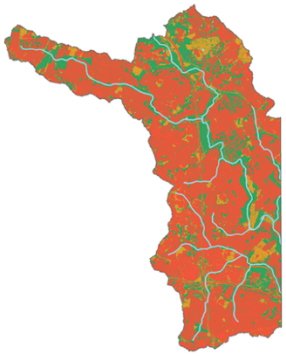
Gwynns Falls: Middle

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use



Total Acres | **31K**

Agriculture | **1%**

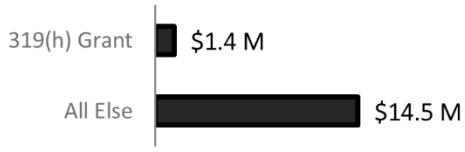
Developed | **77%**

Natural | **22%**

NPS Reduction Progress

From 2014 to 2023, Middle Gwynns Falls is 2% toward its 88K lbs/yr nitrogen reduction goal, 78% toward its 12K lbs/yr phosphorus reduction goal, and 2% toward its 22.9 M lbs/yr sediment reduction goal.

Watershed Funding* | SFY14 – SFY24



*Funding calculations include 2 projects starting in SFY2013. The watershed plan was being drafted in 2013 and was accepted by EPA in 2014.

Cumulative NPS Reductions

Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	4.3K	1.7K	0.0M
All Else	-2.3K	7.5K	0.4M
Total	**2.1K**	**9.1K**	**0.4M**

Watershed Profile

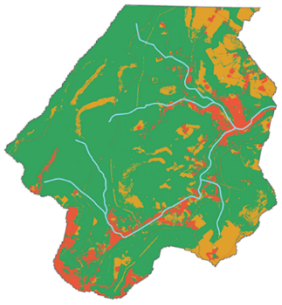
Jennings Run: Upper

NPS Reduction Progress

Currently, the watershed-based plan for the Upper Jennings Run only addresses pH impairment. From 2019 to 2024, there have been no implementation projects funded by the §319(h) grant or other state funding sources included in this report. The cause of any reductions in nitrogen, phosphorus, and sediment loads is unknown and may result from natural variations or projects that were funded by organizations not recorded in this report. MDE is working to establish relationships with the local government and other organizations in Allegany County to pursue future projects that may be funded by the §319(h) grant.

Photo courtesy of MDE, Upper Jennings Run Watershed Implementation Plan

Land Use



Total Acres | **19K**

Agriculture | **7%**

Developed | **12%**

Natural | **80%**

Watershed Funding | SFY19 – SFY24

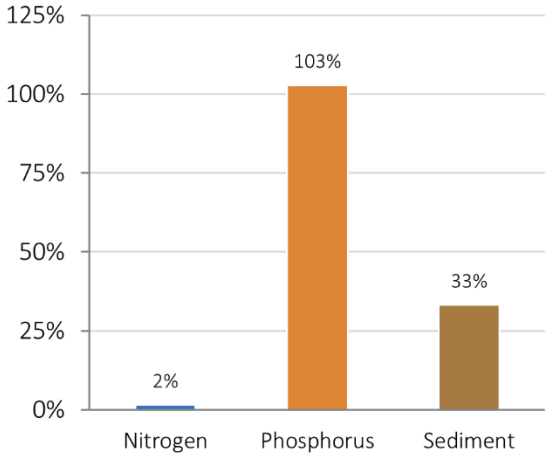
319(h) Grant	$0.0 M
All Else	$0.0 M

Watershed Profile

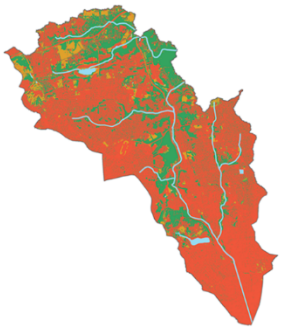
Jones Falls: Lower

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use



Total Acres | **37K**

Agriculture | **4%**

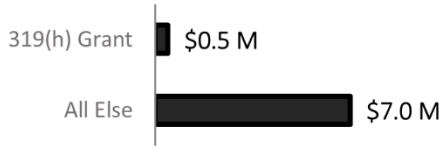
Developed | **67%**

Natural | **30%**

NPS Reduction Progress

From 2008 to 2023, Lower Jones Falls is 2% toward its 100K lbs/yr nitrogen reduction goal, 103% toward its 6K lbs/yr phosphorus reduction goal, and 33% toward its 6.1 M lbs/yr sediment reduction goal.

Watershed Funding | SFY08 – SFY24



Cumulative NPS Reductions

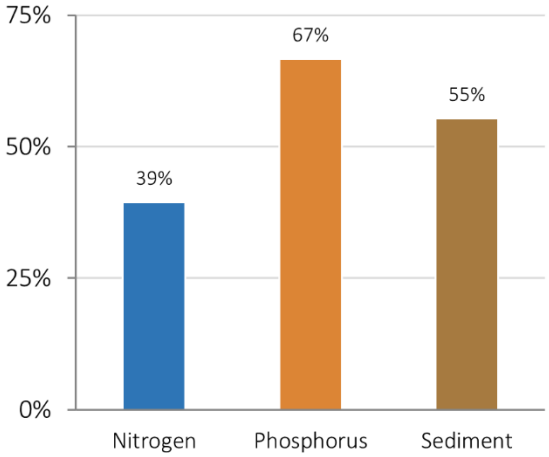
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	0.1K	0.1K	0.0M
All Else	1.4K	6.5K	2.0M
Total	**1.5K**	**6.6K**	**2.0M**

Watershed Profile

Monocacy River: Lower

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use

Total Acres | **195K**

Agriculture | **34%**

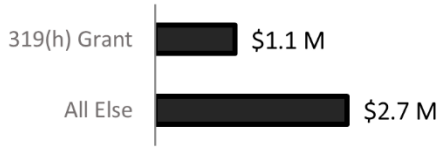
Developed | **26%**

Natural | **39%**

NPS Reduction Progress

From 2008 to 2023, Monocacy River: Lower is 39% toward its 228K lbs/yr nitrogen reduction goal, 67% toward its 41K lbs/yr phosphorus reduction goal, and 55% toward its 41.0 M lbs/yr sediment reduction goal.

Watershed Funding | SFY08 – SFY24



Cumulative NPS Reductions

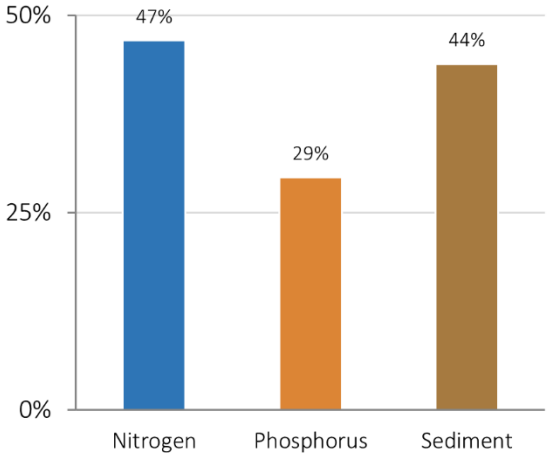
Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	0.7K	0.2K	0.0M
All Else	89.3K	27.1K	22.7M
Total	**90.0K**	**27.2K**	**22.7M**

Watershed Profile

Sassafras River

Percent Progress Towards Target

Nitrogen, Phosphorus, Sediment



Land Use

Total Acres | **47K**

Agriculture | **58%**

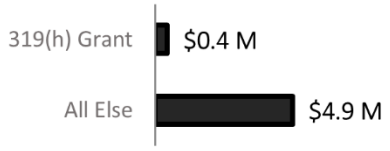
Developed | **11%**

Natural | **31%**

NPS Reduction Progress

From 2009 to 2023, Sassafras River is 47% toward its 57K lbs/yr nitrogen reduction goal, 29% toward its 9K lbs/yr phosphorus reduction goal, and 44% toward its 3.6 M lbs/yr sediment reduction goal.

Watershed Funding | SFY09 – SFY24



Cumulative NPS Reductions

Funding Source	Nitrogen | lbs/yr	Phosphorus | lbs/yr	Sediment | lbs/yr
319(h) Grant	4.2K	0.3K	0.0M
All Else	22.5K	2.3K	1.6M
Total	**26.7K**	**2.5K**	**1.6M**

Appendix A | NPS Load Tracking

Nutrient and Sediment Tracking

Maryland tracks nutrient and sediment reductions for §319 Priority Watersheds using the Chesapeake Assessment Scenario Tool (CAST). In the following tables (**A - 1 to A - 3**), *Reduction Source Document* refers to how the *Percent Reduction Required* (PRR) was determined. All loads are reported as Edge of Stream: the nutrient and sediment entering directly into local waterbodies from the adjoining land.

The percent reduction for *Watershed Plan* was taken from the approved watershed plan. If no such number was given, PRR was calculated as the percent reduction of the watershed's Plan Start Date (PSD) NPS load necessary to achieve the watershed's TMDL for nitrogen, phosphorus, or sediment. If no TMDL was available, or the TMDL was exceeded, PRR was calculated as the percent reduction required of the watershed's PSD NPS load to achieve the watershed's Phase III WIP nutrient or sediment goals.

Maryland uses the Chesapeake Assessment and Scenario Tool (CAST) outputs to estimate its load reductions/increases as more of a "real time" assessment of how our efforts are going. CAST uses a number of data inputs that can affect the loads in our watersheds, BMP implementation being only one of them. Consequently, even with increased BMP implementation the model may assign greater loads to a watershed which offset any reductions achieved through BMP implementation. This variability is reflected in the tables and watershed profiles included in this section. Baseline loads were extracted directly from CAST and represent the load during a watershed's PSD. Target loads were calculated as *((1 – PRR) * Baseline Loads)*. Current Loads represent 2023 Progress loads in CAST for each watershed.

As previously mentioned, the load calculations data from CAST is up to SFY23, which ended on June 30, 2023. SFY24 progress has yet to be finalized at the time that this report is due. Progress in SFY24 will be included in the next annual report.

§319 Reductions come from the individual project calculations provided to MDE in the watershed work plans. Non-§319 Reductions are calculated as *((PSD - Current Loads) - §319 Reductions)*.

Negative values in the charts below connotate increases in load. CAST is a dynamic model whose output may show variation from year to year due to BMP retirement or annual BMP variation that may increase loads in some areas based on land use conditions.

