2025 Assessment of the Chesapeake Bay Program partnership's progress toward the 2025 Water Quality Goal

Overview

The Chesapeake Bay Program (CBP) partnership set restoration goals of having all practices and controls in place by 2025 to achieve the nitrogen, phosphorus, and sediment reductions necessary to meet applicable water quality standards in the Bay, with 60 percent of pollutant reductions called for by 2017. As part of its oversight role in the partnership's accountability framework, EPA is providing an assessment of progress towards meeting the CBP partnership's interim water quality targets. Across the watershed, between 2009 and 2025, nitrogen loads were reduced 14.96 percent from 297.1 million pounds to 252.7, meeting 57 percent of the interim nitrogen target. Phosphorus loads were reduced 21.4 percent, from 16.8 million pounds to 12.8 million pounds, meeting 90 percent of the phosphorus interim target. Sediment loads were reduced by 7 percent, from 18,830 million lbs to 17,555 million lbs, achieving 100 percent of the interim target.

The Chesapeake Bay watershed jurisdictions, the Conowingo Watershed Implementation Plan (CWIP) Steering Committee, and federal agencies have made considerable progress and contributed to significant reductions in pollutant loads across source sectors (agriculture, urban/suburban or "developed", wastewater) since the Chesapeake Bay Total Maximum Daily Load (Bay TMDL) was established in 2010 and the midpoint assessment occurred in 2017. Although interim water quality targets have not yet been achieved for nitrogen and phosphorus, the Chesapeake Bay Program partnership continues to invest heavily in restoring the Chesapeake Bay and its local waters and streams. Successes in restoring the Chesapeake Bay extend beyond water quality improvements and include investments in the people who support implementation, new and innovative programs to accelerate implementation, historic levels of funding dedicated to restoration, and advancements in the science and tools to understand the whole Bay ecosystem. This assessment recognizes the significant progress in reducing nitrogen, phosphorus, and sediment loads to date, the continued challenges in meeting water quality targets, and the road ahead.

What's Changed in the Partnership Since 2017?

The seven jurisdictions committed to implement the Bay TMDL in three phases—developing Phase I and Phase II Watershed Implementation Plans (WIPs) in 2010 and 2012 and developing their Phase III WIPs in 2019. The partnership completed a midpoint assessment in 2017 to measure the Chesapeake Bay jurisdictions' progress towards achieving 60 percent of the necessary pollutant reductions. As part of that midpoint assessment of progress, the CBP partnership reviewed the latest science, data, modeling, and decision support tools to inform development of the jurisdictions' Phase III WIPs, which outlined the actions jurisdictions intended to implement between 2018 and 2025 to meet the water quality targets. In addition, a separate set of targets and a WIP was developed by the Conowingo WIP Steering Committee to address the additional loads entering the Chesapeake Bay as a result of the Conowingo dam achieving dynamic equilibrium – i.e., no longer trapping sediment and nutrients.

At the 2022 Executive Council meeting, the partnership agreed to set a path forward to outline the steps to integrate new science, restoration and conservation strategies and emerging issues, which culminated in a revised Chesapeake Bay Watershed Agreement (Watershed Agreement) in 2025. The revised Watershed Agreement reaffirms the partnership's commitment to meet the water quality targets. In addition, the Watershed Agreement reflects the CBP partnership's commitment to develop new water quality targets and new or revised WIPs by 2030 that will identify the levels of reductions needed by 2040.

Progress Assessment

On an annual basis, the watershed jurisdictions report the best management practices (BMPs) that have been implemented to decrease nutrient and sediment loads along with the pollutant load reductions from wastewater treatment plants. EPA used the partnership's Phase 6 suite of modeling tools to assess this information, along with data on land use, fertilizer and manure use, and river flow to estimate the pollutant load reductions achieved between 2009 and 2025.

According to these data, the CBP partnership met its watershed-wide interim target for sediment but did not meet its watershed-wide interim targets for nitrogen or phosphorus. Estimates showed the following jurisdiction-level reductions between 2009 and 2025.