Table A - 1: *Nitrogen Tracking for 2023 (Edge of Stream loads - Pounds/Year)*

Priority Watershed	Plan Start Date	Reduction Source Document	Percent Reduction Required	Baseline Loads	Target Loads	Current Loads (2022)	319 Reductions	Non-319 Reductions	Total Reductions	Target Reductions	Percent Progress
Antietam Creek	2012	Phase III WIP	5%	1,300,084	1,229,075	1,304,881	1,855	-6,652	-4,797	71,009	-7%
Assawoman Bay	2020		19%	131,750	106,765	132,183	50	-482	-432	24,985	-2%
Back River: Tidal	2010	Watershed Plan	15%	98,847	84,020	96,157	280	2,410	2,690	14,827	18%
Back River: Upper	2008	Watershed Plan	15%	166,230	141,296	159,620	1,419	5,191	6,610	24,935	27%
Casselman River	2011	Phase III WIP									
Choptank River: Upper	2010	Watershed Plan	39%	2,700,212	1,647,129	2,719,056	1,554	-20,398	-18,844	1,053,083	-2%
Corsica River	2004	Local TMDL	20%	322,428	258,108	282,592	4,873	34,963	39,836	64,320	62%
Gwynns Falls: Middle	2014	Watershed Plan	29%	302,954	215,097	300,894	4,340	-2,280	2,060	87,857	2%
Jennings Run: Upper	2019	Phase III WIP									
Jones Falls: Lower	2008	Watershed Plan	22%	446,290	346,321	444,766	90	1,434	1,524	99,969	2%
Monocacy River: Lower	2008	Phase III WIP	7%	3,336,578	3,108,395	3,246,553	726	89,299	90,025	228,183	39%
Sassafras River	2009	Watershed Plan	9%	627,891	570,753	601,162	4,204	22,525	26,729	57,138	47%
Watershed Totals *(Nitrogen)*				**9,517,616**	**8,117,480**	**9,744,213**	**19,391**	**-245,988**	**-226,597**	**1,400,136**	

Table A - 2: *Phosphorus Tracking for 2023 (Edge of Stream loads - Pounds/Year)*

Priority Watershed	Plan Start Date	Reduction Source Document	Percent Reduction Required	Baseline Loads	Target Loads	Current Loads (2022)	319 Reductions	Non-319 Reductions	Total Reductions	Target Reductions	Percent Progress
Antietam Creek	2012	Local TMDL	7%	72,390	67,196	59,333	957	12101	13058	5,194	251%
Assawoman Bay	2020		9%	5,079	4,625	4,674	16	390	406	454	89%
Back River: Tidal	2010	Watershed Plan	15%	11,945	10,153	8,367	94	3484	3578	1,792	200%
Back River: Upper	2008	Watershed Plan	15%	14,444	12,277	10,900	737	2807	3544	2,167	164%
Casselman River	2011	Phase III WIP									
Choptank River: Upper	2010	Watershed Plan	28%	100,317	72,228	97,004	596	2717	3313	28,089	12%
Corsica River	2004	Phase III WIP	50%	14,846	7,386	7,739	458	6649	7107	7,460	95%
Gwynns Falls: Middle	2014	Watershed Plan	45%	25,979	14,263	16,836	1,690	7453	9143	11,717	78%
Jennings Run: Upper	2019	Phase III WIP									
Jones Falls: Lower	2008	Watershed Plan	30%	21,635	15,253	15,074	91	6,471	6,562	6,382	103%
Monocacy River: Lower	2008	Phase III WIP	40%	101,112	60,276	73,875	169	27,069	27,238	40,837	67%
Sassafras River	2009	Watershed Plan	34%	25,096	16,588	22,590	254	2,252	2,506	8,507	29%
Watershed Totals *(Phosphorus)*				**396,724**	**302,168**	**344,799**	**5,061**	**46,863**	**51,924**	**94,556**	

Table A - 3: *Sediment Tracking for 2023 (Edge of Stream loads - Pounds/Year)*

Priority Watershed	Plan Start Date	Reduction Source Document	Percent Reduction Required	Baseline Loads	Target Loads	Current Loads (2022)	319 Reductions	Non-319 Reductions	Total Reductions	Target Reductions	Percent Progress
Antietam Creek	2012	Watershed Plan	52%	132,811,072	63,992,098	133,332,473	11,918	(533,319)	(521,400)	68,818,974	-1%
Assawoman Bay	2020		27%	8,560,125	6,237,597	8,545,257	1	14,867	14,868	2,322,528	1%
Back River: Tidal	2010	Local TMDL	68%	18,880,593	6,041,790	18,773,248	428	106,917	107,345	12,838,803	1%
Back River: Upper	2008	Local TMDL	68%	47,781,280	15,290,010	47,747,842	981	32,457	33,438	32,491,270	0%
Casselman River	2011	Phase III WIP									
Choptank River: Upper	2010	Phase III WIP	34%	71,068,967	47,059,716	85,364,465	3,162	(14,298,660)	(14,295,498)	24,009,252	-60%
Corsica River	2004	Phase III WIP	19%	10,528,898	8,553,115	9,045,586	1,520	1,481,793	1,483,313	1,975,783	75%
Gwynns Falls: Middle	2014	Local TMDL	37%	61,902,596	38,998,635	61,528,252	3,768	370,576	374,344	22,903,960	2%
Jennings Run: Upper	2019	Phase III WIP									
Jones Falls: Lower	2008	Watershed Plan	8%	74,493,210	68,384,766	72,466,952	173	2,026,085	2,026,258	6,108,443	33%
Monocacy River: Lower	2008	Phase III WIP	16%	259,544,915	218,511,178	236,819,083	75	22,725,758	22,725,833	41,033,738	55%
Sassafras River	2009	Watershed Plan	15%	24,619,654	20,975,946	23,022,262	187	1,597,205	1,597,392	3,643,709	44%
Watershed Totals *(Sediment)*				**728,735,848**	**583,150,047**	**808,148,444**	**22,214**	**(79,434,810)**	**(79,412,596)**	**145,585,801**	

Other NPS Pollution – Bacteria

MDE does not currently have a system for tracking bacteria reductions within priority watersheds. Bacteria concentrations and loads tend to be highly variable and difficult to track, particularly when assessing the effectiveness of restoration. The State will continue to evaluate new tools, technologies, and monitoring designs to track progress towards applicable bacteria TMDLs in the future. This largely applies to the Antietam Creek priority watershed plan, which addresses the Bacteria TMDL for the watershed.

Other NPS Pollution – pH Impairments

The Casselman River and Upper Jennings Run priority watershed plans were developed to address the low pH impairment listings due to acid mine drainage. Rather than directly tracking pH, Maryland tracks pH remediation by evaluating how many streams within these watersheds have been successfully delisted for a pH impairment (**Table A - 4**), based on pre and post BMP implementation monitoring. Currently, four water quality segments within the Casselman River watershed have been delisted for pH.

In the Casselman River and Upper Jennings Run, restoration efforts to remediate low pH impairment listings are reported by MDE's Abandoned Mine Land program in an annual report.

Table A - 4: *Casselman River sub-watersheds delisted for pH impairments*

Casselman River | pH Delistings			
River Name	**HUC-12 Watershed**	**Impairment**	**Listing Category**
Alexander Run	050202040032	pH, Low	2 – Meets water quality criteria for the specified pollutant
Big Laurel Run	050202040033	pH, Low	2 – Meets water quality criteria for the specified pollutant
Spiker Run	050202040034	pH, Low	2 – Meets water quality criteria for the specified pollutant
Tarkiln Run	050202040032	pH, Low	2 – Meets water quality criteria for the specified pollutant

Estimating BMP Reductions

The following tables provide information on active Best Management Practices that were accepted in the CAST tool. Many of the priority watersheds received funding and completed projects before any watershed plan was approved, and other BMPs will have been implemented through a number of different funding sources and partners. The results below use CAST BMP efficiency assumptions that have been altered by local delivery factors for the Priority watersheds to better simulate the potential reductions BMPs would be able to produce if no baseline changes altered. These tables also reflect active BMPS in SFY23 and will change in SFY24 as BMPs are not verified and no longer receive credit. The BMP implementation numbers are taken from CAST inputs, which may vary year to year as BMPs fail, do not get verified, new reporting partners come online, or get included in other model data inputs (e.g. tree planting BMPs become forests). Annual variability is to be expected.

MD-0207000410 - Antietam Creek				LBS Reduced		
Permit Approval 2012/Washington Co.	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	40,455.10	46,753.55	-	-
Rate Nitrogen	annual	Acres	10,916.98	4,240.48	-	-
Placement Nitrogen	annual	Acres	1,225.80	1,003.45	-	-
Timing Nitrogen	annual	Acres	758.12	623.94	-	-
Core Phosphorus	annual	Acres	40,455.10	-	2,723.03	-
Rate Phosphorus	annual	Acres	3,898.08	-	100.65	-
Placement Phosphorus	annual	Acres	1,102.08	-	13.93	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				52,621.42	2,837.61	-
Tillage Management						
Conservation	annual	Acres	7,129.31	15,181.15	1,508.70	5,915,932.61
Continuous High Residue	annual	Acres	11,860.79	35,356.55	3,134.57	18,964,049.74
Low Residue	annual	Acres	-	-	-	-
TOTAL				50,537.70	4,643.27	24,879,982.35
Cover Crop						
Traditional	annual	Acres	4,849.53	22,259.62	46.99	226,659.45
Commodity	annual	Acres	4,584.91	8,135.86	-	-
TOTAL				30,395.48	46.99	226,659.45
Pasture Management						
Alternative Watering	cumulative	Acres	3,202.22	1,656.77	312.41	4,288.70
Prescribed Grazing	cumulative	Acres	1,347.74	1,318.90	394.47	5,474.78
Horse Pasture Management	cumulative	Acres	11.22	-	2.75	60.53
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	48.64	3,985.20	856.63	606,996.66
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	17.62	1,408.68	305.42	219,394.11
TOTAL				8,369.55	1,871.68	836,214.78
Forest Buffers	cumulative	Acres in Buffers	711.77	27,523.31	328.15	1,666,415.39
Wetland Restoration	cumulative	Acres	17.71	538.50	10.64	35,047.17
Wetland Creation	cumulative	Acres	3.85	64.73	1.23	4,644.43
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	516.23	6,366.20	-	669,657.67
Land Retirement to Pasture	cumulative	Acres	274.65	8,540.69	48.52	661,342.27
Grass Buffers	cumulative	Acres in Buffers	116.95	3,636.81	20.66	281,613.90
Tree Planting	cumulative	Acres	342.59	4,846.73	61.54	373,119.15
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	21,296.10	19,281.70	984.94	4,870,688.15
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	2,462.14	4,438.28	244.13	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	6,331.90	430.00	274.17	887,962.54
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				75,666.95	1,973.98	9,450,490.69
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	74.86	319.36	-	-
Saturated Buffer	cumulative	Acres	74.86	3,916.05	-	150,117.49
Sorbing Materials in Ag Ditches	cumulative	Acres	74.86	-	12.29	-
Water Control Structures	cumulative	Acres	74.86	329.11	-	-
TOTAL			299.46	4,564.52	12.29	150,117.49
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	0.02	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	59.52	8,822.33	380.41	162,172.99
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	0.44	0.08	0.13	-
Dairy Precision Feeding	annual	Animal Units	1,531.73	3,562.96	398.10	94,798.77
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				12,385.36	778.64	256,971.76
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	125.33	417.95	13.53	-
Storm Water Treatment Performance Standard	cumulative	Acres Treated	92.93	313.71	30.68	62,255.72
Wet Ponds & Wetlands	cumulative	Acres Treated	6.78	13.37	1.77	4,228.85
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	649.85	134.81	24.09	52,205.90
Extended Dry Ponds	cumulative	Acres Treated	40.91	18.34	3.38	5,353.55
Infiltration Practices	cumulative	Acres Treated	131.51	235.91	21.70	103,245.23
Filtering Practices	cumulative	Acres Treated	59.84	442.61	41.86	74,378.81
BioRetention	cumulative	Acres Treated	48.47	173.85	23.94	50,740.71
BioSwale	cumulative	Acres Treated	3.98	20.84	2.24	3,909.55
Permeable Pavement	cumulative	Acres Treated	-	-	-	-
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				1,771.39	163.18	356,318.31
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	2.26	-	-	17,534.64
Urban Forest Buffers	cumulative	Acres in Buffers	17.74	88.30	-	39,617.80
Urban Tree Planting	cumulative	Acres	80.84	703.80	104.35	96,346.73
Urban Forest Planting	cumulative	Acres	101.64	90.97	13.16	10,323.29
Urban Nutrient Management	annual	Acres	16,712.83	110,939.76	15,225.72	10,564,368.08
Urban Stream Restoration	cumulative	Feet	1,757.01	5,088.77	202.79	-
Storm Drain Cleanout	annual	Lbs of Sediment	-	-	-	-
Street Sweeping	annual	Acres	1.88	0.00	0.00	1.07
Urban Shoreline Management	cumulative	Feet	-	-	-	-
Septic Connections	cumulative	No. Systems	2.00	0.17	0.12	327.28
Septic Denitrification	cumulative	No. Systems	254.54	3,177.55	-	-
Septic Pumping	annual	No. Systems	-	-	-	-
Resource Practices						
Forest Harvesting Practices	annual	Acres	0.01	0.04	0.00	2.45
Dirt&Gravel Road E&S	cumulative	Feet	4,225.42	-	-	6,626.46
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				120,089.38	15,546.15	10,735,147.79
GRAND TOTAL				**356,401.76**	**27,873.81**	**46,891,902.62**

MD-020600020409 - Corsica River				LBS Reduced		
Permit Approval 2006/Queen Anne's Co.	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	11,475.29	21,542.46	-	-
Rate Nitrogen	annual	Acres	5,257.95	3,087.52	-	-
Placement Nitrogen	annual	Acres	2,603.02	3,773.28	-	-
Timing Nitrogen	annual	Acres	751.82	934.86	-	-
Core Phosphorus	annual	Acres	11,475.29	-	2,398.57	-
Rate Phosphorus	annual	Acres	118.08	-	8.04	-
Placement Phosphorus	annual	Acres	2,083.52	-	69.92	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				29,338.11	2,476.53	-
Tillage Management						
Conservation	annual	Acres	3,066.44	2,664.46	494.89	504,061.98
Continuous High Residue	annual	Acres	7,780.06	20,280.52	1,753.24	2,464,203.98
Low Residue	annual	Acres	-	-	-	-
TOTAL				22,944.98	2,248.13	2,968,265.96
Cover Crop						
Traditional	annual	Acres	5,586.56	26,924.73	26.38	6,592.69
Commodity	annual	Acres	1,518.01	3,078.78	-	-
TOTAL				30,003.50	26.38	6,592.69
Pasture Management						
Alternative Watering	cumulative	Acres	61.67	27.57	6.49	9.73
Prescribed Grazing	cumulative	Acres	15.71	12.81	5.78	6.20
Horse Pasture Management	cumulative	Acres	5.25	-	1.66	2.76
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	1.24	65.48	20.32	11,571.02
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	0.59	30.08	9.42	5,504.74
TOTAL				-	-	-
Forest Buffers	cumulative	Acres in Buffers	79.45	5,735.11	88.33	65,940.61
Wetland Restoration	cumulative	Acres	132.04	5,917.80	158.45	90,717.29
Wetland Creation	cumulative	Acres	34.29	883.81	27.77	14,712.22
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	232.62	4,373.66	11.67	92,148.58
Land Retirement to Pasture	cumulative	Acres	30.89	580.78	1.55	12,236.36
Grass Buffers	cumulative	Acres in Buffers	698.46	38,930.32	433.62	578,958.57
Tree Planting	cumulative	Acres	14.58	323.00	9.12	5,709.64
Alternative Crops	cumulative	Acres	5.55	117.14	0.64	2,202.82
Soil and Water Conservation Plan	cumulative	Acres	7,249.15	11,155.28	566.59	633,673.92
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	1,146.26	2,314.52	106.57	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	-	-	-	-
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				70,331.43	1,404.30	1,496,300.02
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	34.24	149.19	-	-
Saturated Buffer	cumulative	Acres	34.24	2,195.90	4.54	13,841.24
Sorbing Materials in Ag Ditches	cumulative	Acres	34.24	-	7.79	-
Water Control Structures	cumulative	Acres	34.24	221.76	-	-
TOTAL				2,566.85	12.33	13,841.24
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	780.88	1,008.96	20.39	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	2.61	481.87	42.83	697.66
Ag Stormwater Management	cumulative	Acres Treated	11.86	3,816.05	544.10	5,497.00
Manure Transport	annual	Dry Tons	209.34	533.27	20.12	-
Dairy Precision Feeding	annual	Animal Units	47.26	102.35	13.99	3,903.03
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	82.67	39.06	0.18	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				5,981.57	641.61	10,097.69
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	-	-	-	-
Storm Water Treatment Performance Standard	cumulative	Acres Treated	-	-	-	-
Wet Ponds & Wetlands	cumulative	Acres Treated	-	-	-	-
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	-	-	-	-
Extended Dry Ponds	cumulative	Acres Treated	-	-	-	-
Infiltration Practices	cumulative	Acres Treated	-	-	-	-
Filtering Practices	cumulative	Acres Treated	-	-	-	-
BioRetention	cumulative	Acres Treated	-	-	-	-
BioSwale	cumulative	Acres Treated	-	-	-	-
Permeable Pavement	cumulative	Acres Treated	-	-	-	-
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				-	-	-
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	-	-	-	-
Urban Forest Buffers	cumulative	Acres in Buffers	2.02	17.28	3.11	560.79
Urban Tree Planting	cumulative	Acres	0.46	0.46	0.08	42.20
Urban Forest Planting	cumulative	Acres	2.17	14.19	2.35	340.98
Urban Nutrient Management	annual	Acres	1,832.99	1,141.13	81.02	-
Urban Stream Restoration	cumulative	Feet	-	-	-	-
Storm Drain Cleanout	annual	Lbs of Sediment	-	-	-	-
Street Sweeping	annual	Acres	-	-	-	-
Urban Shoreline Management	cumulative	Feet	-	-	-	-
Septic Connections	cumulative	Number of Systems	5.56	45.27	-	-
Septic Denitrification	cumulative	Number of Systems	40.05	210.85	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices						
Forest Harvesting Practices	annual	Acres	-	-	-	-
Dirt&Gravel Road E&S	cumulative	Feet	-	-	-	-
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				1,429.17	86.56	943.97
GRAND TOTAL				**162,595.62**	**6,895.83**	**4,496,041.57**

MD-N24510WM0_3650_0001 - Lower Jones Falls				LBS Reduced		
Permit Approval 2008/Baltimore City & Co.	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	-	-	-	-
Rate Nitrogen	annual	Acres	-	-	-	-
Placement Nitrogen	annual	Acres	-	-	-	-
Timing Nitrogen	annual	Acres	-	-	-	-
Core Phosphorus	annual	Acres	-	-	-	-
Rate Phosphorus	annual	Acres	-	-	-	-
Placement Phosphorus	annual	Acres	-	-	-	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				-	-	-
Tillage Management						
Conservation	annual	Acres	-	-	-	-
Continuous High Residue	annual	Acres	-	-	-	-
Low Residue	annual	Acres	-	-	-	-
TOTAL				-	-	-
Cover Crop						
Traditional	annual	Acres	-	-	-	-
Commodity	annual	Acres	-	-	-	-
TOTAL				-	-	-
Pasture Management						
Alternative Watering	cumulative	Acres	-	-	-	-
Prescribed Grazing	cumulative	Acres	-	-	-	-
Horse Pasture Management	cumulative	Acres	-	-	-	-
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
TOTAL				-	-	-
Forest Buffers	cumulative	Acres in Buffers	2.50	33.73	0.40	757.64
Wetland Restoration	cumulative	Acres	-	-	-	-
Wetland Creation	cumulative	Acres	-	-	-	-
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	-	-	-	-
Land Retirement to Pasture	cumulative	Acres	-	-	-	-
Grass Buffers	cumulative	Acres in Buffers	-	-	-	-
Tree Planting	cumulative	Acres	-	-	-	-
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	-	-	-	-
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	-	-	-	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	-	-	-	-
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				33.73	0.40	757.64
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	-	-	-	-
Saturated Buffer	cumulative	Acres	-	-	-	-
Sorbing Materials in Ag Ditches	cumulative	Acres	-	-	-	-
Water Control Structures	cumulative	Acres	-	-	-	-
TOTAL				-	-	-
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	-	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	-	-	-	-
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	-	-	-	-
Dairy Precision Feeding	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				-	-	-
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	23.72	61.57	6.68	10,280.44
Storm Water Treatment Performance Standard	cumulative	Acres Treated	11.17	16.93	2.47	4,514.87
Wet Ponds & Wetlands	cumulative	Acres Treated	-	-	-	-
Floating Treatment Wetlands	cumulative	Acres Treated (Wet	-	-	-	-
Dry Ponds	cumulative	Acres Treated	47.12	17.10	3.22	4,854.51
Extended Dry Ponds	cumulative	Acres Treated	0.03	0.04	0.00	18.55
Infiltration Practices	cumulative	Acres Treated	-	-	-	-
Filtering Practices	cumulative	Acres Treated	8.25	23.98	3.40	6,800.26
BioRetention	cumulative	Acres Treated	0.05	0.21	0.02	38.64
BioSwale	cumulative	Acres Treated	-	-	-	-
Permeable Pavement	cumulative	Acres Treated	-	-	-	-
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				119.83	15.80	26,507.25
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	-	-	-	-
Urban Forest Buffers	cumulative	Acres in Buffers	-	-	-	-
Urban Tree Planting	cumulative	Acres	112.96	11.71	2.24	1,813.64
Urban Forest Planting	cumulative	Acres	4.92	22.46	3.94	1,602.69
Urban Nutrient Management	annual	Acres	4,088.10	604.83	33.04	-
Urban Stream Restoration	cumulative	Feet	-	-	-	-
Storm Drain Cleanout	annual	Lbs of Sediment	246,720.00	536.12	112.75	124,106.57
Street Sweeping	annual	Acres	1,361.50	220.60	43.33	192,009.80
Urban Shoreline Management	cumulative	Feet	-	-	-	-
Septic Connections	cumulative	Number of Systems	-	-	-	-
Septic Denitrification	cumulative	Number of Systems	-	-	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices				-	-	-
Forest Harvesting Practices	annual	Acres	-	-	-	-
Dirt&Gravel Road E&S	cumulative	Feet	-	-	-	-
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				1,395.72	195.30	319,532.71
GRAND TOTAL				**1,549.28**	**211.50**	**346,797.60**