Percent Completion of the Nitrogen, Phosphorous, Sediment Goals

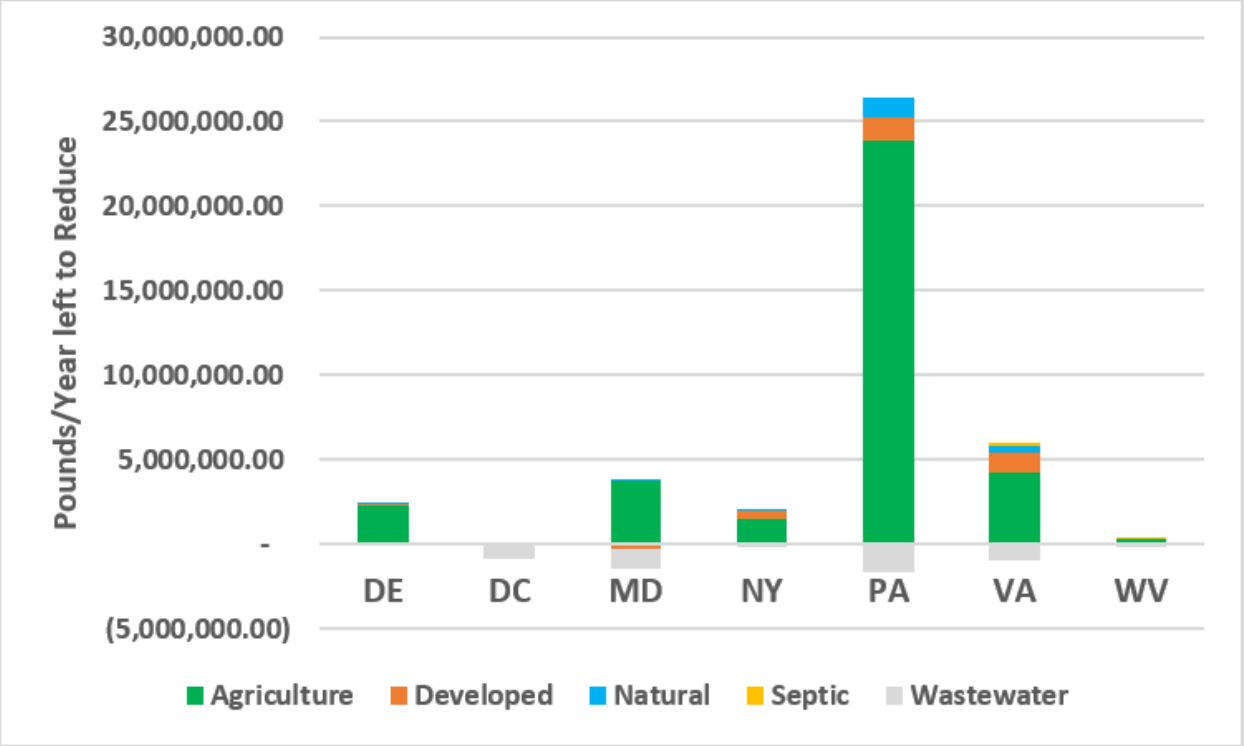
Jurisdiction	*% Completion of Nitrogen Target*	*% Completion of Phosphorus Target*	*% Completion of Sediment Target*
Delaware	0%[1]	99%	100%
District of Columbia	100%	100%	100%
Maryland	99%	100%	100%
New York	62%	74%	52%
Pennsylvania	15%	47%	48%
Virginia	84%	89%	100%
West Virginia	100%	100%	100%
Conowingo[2]	3%	1%	0%
Watershed	**57%**	**90%**	**100%**

[1] The value of 0% indicates that growth outpaces current implementation efforts, leading to an overall increase in loads.