MD-0207000907 - Lower Monocacy				LBS Reduced		
Permit Approval 2008/Fredrick Co.	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	41,292.37	55,550.63	-	-
Rate Nitrogen	annual	Acres	10,911.96	5,015.14	-	-
Placement Nitrogen	annual	Acres	1,225.23	1,150.69	-	-
Timing Nitrogen	annual	Acres	757.77	749.34	-	-
Core Phosphorus	annual	Acres	41,292.37	-	3,407.86	-
Rate Phosphorus	annual	Acres	3,896.26	-	145.92	-
Placement Phosphorus	annual	Acres	1,101.56	-	20.05	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				62,465.79	3,573.82	-
Tillage Management						
Conservation	annual	Acres	3,513.09	9,486.09	736.41	2,421,402.15
Continuous High Residue	annual	Acres	12,066.63	45,609.94	3,270.42	16,025,338.26
Low Residue	annual	Acres	-	-	-	-
TOTAL				55,096.03	4,006.83	18,446,740.41
Cover Crop						
Traditional	annual	Acres	6444.69	35,105.77	48.88	111,834.50
Commodity	annual	Acres	2451.07	6,096.71	-	-
TOTAL				41,202.47	48.88	111,834.50
Pasture Management						
Alternative Watering	cumulative	Acres	2,049.14	1,040.66	155.82	1,947.75
Prescribed Grazing	cumulative	Acres	262.34	287.12	59.13	759.49
Horse Pasture Management	cumulative	Acres	20.74	-	3.89	79.70
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	15.62	928.17	242.39	153,812.99
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	4.03	230.31	60.62	39,676.19
TOTAL				2,486.26	521.85	196,276.12
Forest Buffers	cumulative	Acres in Buffers	592.20	36,523.73	454.67	1,381,625.19
Wetland Restoration	cumulative	Acres	11.24	472.28	9.97	21,635.76
Wetland Creation	cumulative	Acres	-	-	-	-
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	493.35	8,481.05	23.68	585,360.47
Land Retirement to Pasture	cumulative	Acres	218.87	3,762.59	180.62	214,309.14
Grass Buffers	cumulative	Acres in Buffers	116.61	5,614.77	34.19	276,983.29
Tree Planting	cumulative	Acres	71.87	1,421.83	29.83	75,333.19
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	12,703.68	-	2,309.40	-
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	876.71	1,814.84	94.40	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	2,379.11	132.35	102.97	307,184.03
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				58,223.45	3,239.74	2,862,431.06
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	128.41	694.72	-	-
Saturated Buffer	cumulative	Acres	128.41	8,792.13	12.24	215,272.68
Sorbing Materials in Ag Ditches	cumulative	Acres	128.41	-	23.34	-
Water Control Structures	cumulative	Acres	128.41	758.82	-	-
TOTAL				10,245.67	35.59	215,272.68
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	25.35	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	35.73	3,046.04	84.69	100,472.71
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	703.17	356.21	309.18	-
Dairy Precision Feeding	annual	Animal Units	498.58	1,163.44	79.95	20,682.66
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				4,565.69	473.83	121,155.37
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	632.13	2,283.94	152.84	391,953.27
Storm Water Treatment Performance Standard	cumulative	Acres Treated	1,299.54	2,745.86	247.02	750,710.13
Wet Ponds & Wetlands	cumulative	Acres Treated	2,288.78	5,030.96	671.73	1,694,297.68
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	791.96	435.36	51.79	97,710.31
Extended Dry Ponds	cumulative	Acres Treated	1,201.17	2,640.29	157.09	889,180.74
Infiltration Practices	cumulative	Acres Treated	204.90	1,857.81	113.57	240,161.91
Filtering Practices	cumulative	Acres Treated	140.50	617.68	55.02	138,679.90
BioRetention	cumulative	Acres Treated	66.76	427.97	29.74	61,773.14
BioSwale	cumulative	Acres Treated	29.03	223.31	14.19	28,651.38
Permeable Pavement	cumulative	Acres Treated	-	-	-	-
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				16,263.17	1,492.99	4,293,118.47
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	0.47	2.93	-	948.32
Urban Forest Buffers	cumulative	Acres in Buffers	25.85	267.77	25.76	26,983.75
Urban Tree Planting	cumulative	Acres	138.68	146.00	14.28	-
Urban Forest Planting	cumulative	Acres	124.92	989.19	87.01	67,224.20
Urban Nutrient Management	annual	Acres	14,620.42	12,029.24	498.56	-
Urban Stream Restoration	cumulative	Feet	925.09	51.46	40.04	119,445.27
Storm Drain Cleanout	annual	Lbs of Sediment	0.27	0.00	0.00	0.14
Street Sweeping	annual	Acres	0.61	0.16	0.02	134.25
Urban Shoreline Management	cumulative	Feet	-	-	-	-
Septic Connections	cumulative	Number of Systems	4.07	42.49	-	-
Septic Denitrification	cumulative	Number of Systems	223.73	1,510.53	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices						
Forest Harvesting Practices	annual	Acres	-	0.00	0.00	-
Dirt&Gravel Road E&S	cumulative	Feet	9,298.50	-	-	13,426.04
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				15,039.78	665.67	228,161.96
GRAND TOTAL				**265,588.31**	**14,059.19**	**26,474,990.57**

MD-020600030902 - Middle Gywnns Falls (Dead Run)				LBS Reduced		
Permit Approval 2014/Baltimore City	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	88.42	-	-	-
Rate Nitrogen	annual	Acres	36.81	-	-	-
Placement Nitrogen	annual	Acres	3.23	-	-	-
Timing Nitrogen	annual	Acres	3.66	-	-	-
Core Phosphorus	annual	Acres	88.42	-	-	-
Rate Phosphorus	annual	Acres	0.61	-	-	-
Placement Phosphorus	annual	Acres	2.35	-	-	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				-	-	-
Tillage Management						
Conservation	annual	Acres	12.89	-	-	-
Continuous High Residue	annual	Acres	51.00	-	-	-
Low Residue	annual	Acres	-	-	-	-
TOTAL				-	-	-
Cover Crop						
Traditional	annual	Acres	14.03	-	-	-
Commodity	annual	Acres	10.11	-	-	-
TOTAL				-	-	-
Pasture Management						
Alternative Watering	cumulative	Acres	9.24	-	-	-
Prescribed Grazing	cumulative	Acres	1.24	-	-	-
Horse Pasture Management	cumulative	Acres	0.27	-	-	-
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	0.05	-	-	-
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
TOTAL				-	-	-
Forest Buffers	cumulative	Acres in Buffers	5.91	-	-	-
Wetland Restoration	cumulative	Acres	0.22	-	-	-
Wetland Creation	cumulative	Acres	0.03	-	-	-
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	0.44	-	-	-
Land Retirement to Pasture	cumulative	Acres	1.01	-	-	-
Grass Buffers	cumulative	Acres in Buffers	0.74	-	-	-
Tree Planting	cumulative	Acres	0.10	-	-	3.54
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	63.90	-	-	-
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	0.51	-	-	-
Capture & Reuse	cumulative	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Acres	1,528.78	97.08	85.69	226,631.87
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				97.08	85.69	226,635.42
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	0.13	-	-	-
Saturated Buffer	cumulative	Acres	0.13	-	-	-
Sorbing Materials in Ag Ditches	cumulative	Acres	0.13	72.27	5.97	426.88
Water Control Structures	cumulative	Acres	0.13	-	-	-
TOTAL				72.27	5.97	426.88
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	-	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	0.11	-	-	-
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	0.51	-	-	-
Dairy Precision Feeding	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				-	-	-
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	209.79	553.68	62.17	100,858.22
Storm Water Treatment Performance Standard	cumulative	Acres Treated	940.84	1,449.31	219.47	421,850.22
Wet Ponds & Wetlands	cumulative	Acres Treated	165.02	242.59	53.75	116,077.82
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	1,461.12	535.90	105.04	171,292.05
Extended Dry Ponds	cumulative	Acres Treated	1,372.15	2,017.09	197.27	965,181.01
Infiltration Practices	cumulative	Acres Treated	31.98	193.98	19.66	35,616.92
Filtering Practices	cumulative	Acres Treated	0.28	0.81	0.12	258.34
BioRetention	cumulative	Acres Treated	0.74	3.18	0.37	652.90
BioSwale	cumulative	Acres Treated	3.02	15.55	1.64	2,834.91
Permeable Pavement	cumulative	Acres Treated	4.67	16.03	1.69	3,834.15
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				5,028.12	661.18	1,818,456.54
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	0.01	0.03	-	12.16
Urban Forest Buffers	cumulative	Acres in Buffers	0.47	2.77	0.56	397.32
Urban Tree Planting	cumulative	Acres	201.82	-	-	-
Urban Forest Planting	cumulative	Acres	13.90	60.45	12.04	4,878.90
Urban Nutrient Management	annual	Acres	11,211.53	-	-	-
Urban Stream Restoration	cumulative	Feet	2,486.71	157.91	139.38	368,637.62
Storm Drain Cleanout	annual	Lbs of Sediment	6,339.22	14.52	3.11	3,789.33
Street Sweeping	annual	Acres	1,650.14	261.12	55.75	249,829.94
Urban Shoreline Management	cumulative	Feet	1.10	0.09	0.07	179.66
Septic Connections	cumulative	Number of Systems	43.10	298.80	-	-
Septic Denitrification	cumulative	Number of Systems	5.33	24.42	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices				-	-	-
Forest Harvesting Practices	annual	Acres	2.36	6.50	-	336.58
Dirt&Gravel Road E&S	cumulative	Feet	1.60	-	-	2.65
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				826.63	210.90	628,064.17
GRAND TOTAL				**6,024.10**	**963.73**	**2,673,583.00**