[2] The CBP Partnership learned in 2021 that the Conowingo Reservoir had reached trapping capacity, so additional targets were applied for these additional reductions required for water quality standards. By 2025, it was determined that practices would be in place to help address 25% of the Conowingo reductions across the three jurisdictions, MD, NY, and PA. The value of 0% indicates that percent completion of a target from the implementation of BMPs was less than 0.5%.

The following graphic provides a visual for the remaining amount of nitrogen reductions needed to meet the Phase III WIPs by jurisdiction. This helps contextualize the level of effort needed by each jurisdiction and the source sector where the expected reductions will occur. The majority of the remaining nitrogen reductions are expected to come from the agriculture sector based on the information provided by each jurisdiction in its Phase III WIP.

Nitrogen Reductions Needed to achieve the Phase III WIP Commitments, based on 2025 loads[3]



[3] Negative numbers indicate that sector progress has exceeded the Phase III WIP sector reduction commitment.

The next graphic is based on the progress made by each jurisdiction in the three main source sectors-- agriculture, developed (urban and suburban stormwater), and wastewater-- as identified in each jurisdiction's Phase III WIP. This graphic is specific to progress in meeting the jurisdictions' Phase III WIP commitments. As noted in other graphics, a value of 0% indicates that increased loads due to growth outpaced implementation efforts leading to an overall increase in loads.

Percent of Source Sector Commitments Achieved Based on the Jurisdictions' Phase III WIP Commitments

Legend:

	100% progress achieved
	65-99% progress achieved
	40-64% progress achieved
	<40% progress achieved
N/A	Data Not Available

	Agriculture			Developed			Wastewater		
	N	P	S	N	P	S	N	P	S
Delaware	0%	37%	98%	0%	100%	100%	100%	100%	100%
District of Columbia	N/A	N/A	N/A	100%	100%	100%	100%	100%	100%
Maryland	34%	43%	37%	100%	100%	100%	100%	100%	100%
New York	27%	16%	100%	0%	20%	2%	100%	100%	100%
Pennsylvania	0%	15%	48%	0%	43%	36%	100%	100%	65%
Virginia	42%	51%	78%	0%	100%	0%	100%	97%	100%
West Virginia	43%	71%	85%	0%	24%	0%	100%	100%	100%

Successes from 2017 through 2025

Across the Chesapeake Bay watershed, partners have made meaningful progress in reducing nutrient and sediment loads, driven by sustained investments in people (i.e., technical support, workforce development), programs, and on the ground conservation efforts. Between 2009 and 2017, the majority of nutrient reductions were achieved through point sources from major upgrades to wastewater treatment facilities. Reductions in the wastewater sector accounted for 150% of nitrogen reductions, as there was growth in nitrogen loads in other sectors, and 68% of phosphorus reductions. Between 2017-2025,

half of nitrogen reductions were achieved through reductions from nonpoint sources and the other half from point sources. The agriculture sector accounted for 49% of the nitrogen reductions from nonpoint sources which is a significant shift from the midpoint assessment. Partners have taken strategic steps to strengthen programs and drive innovation to increase progress in reducing nutrients and sediment across sectors.

- **Delaware** targeted investments into agriculture BMP implementation, including nutrient management, cover crops, and tillage. Delaware also updated its nutrient management law to require commercial nutrient handler certification for applications of nitrogen and phosphorus on 0.25 acres or more.
- **The District** made significant investments in the Blue Plains Advanced Wastewater Treatment Facility and developed a storymap that is updated annually with accomplishments in meeting the District's Municipal Separate Storm Sewer System (MS4) commitments.
- **Maryland** made major upgrades to wastewater treatment and enhanced nutrient removal technology. Maryland strengthened agricultural conservation assistance capacity, which contributed to record cover crop enrollments, development of healthy soils and buffer programs, and reverification of over 30,000 BMPs.
- **New York** invested resources for implementation, capacity building, and technical support for agriculture BMP implementation, riparian forest buffers, stream corridor rehabilitation, and wetland restoration. New York works closely with the Upper Susquehanna Coalition to further its WIP and protect and improve local water quality.
- **Pennsylvania** is focused locally, which led to streams being removed from Pennsylvania's impaired waters list (e.g. Turtle Creek, Upper Conestoga). Focusing locally through its Countywide Action Planning process has led Pennsylvania to be able to document real improvements in local water quality.
- **Virginia** made record investments in the Virginia Agricultural Cost Share (VACS) program in the Chesapeake Bay watershed. VACS was allocated $223 million in cost-share funding for FY 2026, the highest level of investment in the program's history. The funding is a $16 million increase over FY 2025 and marks the fourth straight year of record funding.
- **West Virginia** made significant improvements in its wastewater infrastructure and in the agriculture sector by making significant strides toward its riparian forest buffer goals. The West Virginia Department of Agriculture also maintained over 90,000