MD-0206000203 - Sassafras River				LBS Reduced		
Permit Approval 2010/Cecil & Kent Co.	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	24,364.38	30,552.21	-	-
Rate Nitrogen	annual	Acres	12,936.73	5,876.63	-	-
Placement Nitrogen	annual	Acres	2,113.26	2,100.40	-	-
Timing Nitrogen	annual	Acres	3,084.60	3,049.49	-	-
Core Phosphorus	annual	Acres	24,364.38	-	3,269.37	-
Rate Phosphorus	annual	Acres	468.45	-	24.88	-
Placement Phosphorus	annual	Acres	1,624.95	-	42.63	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				41,578.73	3,336.88	-
Tillage Management						
Conservation	annual	Acres	7,835.54	7,775.35	1,361.77	2,241,886.69
Continuous High Residue	annual	Acres	13,170.24	32,453.89	3,109.16	7,260,769.02
Low Residue	annual	Acres	-	-	-	-
TOTAL				40,229.24	4,470.92	9,502,655.71
Cover Crop						
Traditional	annual	Acres	12,000.89	53,248.97	98.45	41,515.15
Commodity	annual	Acres	3,436.48	6,875.29	-	-
TOTAL				60,124.26	98.45	41,515.15
Pasture Management						
Alternative Watering	cumulative	Acres	176.67	83.19	24.52	90.23
Prescribed Grazing	cumulative	Acres	83.80	72.82	34.06	133.32
Horse Pasture Management	cumulative	Acres	2.29	-	0.77	4.80
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	8.70	852.19	228.18	121,606.07
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	2.52	143.75	37.20	21,938.61
TOTAL				1,151.96	324.73	143,773.03
Forest Buffers	cumulative	Acres in Buffers	140.17	8,714.26	136.73	184,498.11
Wetland Restoration	cumulative	Acres	88.26	3,750.18	100.77	101,316.99
Wetland Creation	cumulative	Acres	60.15	1,303.49	40.03	39,354.85
Wetland Enhancement and Rehabilitation	cumulative	Acres	0.00	0.01	0.00	0.12
Land Retirement to Open Space	cumulative	Acres	833.98	13,077.35	54.29	521,287.42
Land Retirement to Pasture	cumulative	Acres	50.40	790.30	3.28	31,502.76
Grass Buffers	cumulative	Acres in Buffers	580.49	27,771.88	235.01	763,947.07
Tree Planting	cumulative	Acres	99.18	1,836.75	48.62	59,030.44
Alternative Crops	cumulative	Acres	8.42	160.84	-	5,649.89
Soil and Water Conservation Plan	cumulative	Acres	18,193.44	23,324.75	1,316.36	2,409,189.80
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	2,550.26	4,380.40	239.39	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	793.06	52.32	43.43	85,419.66
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				85,162.53	2,217.92	4,201,197.11
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	362.34	1,453.25	-	-
Saturated Buffer	cumulative	Acres	362.34	19,029.07	8.93	298,723.19
Sorbing Materials in Ag Ditches	cumulative	Acres	362.34	-	78.76	-
Water Control Structures	cumulative	Acres	362.34	2,004.34	-	-
TOTAL				22,486.65	87.70	298,723.19
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	207.62	(152.57)	15.48	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	21.30	2,759.68	294.15	33,740.07
Ag Stormwater Management	cumulative	Acres Treated	12.49	3,087.46	550.03	37,599.90
Manure Transport	annual	Dry Tons	4,783.10	-	1,891.75	-
Dairy Precision Feeding	annual	Animal Units	450.59	981.99	159.88	30,408.67
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				6,676.57	2,911.29	101,748.64
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	6.01	29.50	4.18	2,792.25
Storm Water Treatment Performance Standard	cumulative	Acres Treated	4.73	13.53	2.58	2,042.79
Wet Ponds & Wetlands	cumulative	Acres Treated	-	-	-	-
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	3.31	1.41	0.35	206.04
Extended Dry Ponds	cumulative	Acres Treated	1.23	2.09	0.26	458.52
Infiltration Practices	cumulative	Acres Treated	18.57	130.10	16.66	10,979.17
Filtering Practices	cumulative	Acres Treated	0.12	0.41	0.08	59.86
BioRetention	cumulative	Acres Treated	0.52	2.57	0.37	241.62
BioSwale	cumulative	Acres Treated	2.92	17.39	2.32	1,456.13
Permeable Pavement	cumulative	Acres Treated	0.01	0.04	0.00	3.88
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				197.02	26.81	18,240.27
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	-	-	-	-
Urban Forest Buffers	cumulative	Acres in Buffers	2.85	23.51	4.65	1,633.82
Urban Tree Planting	cumulative	Acres	0.61	0.57	0.11	17.19
Urban Forest Planting	cumulative	Acres	1.25	7.91	1.43	393.20
Urban Nutrient Management	annual	Acres	3,752.64	2,358.34	187.13	-
Urban Stream Restoration	cumulative	Feet	-	-	-	-
Storm Drain Cleanout	annual	Lbs of Sediment	-	-	-	-
Street Sweeping	annual	Acres	-	-	-	-
Urban Shoreline Management	cumulative	Feet	11.99	1.04	0.73	1,966.87
Septic Connections	cumulative	Number of Systems	0.73	6.65	-	-
Septic Denitrification	cumulative	Number of Systems	140.18	830.97	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices						
Forest Harvesting Practices	annual	Acres	-	-	-	-
Dirt&Gravel Road E&S	cumulative	Feet	-	-	-	-
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				3,228.99	194.06	4,011.08
GRAND TOTAL				**260,835.94**	**13,668.76**	**14,311,864.18**

MD-020600030703 - Tidal Back River (Hawk Cove)				LBS Reduced		
Permit Approval 2010/Baltimore City	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	243.30	-	-	-
Rate Nitrogen	annual	Acres	104.21	-	-	-
Placement Nitrogen	annual	Acres	9.16	-	-	-
Timing Nitrogen	annual	Acres	10.36	-	-	-
Core Phosphorus	annual	Acres	243.30	-	-	-
Rate Phosphorus	annual	Acres	1.74	-	-	-
Placement Phosphorus	annual	Acres	6.67	-	-	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				-	-	-
Tillage Management						
Conservation	annual	Acres	38.70	-	-	-
Continuous High Residue	annual	Acres	153.17	-	-	-
Low Residue	annual	Acres	-	-	-	-
TOTAL				-	-	-
Cover Crop						
Traditional	annual	Acres	42.12	-	-	-
Commodity	annual	Acres	30.38	-	-	-
TOTAL				-	-	-
Pasture Management						
Alternative Watering	cumulative	Acres	20.59	-	-	-
Prescribed Grazing	cumulative	Acres	2.76	-	-	-
Horse Pasture Management	cumulative	Acres	0.59	-	-	-
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	0.11	-	-	-
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
TOTAL				-	-	-
Forest Buffers	cumulative	Acres in Buffers	6.85	-	-	-
Wetland Restoration	cumulative	Acres	0.48	-	-	-
Wetland Creation	cumulative	Acres	0.09	-	-	-
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	1.31	-	-	-
Land Retirement to Pasture	cumulative	Acres	3.02	-	-	-
Grass Buffers	cumulative	Acres in Buffers	2.11	-	-	-
Tree Planting	cumulative	Acres	0.27	-	0.01	9.48
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	170.92	-	-	-
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	1.53	-	-	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	1,002.41	63.65	56.19	148,600.58
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				63.65	56.20	148,610.06
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	0.37	-	-	-
Saturated Buffer	cumulative	Acres	0.37	-	-	-
Sorbing Materials in Ag Ditches	cumulative	Acres	0.37	199.06	16.44	1,175.74
Water Control Structures	cumulative	Acres	0.37	-	-	-
TOTAL				199.06	16.44	1,175.74
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	-	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	0.30	-	-	-
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	1.44	-	-	-
Dairy Precision Feeding	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				-	-	-
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	122.19	322.49	36.21	58,743.99
Storm Water Treatment Performance Standard	cumulative	Acres Treated	1,360.49	2,095.75	317.36	610,008.36
Wet Ponds & Wetlands	cumulative	Acres Treated	0.73	1.08	0.24	516.01
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	328.64	120.54	23.63	38,527.76
Extended Dry Ponds	cumulative	Acres Treated	582.90	856.87	83.80	410,014.62
Infiltration Practices	cumulative	Acres Treated	0.12	0.70	0.07	128.31
Filtering Practices	cumulative	Acres Treated	0.11	0.31	0.05	100.13
BioRetention	cumulative	Acres Treated	0.00	0.02	0.00	3.46
BioSwale	cumulative	Acres Treated	0.30	1.55	0.16	282.84
Permeable Pavement	cumulative	Acres Treated	0.50	1.70	0.18	407.15
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				3,401.01	461.70	1,118,732.64
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	-	-	-	-
Urban Forest Buffers	cumulative	Acres in Buffers	0.41	2.43	0.49	348.47
Urban Tree Planting	cumulative	Acres	68.92	-	-	-
Urban Forest Planting	cumulative	Acres	5.35	23.28	4.64	1,878.94
Urban Nutrient Management	annual	Acres	4,694.63	-	-	-
Urban Stream Restoration	cumulative	Feet	1,630.76	103.55	91.40	241,749.19
Storm Drain Cleanout	annual	Lbs of Sediment	-	-	-	-
Street Sweeping	annual	Acres	5.47	0.87	0.18	827.68
Urban Shoreline Management	cumulative	Feet	784.78	67.74	47.89	128,704.24
Septic Connections	cumulative	Number of Systems	55.75	386.44	-	-
Septic Denitrification	cumulative	Number of Systems	5.93	27.18	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices				-	-	-
Forest Harvesting Practices	annual	Acres	2.80	7.71	-	399.34
Dirt&Gravel Road E&S	cumulative	Feet	-	-	-	-
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				619.22	144.60	373,907.86
GRAND TOTAL				**4,282.94**	**678.94**	**1,642,426.31**

MD-020600030702 - Upper Back River (Redhouse Creek)				LBS Reduced		
Permit Approval 2009/Baltimore City	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	4.15	-	-	-
Rate Nitrogen	annual	Acres	1.45	-	-	-
Placement Nitrogen	annual	Acres	0.10	-	-	-
Timing Nitrogen	annual	Acres	0.12	-	-	-
Core Phosphorus	annual	Acres	4.15	-	-	-
Rate Phosphorus	annual	Acres	0.03	-	-	-
Placement Phosphorus	annual	Acres	0.09	-	-	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				-	-	-
Tillage Management						
Conservation	annual	Acres	0.66	-	-	-
Continuous High Residue	annual	Acres	2.59	-	-	-
Low Residue	annual	Acres	-	-	-	-
TOTAL				-	-	-
Cover Crop						
Traditional	annual	Acres	0.72	-	-	-
Commodity	annual	Acres	0.51	-	-	-
TOTAL				-	-	-
Pasture Management						
Alternative Watering	cumulative	Acres	0.54	-	-	-
Prescribed Grazing	cumulative	Acres	0.08	-	-	-
Horse Pasture Management	cumulative	Acres	0.02	-	-	-
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	-	-	-	-
TOTAL				-	-	-
Forest Buffers	cumulative	Acres in Buffers	41.23	-	-	-
Wetland Restoration	cumulative	Acres	0.01	-	-	-
Wetland Creation	cumulative	Acres	-	-	-	-
Wetland Enhancement and Rehabilitation	cumulative	Acres	-	-	-	-
Land Retirement to Open Space	cumulative	Acres	0.02	-	-	-
Land Retirement to Pasture	cumulative	Acres	0.05	-	-	-
Grass Buffers	cumulative	Acres in Buffers	0.04	-	-	-
Tree Planting	cumulative	Acres	0.02	-	-	0.61
Alternative Crops	cumulative	Acres	-	-	-	-
Soil and Water Conservation Plan	cumulative	Acres	3.82	-	-	-
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	0.03	-	-	-
Capture & Reuse	annual	Acres	0.01	-	-	-
Non Urban Stream Restoration	cumulative	Feet	594.56	37.75	33.33	88,139.80
Non Urban Shoreline Management	cumulative	Feet	-	-	-	-
TOTAL				37.75	33.33	88,140.41
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	0.01	-	-	-
Saturated Buffer	cumulative	Acres	0.01	-	-	-
Sorbing Materials in Ag Ditches	cumulative	Acres	0.01	5.45	0.45	32.19
Water Control Structures	cumulative	Acres	0.01	-	-	-
TOTAL				5.45	0.45	32.19
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	-	-	-	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	0.01	-	-	-
Ag Stormwater Management	cumulative	Acres Treated	-	-	-	-
Manure Transport	annual	Dry Tons	0.04	-	-	-
Dairy Precision Feeding	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	-	-	-	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				-	-	-
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	32.35	85.39	9.59	15,554.75
Storm Water Treatment Performance Standard	cumulative	Acres Treated	163.77	252.28	38.20	73,431.71
Wet Ponds & Wetlands	cumulative	Acres Treated	62.25	91.51	20.28	43,789.08
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	32.05	11.76	2.30	3,757.44
Extended Dry Ponds	cumulative	Acres Treated	87.09	128.02	12.52	61,260.02
Infiltration Practices	cumulative	Acres Treated	0.02	0.12	0.01	22.93
Filtering Practices	cumulative	Acres Treated	0.41	1.21	0.18	387.13
BioRetention	cumulative	Acres Treated	0.01	0.05	0.01	10.38
BioSwale	cumulative	Acres Treated	0.05	0.28	0.03	50.75
Permeable Pavement	cumulative	Acres Treated	0.00	0.01	0.00	1.29
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL			-	570.64	83.12	198,265.49
Erosion and Sediment Control	annual	Acres	-	-	-	-
Impervious Surface Reduction	cumulative	Acres	0.01	0.02	-	8.25
Urban Forest Buffers	cumulative	Acres in Buffers	0.24	1.45	0.29	206.98
Urban Tree Planting	cumulative	Acres	137.40	-	-	-
Urban Forest Planting	cumulative	Acres	11.97	52.07	10.37	4,202.60
Urban Nutrient Management	annual	Acres	8,298.89	-	-	-
Urban Stream Restoration	cumulative	Feet	967.11	61.41	54.21	143,367.56
Storm Drain Cleanout	annual	Lbs of Sediment	9,383.50	21.49	4.60	5,609.08
Street Sweeping	annual	Acres	1,312.37	207.67	44.34	198,692.51
Urban Shoreline Management	cumulative	Feet	10.11	0.87	0.62	1,658.04
Septic Connections	cumulative	Number of Systems	5.66	39.24	-	-
Septic Denitrification	cumulative	Number of Systems	2.28	10.44	-	-
Septic Pumping	annual	Number of Systems	0.86	0.31	-	-
Resource Practices				-	-	-
Forest Harvesting Practices	annual	Acres	0.57	1.57	-	81.29
Dirt&Gravel Road E&S	cumulative	Feet	10.65	-	-	17.66
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				396.55	114.42	353,843.97
GRAND TOTAL				**1,010.40**	**231.31**	**640,282.05**

MD-0206000502 - Upper Choptank River				LBS Reduced		
Permit Approval 2010/Talbot, Caroline, & Queen Anne's	Duration	Unit	Measure	Nitrogen	Phosphorus	Sediment
Agriculture Practices						
Nutrient Management						
Core Nitrogen	annual	Acres	34,881.09	91,886.86	119.56	-
Rate Nitrogen	annual	Acres	14,390.12	11,731.39	-	-
Placement Nitrogen	annual	Acres	4,444.32	9,130.64	-	-
Timing Nitrogen	annual	Acres	8,403.69	14,575.70	-	-
Core Phosphorus	annual	Acres	34,881.09	-	8,705.31	-
Rate Phosphorus	annual	Acres	1,814.49	-	233.87	-
Placement Phosphorus	annual	Acres	2,536.16	-	158.93	-
Timing Phosphorus	annual	Acres	-	-	-	-
TOTAL				127,324.59	9,217.66	-
Tillage Management						
Conservation	annual	Acres	7,918.21	8,908.38	2,043.26	1,187,215.48
Continuous High Residue	annual	Acres	20,190.30	68,145.09	7,552.07	5,832,956.36
Low Residue	annual	Acres	-	-	-	-
TOTAL				77,053.47	9,595.34	7,020,171.84
Cover Crop						
Traditional	annual	Acres	14,352.27	89,579.53	166.40	24,424.79
Commodity	annual	Acres	-	-	-	-
TOTAL				89,579.53	166.40	24,424.79
Pasture Management						
Alternative Watering	cumulative	Acres	96.29	50.14	14.27	189.65
Prescribed Grazing	cumulative	Acres	55.75	51.74	23.59	335.13
Horse Pasture Management	cumulative	Acres	11.28	-	4.03	90.34
Forest Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	3.00	153.35	48.99	23,448.09
Grass Buffers on Fenced Pasture Corridor	cumulative	Acres in Buffers	0.04	1.95	0.62	272.95
TOTAL				257.18	91.50	24,336.17
Forest Buffers	cumulative	Acres in Buffers	134.21	11,339.45	286.87	102,212.69
Wetland Restoration	cumulative	Acres	522.34	28,203.13	1,103.40	308,275.65
Wetland Creation	cumulative	Acres	6.08	202.68	9.41	2,358.62
Wetland Enhancement and Rehabilitation	cumulative	Acres	2.43	10.07	0.87	80.17
Land Retirement to Open Space	cumulative	Acres	158.04	4,096.42	51.25	54,825.31
Land Retirement to Pasture	cumulative	Acres	79.42	2,058.58	25.75	38,804.77
Grass Buffers	cumulative	Acres in Buffers	1,348.69	88,467.26	1,804.25	1,018,524.99
Tree Planting	cumulative	Acres	133.25	3,825.15	159.47	47,176.89
Alternative Crops	cumulative	Acres	0.35	9.61	0.12	124.70
Soil and Water Conservation Plan	cumulative	Acres	27,019.04	52,994.68	3,966.37	2,123,092.86
Crop Irrigation Management	cumulative	Acres	-	-	-	-
Manure Incorporation	annual	Acres	4,154.90	11,379.04	730.65	-
Capture & Reuse	annual	Acres	-	-	-	-
Non Urban Stream Restoration	cumulative	Feet	1,092.17	67.45	57.86	62,462.86
Non Urban Shoreline Management	cumulative	Feet	0.01	0.00	0.00	1.64
TOTAL				202,653.52	8,196.28	3,757,941.14
Agricultural Drainage Management						
Denitrifying Ditch Bioreactors	cumulative	Acres	555.14	3,132.18	-	-
Saturated Buffer	cumulative	Acres	555.14	45,947.75	214.72	202,411.37
Sorbing Materials in Ag Ditches	cumulative	Acres	555.14	-	238.33	-
Water Control Structures	cumulative	Acres	555.14	4,599.52	-	-
TOTAL				53,679.45	453.05	202,411.37
Animal Waste Management Systems						
Broiler Mortality Freezers	annual	Dry Tons (Carcasses)	6035.54	11,364.36	394.16	-
Barnyard Runoff Control & Loafing Lot Management	cumulative	Acres	11.44	2,659.45	135.85	643.21
Ag Stormwater Management	cumulative	Acres Treated	86.19	34,910.12	2,857.07	8,405.55
Manure Transport	annual	Dry Tons	141.83	173.48	64.33	-
Dairy Precision Feeding	annual	Animal Units	2.99	7.07	0.65	132.23
Ammonia Emission Reductions (Litter Amendments)	annual	Animal Units	5.22	2.45	0.00	-
Ammonia Emission Reductions (Biofilters)	cumulative	Animal Units	-	-	-	-
Ammonia Emission Reductions (Lagoon Covers)	cumulative	Animal Units	-	-	-	-
TOTAL				49,116.92	3,452.05	9,180.99
Urban/Suburban Practices						
Stormwater Management						
Runoff Reduction Performance Standard	cumulative	Acres Treated	-	-	-	-
Storm Water Treatment Performance Standard	cumulative	Acres Treated	-	-	-	-
Wet Ponds & Wetlands	cumulative	Acres Treated	-	-	-	-
Floating Treatment Wetlands	cumulative	Acres Treated (Wet Pond)	-	-	-	-
Dry Ponds	cumulative	Acres Treated	-	-	-	-
Extended Dry Ponds	cumulative	Acres Treated	-	-	-	-
Infiltration Practices	cumulative	Acres Treated	-	-	-	-
Filtering Practices	cumulative	Acres Treated	-	-	-	-
BioRetention	cumulative	Acres Treated	-	-	-	-
BioSwale	cumulative	Acres Treated	-	-	-	-
Permeable Pavement	cumulative	Acres Treated	-	-	-	-
Vegetated Open Channel	cumulative	Acres Treated	-	-	-	-
Urban Filter Strips	cumulative	Acres Treated	-	-	-	-
Grey Infrastructure (IDDE)	annual	Acres Treated	-	-	-	-
Impervious Disconnection	cumulative	Acres Treated	-	-	-	-
Conservation Landscaping Practices	cumulative	Acres Treated	-	-	-	-
TOTAL				-	-	-
Erosion and Sediment Control	annual	Acres	0.00	-	-	-
Impervious Surface Reduction	cumulative	Acres	-	-	-	-
Urban Forest Buffers	cumulative	Acres in Buffers	5.17	54.22	6.12	1,103.01
Urban Tree Planting	cumulative	Acres	0.12	0.13	0.02	12.24
Urban Forest Planting	cumulative	Acres	6.92	55.26	5.68	576.37
Urban Nutrient Management	annual	Acres	8,415.85	7,077.04	358.86	290,462.09
Urban Stream Restoration	cumulative	Feet	-	-	-	-
Storm Drain Cleanout	annual	Lbs of Sediment	-	-	-	-
Street Sweeping	annual	Acres	-	-	-	-
Urban Shoreline Management	cumulative	Feet	-	-	-	-
Septic Connections	cumulative	Number of Systems	3.29	32.22	-	124.10
Septic Denitrification	cumulative	Number of Systems	204.43	1,294.57	-	-
Septic Pumping	annual	Number of Systems	-	-	-	-
Resource Practices						
Forest Harvesting Practices	annual	Acres	29.60	134.27	4.06	563.32
Dirt&Gravel Road E&S	cumulative	Feet	-	-	-	-
Non-Tidal Algal Flow-way	annual	Acres	-	-	-	-
Tidal Algal Flow-way	annual	Acres	-	-	-	-
TOTAL				8,647.70	374.73	292,841.14
GRAND TOTAL				**608,312.37**	**31,547.01**	**11,331,307.43**