acres of agricultural land in nutrient management, helping producers achieve optimum yields without overapplying nutrients, thereby reducing nutrient and sediment losses to its waterways.

- **Conowingo WIP Steering Committee** is targeting pay-for-performance projects to achieve its load reduction targets.

Challenges

Progress toward restoring Chesapeake Bay water quality is increasingly challenged by rising nutrient and sediment loads driven by agricultural intensification, population growth, and development, as well as changing environmental conditions. With earlier, lower effort reductions largely maximized, partners now face more complex and resource intensive work, particularly in the agricultural sector where implementation and verification demand remains high. These challenges are further amplified by communications hurdles stemming from disparities between modeled and monitored data and the lag time between BMP installation and measurable water quality improvements.

Restoring Chesapeake Bay water quality faces persistent and evolving challenges:

- **Increasing Loads Due to Growth:** Growth in loads due to increased population and development, intensified agricultural production, loss of Conowingo Dam trapping capacity, and changing environmental conditions are making it difficult to meet targets and maintain progress.
- **Agricultural Focus:** Most remaining reductions are expected to come from agriculture, which is cost-effective but challenging to preserve and implement at scale. Declining acreage, economic pressures, and competing land uses are making it harder to keep working lands productive and rural.
- **Complexity and Effort:** Early, easier opportunities have been maximized. Further reductions require more complex, high-effort actions in a changing landscape.
- **Lag time between implementation and Water Quality Improvements:** There is a delay between BMP implementation and observable water quality improvements, which can make it challenging to maintain motivation and demonstrate progress.
- **Resource-Intensive Verification:** Verifying existing BMPs is labor-intensive but critical for ensuring that practices are implemented and proper credit is received. This is prompting efforts to explore new technologies and systems to streamline verification.

- **Data and Modeling Disparities**: Discrepancies between modeled and real-world data create communication challenges and distrust in decisions based on modeled results.
- **Operation and Maintenance**: As more BMPs are implemented and constructed and wastewater plants upgraded, the level of effort increases to keep these practices in optimal working condition. Efforts to improve the operation and maintenance of BMPs and wastewater treatment facilities should be explored.

Looking Ahead

The Chesapeake Bay Program partnership remains committed to working collaboratively to achieve water quality targets and advance restoration goals throughout the watershed. Looking ahead, the CBP partnership will focus on developing the next set of water quality targets by incorporating updated science, modeling, monitoring information and assessments of future environmental conditions. This work will include refining and expanding decision support tools, evaluating how tiered implementation and targeted approaches can be applied to maximize benefits for shallow water habitats and living resources, and identifying opportunities to integrate complementary habitat and water quality actions.

The partnership is examining new ways to streamline reporting and tracking to reduce administrative burdens on jurisdictional partners, ensure that restoration credit is accurately captured, and improve accuracy of its models. It will also continue to explore innovative approaches to accelerate progress in addressing nonpoint source loads across both the agricultural and developed landscapes.

While there is still much work needed to fully achieve water quality and restoration goals, the collective effort and commitment of CBP partners demonstrate the substantial progress made since 2017. These accomplishments reinforce that meaningful progress is possible when partners work together with a shared vision for a healthier Chesapeake Bay.