Appendix B | Milestones and BMP Goals

The following annual milestones coincide with Maryland's NPS Management Program objectives presented in Chapter 2 of Maryland's 2021-2025 Nonpoint Source Management Plan (Plan). The Management Plan is intended to achieve and maintain water quality standards and to maximize water quality benefits among other broad strategic goals presented in Chapter 1 of the Plan. These milestones, in concert with the Plan's goals and objectives, address Key Component #1 of EPA's Nonpoint Source Program and Grants Guidelines entitled, "Key Components of an Effective State Nonpoint Source Management Program" (November 2012).

Each year, the following tables are included in Maryland's NPS Annual Report with updates to reflect annual progress. These results show what was accomplished in SFY2024 (unless otherwise noted).

Objective 3: Pollutants & Stressors	Lead	2024	Cumulative Progress
Annual Nitrogen Nonpoint Source Loads to Bay: (lbs/yr)	MDE	42,885,954 (SFY2023)	-
Nitrogen: For all watersheds with EPA-accepted plans, overall total annual reduction by NPS implementation completed during the past year: (Cumulative lbs/yr from plan start)	MDE	1,666,601 (SFY2023)	-
Annual Phosphorus Nonpoint Source Loads to Bay: (lbs/yr)	MDE	2,688,815 (SFY2023)	-
Phosphorus: For all watersheds with EPA-accepted plans, overall total annual reduction by NPS implementation completed during the past year: (Cumulative lbs/yr from plan start)	MDE	96,130 (SFY2023)	-

Sediment: 319-funded projects Estimated annual reductions in pounds of sediment to local water bodies (lbs/yr)	MDE	22,214,000 (SFY2023)	-
Sediment: For all watersheds with EPA-accepted plans, overall total annual reduction by NPS implementation completed during the past year: (Cumulative lbs/yr from plan start)	MDE	33,779,141 (SFY2023)	-
Bacteria: Annual Report on Monitoring Results for Maryland Beaches	MDE	https://mde.maryland.gov/programs/water/Beaches/Documents/2023_MD_Beach_Report_final.pdf	
Bacteria: Conduct Annual Meetings of County Beach Management Programs	MDE	Annual meetings conducted.	
Bacteria: Conduct annual Shoreline Field Surveys near Shellfish Waters to identify pollutant sources of concern (part of a 7-year cycle).	MDE	21 Routine Surveys; 24 Separate Aquaculture Surveys	96 Surveys
Bacteria: Conduct annual Sanitary Surveys of relevant data for all shellfish growing areas. These are reviews of all potential pollution sources in a shellfish growing area, which are informed by Shoreline Field Surveys.	MDE	49 Surveys/year	
Chloride: Development of a Statewide Implementation	MDE	Agreement with EPA Region 3 could not be reached on a 4b approach;	-

Strategy in the form of a 5S plan to address chloride impairments in a consistent manner across the State. This path was discussed with Region 3 staff, and MDE's ultimate goal is a 4b plan.		therefore, these chloride impairments remain in Category 5s. Maryland's salt/chloride reduction strategies are documented here and are available on MDE's winter salts web page.	
Chloride: Certify 150 individuals over the life of this 5-year NPS State Management Program Plan through the Annual Parking lots and Sidewalks Salt Application Management Training by MDE designee.	MDE	The Smart Salting pilot was a success. Twenty-one participants completed the entire training and were certified. Plans are underway to offer training again with UMD EFC in October-December 2024.	-
Chloride: Track and report the # of personnel trained through the Annual Road Salt Application Management Training by State Highway Administration.	MDE	143 People	409 People
Chloride: Update Maryland's 319 Program webpage to summarize Maryland's existing chloride mitigation activities, information about chloride pollution, and partnerships established within and outside of the State.	MDE	Updates ongoing; https://mde.maryland.gov/programs/water/319NonPointSource/Pages/411-on-Salt.aspx	
PCBs: Develop one new PCB TMDL over the life of this 5-year NPS State Management Program Plan.	MDE	Draft PCB TMDL for the Conowingo Pool and Lower Susquehanna River is currently undergoing review. MDE anticipates submitting the TMDL to EPA by Fall 2025.	TBD

Temperature: Update Maryland's 319 Program webpage to summarize state initiatives designed to reduce temperature. Project Summer 2022 for completion.	MDE	Prettyboy Reservoir Stream Temperature simulation was completed and we are currently designing management scenarios, calculating TMDL allocations, and continuing drafting the TMDL.	https://mde.maryland.gov/programs/water/TMDL/WaterQualityStandards/Pages/Protecting-Cold-Water-Resources-in-Maryland.aspx
Trash: Update Maryland's 319 Program webpage to summarize status of TMDLs designed to reduce trash. Project Summer 2022 for completion.	MDE	The work with Morgan State is ongoing and in FFY25, the analysis will be completed and a draft revised TMDL will be completed.	https://mde.maryland.gov/programs/water/TMDL/DataCenter/Pages/TMDLMapTrash.aspx

Objective 4: Pollutant Sources	Lead	2024	Cumulative Progress
Maintain Annual Cover Crop Implementation Acreage Levels	MDA	515,561 acres (SFY2023)	515,561 acres
Maintain Annual Nutrient Management Plan Acreage Levels	MDA	1,101,012 acres (SFY2023)	1,101,012 acres
Maintain Annual Soil Conservation and Water Quality Plan Acreage Levels	MDA	802,492 acres (SFY2023)	802,492 acres
Maintain Annual Manure Transported out of Chesapeake Bay watershed (tons)	MDA	Manure Transport out of the WS decreased to 16,609 tons in FY23	Manure Transport out of the WS increased to 40,900 tons
Maintain Annual Conservation Tillage (Inc. High Residue) Acreage Levels	MDA	Conservation Tillage levels were maintained in FY23 at 909,221 acres.	909,221 acres
Plant Riparian Forest Buffers (Acres/year; cumulative)	MDA	22,147 acres of buffer planted (SFY2023)	22,147 acres of buffer planted

Wetland Restoration (Acres/year)	MDA	229 acres created (SFY2023)	615 acres created
Phosphorus Management Tool – Maintain use of PMT for operations in the high-risk group, medium-risk group, and low-risk group. (# of operations utilizing the tool by risk group)	MDA	PMT is fully implemented with 20% of MD farm fields requiring use of the PMT at this time, which translates to roughly 200,000 acres of fields.	
Upgrade septic systems to nitrogen removal technology (systems/year; figures may vary from year to year due to edits to the BATMN database resulting from BAT units being replaced with sewer connection or conventional septic tanks, vacancy, catastrophe, error, etc.)	MDE	806 BAT upgrades	-
Stormwater retrofits of land without sufficient controls (cumulative pounds of nitrogen reduced/year). (May be refined in future Chesapeake Bay 2-Yr Milestones.)	MDE	https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/FAP-WPRP/2024%20Stormwater%20Financial%20Assurance%20Plan%20Annual%20Report%20_MSAR%20%23%2010954.docx.pdf	
Complete the redevelopment of the MS4 geodatabase that will aid MDE in the assessment of management programs and improve current Phase I MS4 stormwater data tracking, collection, and validation of BMPs:	MDE	Some jurisdictions have submitted in the revised format and we anticipate most jurisdictions will be submitting data in that format in CY 2025.	-

Online BMP Reporting Tool for Non-MS4 local governments:	MDE	Complete: a tool has been created that can be used for these jurisdictions.	
SMART Homeowner BMP Tracking Tool: Track number of BMPs	UMD	405 BMPs	1,584 BMPs
Online BMP Reporting Tools for Phase II MS4 and Non-MS4 local governments: Make the tool available to users.	MDE	No Progress	No Progress
Local Stormwater WLA Implementation Plans: Review Plans submitted as part of Phase I MS4 requirements. (Number of jurisdictions, which may include multiple plans for each jurisdiction) Anticipate salt plans in 2024.	MDE	2 TMDL SW-WLA Implementation Plans and 9 Countywide TMDL Implementation Plans across 10 jurisdictions.	-
Erosion and Sediment site "inspection compliance rate" conducted by MDE (Source: Annual Enforcement & Compliance Report)	MDE	Report not yet published.	https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Annual%20Report%20E%26SC%20Violations%202023%20MDE.pdf
Lawn-to-Woodland Program: Track and report the number of landowners assisted and acres forested through the Lawn-to-Woodland Program, which provides landowners with trees, tools and technical assistance for planting and maintaining a healthy tree canopy that will support a	DNR	The Lawn-to-Woodland program has not been funded in recent years, but by working with partners, such as Healthy Forests Healthy Waters and the Western MD Tree Planting Program, services that address tree planting opportunities have been implemented	https://dnr.maryland.gov/forests/Pages/tree-planting.aspx#:~:text=Lawn%20to%20Woodland%20helps%20Maryland,tree%20shelters%20by%20a%20contractor.

myriad of environmental, economic and recreational benefits.			
Maryland's 5 million trees by 2030 initiative (Report status of program and # of trees planted)	MDE	522,747 trees	992,989 trees (June 2024)
Sustainably manage forests on 38,000 acres (annually) by 2030 from baseline as part of Maryland's revised 2021 Greenhouse Gas Reduction Act (GGRA) plan goals.	DNR	41,066 acres	https://mde.maryland.gov/programs/Air/ClimateChange/Pages/Greenhouse-Gas-Emissions-Reduction-Act-(GGRA)-Plan.aspx
Coal Mining site "inspection coverage rate" conducted by MDE	MDE	Report not yet published.	-
Non-Coal Mining site "inspection coverage rate" conducted by MDE	MDE	Report not yet published.	-
Non-tidal wetlands and floodplains permit site "inspection coverage rate"	MDE	Report not yet published.	-
Tidal wetlands permit site "inspection coverage rate"	MDE	Report not yet published.	-

Objective 5: Types of Waterbodies	Lead	2024
Statewide Lakes and Reservoirs		
Lakes/Reservoirs: Triadelphia and Liberty chlorides/temperature monitoring Study (Trends analysis to help determine if we can see drops in salt levels, started in 2019)	MDE	Data is being compiled up to December 2024; MDE is discussioning internally the best analyses for this data.

Patuxent Reservoirs Annual Report of the Technical Advisory Committee	WSSC	2023 Annual Report
Central Maryland – Chesapeake Bay Drainage	Watersheds with EPA-accepted watershed plans that are eligible for 319(h) Grant implementation funding.	
Antietam Creek Watershed. Water quality goal is to reduce annual pollutant loads: 12,923 tons/yr sediment, approx. 3 million-billion E. coli MPN. (see the Washington County Soil Conservation District's 2012 watershed plan Tables 8, 10, 13, 18, and 19)		
Watershed plan milestones: Report progress in the 319 Annual Report.	WCSCD	MDE's NPS program has funded 16 projects in this watershed, the most of any watershed in MD
Assess Implementation Progress toward sediment and bacteria reduction watershed plan milestones and update plan if needed.		Review of revisions has stalled due to staff turnover. MDE will reevaluate once positions have been filled.
Update watershed implementation plan		Review of revisions has stalled due to staff turnover. MDE will reevaluate once positions have been filled.
Back River – Tidal Watershed. Water quality goal is to reduce annual nutrient loads: 6,498 lbs/yr nitrogen and 679 lbs/yr phosphorus. (see Baltimore County's 2010 watershed plan Table 3-2 and Appendix A-1)		
Watershed plan milestones: Report progress in the 319 Annual Report.	Baltimore County	No new progress
Assess action items progress: Stormwater retrofit and Stream restoration		No action for 2024
Back River – Upper Watershed. Water quality goal is to reduce annual nutrient loads: 48,189.6 lbs/yr nitrogen and 6,055.8 lbs/yr phosphorus. (see Baltimore County's 2008 watershed plan Table 3-2 and Appendix A Table A-2)		
Watershed plan milestones: Report progress in the 319 Annual Report.	Baltimore County	Baltimore County has started a stream restoration project of 4,790 LF of Stemmers Run, which will be partially funded by the 319(h) grant. Construction is set to begin in 2025.

Assess plan implementation progress, particularly: open space tree planting, impervious area removal on institutional land.		No action for 2024
Choptank River – Upper Watershed. Water quality goal is to reduce nutrient loads from 2002 levels by 39% for nitrogen (704,000 lbs/yr) and 28% for phosphorus (34,5000 lbs/yr). (see Caroline County's 2010 watershed plan, Table 11)		
Watershed plan milestones: Report progress in the 319 Annual Report.	Caroline County	BMP implementation has greatly expanded due in large part to the funding of a Technical Assistance Circuit Rider. We expect several more proposals from various locations within the Upper and Lower Choptank River watersheds, including Goldsboro, a community outside of St. Michaels, and Camp Mardela.
Assess BMP implementation progress and update plan if needed.		Another stormwater BMP project will be installed at Denton Elementary, which will heavily involve the teachers and students in the design and some of the installation. MDA's ag drainage management project will begin toward the end of 2024.
Greater Choptank Watershed Plan (Tuckahoe and Lower Choptank)		MDE submitted another draft of the WBP to EPA in 2024. Another revised draft will be submitted in 2025 to address additional comments.
Jonestown SW BMP installation		Phase I of the stormwater BMP/septic repair project was completed in summer 2024, as well as the installation of a grassed swale and some raingardens at the Jonestown Park. Phase II work will begin in 2025.
Technical Assistance Circuit Rider project		Funding for the Technical Assistance Circuit Rider will be extended through CY2027. This project has been highly successful with developing relationships with local residents, providing expertise with

		reviewing technical documents, and promoting this work amongst several different audiences.
Conococheague Creek Watershed		
Plan is being drafted and will come to MDE for review. MDE anticipates review in Spring 2022 and submission to EPA in late summer of 2022 for review. Milestones for implementation will be added upon acceptance.	Washington County	MDE continues to check in on a regular basis and is still waiting for revisions from the County.
Corsica River Watershed. Water quality goal is to continue meeting the Corsica TMDL for nitrogen and phosphorus.		
Watershed plan milestones: Conduct outreach to the owners of this plan to increase 319 project implantation and Report progress in the 319 Annual Report.	Centreville	No response to RFP for FFY24 funding
Assess implementation progress for BMP goals and update plan if needed.		Future projects are not expected. Frequency of monitoring was reduced this year to accommodate the growing need in other areas.
Gwynns Falls – Middle Watershed. Water quality goal for 2017 is to reduce annual nutrient loads: 35,350 lbs/yr nitrogen and 5,915 lbs/yr phosphorus. (see Baltimore County's 2014 watershed plan Table 3-24 and Appendix A Table A-2)		
Report implementation progress in the 319 Annual Report.	Baltimore County	No new 319 projects in this watershed.
Jones Falls – Lower Watershed. Water quality goal is to reduce annual pollutant loads: 23,146 lbs/yr nitrogen, 3,887 lbs/yr phosphorus, 204.9 tons/yr sediment. (see Baltimore County's 2008 watershed plan Table 5.4)		
Watershed plan milestones: Report progress in the 319 Annual Report.	Baltimore County	No new 319 projects in this watershed.

Monocacy River – Lower Watershed. Water quality goal is to reduce annual pollutant loads: 649,998 lbs/yr nitrogen, 68,952 lbs/yr phosphorus, 10,345 tons/yr sediment. (see Frederick County's 2008 watershed plan page 16 and Table "X" p34)		
Watershed plan milestones: Conduct outreach to the owners of this plan to increase 319 project implantation and Report progress in the 319 Annual Report.	Frederick County	The design of the SPSC system was funded and MDE expects for CWP to submit another proposal for construction. However, there was no response to the RFP for FFY24 funding. MDE will check in with CWP during the FFY25 RFP period.
Assess implementation progress and update plan if needed.		No new 319 projects in this watershed
Sassafras River Watershed. Water quality goal is to reduce annual pollutant loads: 462,225 lbs/yr nitrogen, 12,602 lb/yr phosphorus, 1,143		
tons/yr sediment. (see the Sassafras River Association's 2009 watershed plan Table 5.4)		MDA plans to submit a proposal to the FFY25 RFP, which would provide funding to implement ag drainage management BMPs. This recent increase in interest in §319 grant funding may lead to additional future projects.
<u>Central Maryland – Chesapeake Bay Drainage</u>	Plans not designed to seek 319(h) implementation funds.	
Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL.		
Evaluate 2025 progress for pollutant load reductions to be achieved for nonpoint sources of nitrogen, phosphorus, and sediment. Report Annually.	MDE	FY23 NPS annual progress: All nonpoint sources pollutant loads continue to decrease in Maryland due to BMP implementation. https://public.tableau.com/app/profile/olivia.devereux/viz/ProgressDataReview-2024/IntroductionandUpdates

Western Maryland – Casselman River and Youghiogheny River	Watersheds with EPA-accepted watershed plans that are eligible for 319(h) grant implementation funding.	
Casselman River Watershed Management Plan Water quality goal is to meet the pH water quality standard. (see MDE's 2011 watershed plan Chapter 3.2)		
Watershed plan milestones: Report progress in the 319 Annual Report, including, number/percentage of pH-impaired stream segments, NPS Program Success Stories and implementation progress.	MDE	No new projects are expected to be funded by the §319(h) grant in the near future due to the influx of BIL money into the Abandoned Mine Lands program.
Percentage of impaired stream segments remediated and meet the State water quality standard for pH.[46] [47]	MDE	50%
Report 303(d) stream segments that achieve pH criteria via Maryland's Integrated Report.	MDE	In text; complete
Cherry Creek Watershed Protection Plan Water quality goal to be determined when the plan is finalized.		
Plan completion anticipated in 2022. Potential milestones TBD.	MDE	Plan will not be submitted due to influx of BIL money into our Abandoned Mine Lands program (no projects to be funded by 319 grant in near future).
Upper Jennings Run Watershed Plan Water quality goal to be determined when the plan is finalized.		
Tentatively accepted pH mitigation Plan is being updated to include sediment. Report progress in the 319 Annual Report.	MDE	MDE will work with Allegany County if they want to update the WS Plan to include other sources of impairment. Sampling by MDE that is funded through the 319(h) grant will continue through 2025; however, the number of sites will be reduced to target only those sites that are tied to remediation efforts.
Coastal Region – Coastal Bays and Atlantic Ocean		

Coastal Bays Conservation and Management Plan Water quality goal to be determined when plans are finalized.		
Assawoman Bay is conditionally approved: Report progress in the 319 Annual Report.	MCBP	Construction of the Greys Creek project was set to begin in 2024 but was delayed. A no-cost extension was granted and construction should be done in 2025.
Next steps are to create plans for Assateague, Isle of Wight, Newport, and Sinepuxent Bays. Report progress on creation of these plans and incorporate updates to milestones for any new plans in updates to this NPS plan.	MCBP	MDE is gathering relevant data and information to formulate a draft of the Coastal Bays WBP.