

EPA EVALUATION OF DELAWARE'S 2020-2021 and 2022-2023 MILESTONES

Executive Summary

The Chesapeake Bay Program (CBP) partnership established the goal to have all practices and controls in place by 2025 that were necessary to meet applicable water quality standards in the Chesapeake Bay and its tidal tributaries ("2025 Goal"). The seven jurisdictions (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) in the CBP partnership agreed to develop and implement a framework for holding each partner accountable for reducing nitrogen, phosphorus, and sediment loads to meet water quality standards in the Chesapeake Bay (Bay) and its tidal tributaries. The U.S. Environmental Protection Agency (EPA) is providing this evaluation of Delaware's 2020-2021 and 2022-2023 milestones to the CBP partnership and the public in accordance with its oversight role and responsibility under the CBP partnership's accountability framework.

In that role, EPA has evaluated Delaware's progress toward attaining its portion of the 2025 Goal. This evaluation includes an assessment of progress toward attaining the nutrient and sediment goals at the state and state-basin level and progress toward meeting sector-specific programmatic commitments for the 2020-2021 milestone period. This evaluation also provides an assessment of sector-specific programmatic and numeric commitments (e.g., Best Management Practices (BMP) or BMP implementation targets) for the 2022-2023 milestone period and the status of the relevant water quality monitoring trends.

In reviewing Delaware's final programmatic progress for the 2020-2021 milestones, the 2021 numeric progress, and the final 2022-2023 milestones, EPA identified sector-by-sector strengths as well as areas for enhancement. According to the data provided by Delaware for the 2021 progress run, Delaware did not achieve its statewide 2021 targets for nitrogen, phosphorus, and sediment. EPA stands ready to assist Delaware with implementing its two-year milestone commitments.

Some notable strengths identified in this evaluation of Delaware's 2020-2021 milestones and the final 2022-2023 milestones include:

- Committed to restore or verify a specific number of practices for each of the following urban categories during the milestone period: stream restoration, conservation landscaping, stormwater treatment, runoff reduction, urban tree planting, street sweeping, and urban nutrient management.
- Committed to reissuing the Seaford permit and terminating the Bridgeville permit.
- Commits to builds on citizen engagement workshops and commits to developing and incorporating specific diversity and environmental justice goals.

Some key areas that EPA expects Delaware to address in the final 2022-2023 milestone period include:

- Identify the programs that will help Delaware achieve the numeric targets for the 13 priority BMPs Delaware identified in its Phase III Watershed Implementation Plan (WIP). Delaware

should consider including language linking to specific BMP targets in a larger set of programmatic milestones.

- Provide a specific timeframe for reissuing Concentrated Animal Feeding Operation (CAFO) General Permit for Large, Medium, & Designated Poultry Operations with No-Land Application of Manure (GP1) and issuing CAFO General Permit for Large, Medium, & Designated Non-Poultry Operations (GP3).
- Provide a more specific timeframe for reissuance of expired Phase II Municipal Separate Storm Sewer Systems (MS4) permits and the industrial general permit.

Detailed Evaluation of Overall Load Reductions and Source Sectors

Load Reduction Review

When evaluating Delaware’s 2020-2021 milestone implementation, EPA simulated nutrient and sediment loads using the Chesapeake Assessment Scenario Tool 2019 (CAST-19)¹ and wastewater discharge data reported by Delaware, and compared those simulated loads to Delaware’s statewide and state-basin (Eastern Shore) Phase III WIP planning targets.

According to the data provided by Delaware for the 2021 progress run², Delaware did not achieve its statewide 2021 targets for nitrogen, phosphorus, and sediment.

Table 1. Loads and Targets for Delaware based on CAST-19 and reported wastewater data.

Pollutant	2009 Progress Loads (M lbs/year)	2021 Progress Loads (M lbs/year)	2025 Target (M lbs/year)
Nitrogen	6.85	6.39	4.55
Phosphorus	0.132	0.120	0.108
Sediment	50.3	35.4	26.7

Delaware developed specific BMP implementation targets for the 2020-2021 and 2022-2023 milestone period for those practices identified in Delaware’s Phase III WIP that account for the majority of the nitrogen reductions. Table 2 provides a summary of Delaware’s 2021 progress compared to the 2009 baseline and the 2025 targets, as well as the 2022-2023 commitments, for these priority BMPs.

¹ CAST-19 is part of the Phase 6.0 suite of modeling tools for the Chesapeake Bay.

² Each year, jurisdictions in the CBP partnership report on the BMPs installed, tracked and verified and the pollutant load reductions from wastewater treatment plants. Using the Chesapeake Assessment Scenario Tool, this information (or “annual progress runs”) provides an estimate of how much nitrogen, phosphorus and sediment pollution has been reduced.

Table 2. Progress toward Targets for Delaware's priority BMPs (those that account for the majority of the nitrogen reductions).

BMP³	2009 Progress	2021 Progress	2022-2023 Milestone Target	2025 WIP Target
Nutrient Application Management Core Nitrogen (acres)	34,669	134,958	132,000	130,936
Nutrient Application Management Rate Nitrogen (acres)	None reported ⁴	None reported	80,000	92,426
Nutrient Application Management Timing Nitrogen (acres)	None reported	None reported	80,000	92,426
Cover Crop (acres)	32,717	132,333	142,508	109,360
Wetland Restoration (acres)	3,187	4,754	1,380	14,173
Grass Buffers (acres in buffers)	2,430	4,819	4,100	13,021
Soil and Water Conservation Plan (acres)	69,781	69,570	None identified	164,916
Livestock + Poultry Waste Management Systems (animal units)	629,286	958,628	884,176	1,091,906
Manure Transport Out of Area (dry tons)	14,200	14,282	72,000	74,080

The summary progress from the CBP partnership's modeling tools for 2009 and 2021 incorporate BMP credit duration. The CBP partnership decided to remove reported BMPs from the model simulation at the end of their established lifespans unless verified by the state as inspected and continuing to function as designed. Delaware is expected to provide programmatic

³ BMP levels are units reported or planned by the jurisdiction. The levels are calculated using the Phase 6.0 suite of modeling tools and include everything established or installed, reported, and functioning through the particular year, e.g., through 2009, or through 2021, etc., not just new reported implementation, unless otherwise noted.

⁴ CBP partnership modeling tools evolve based on CBP partnership decisions. As a result, some BMPs have "none reported" listed since those particular BMP names were not available for reporting. These practices were often included in another BMP category before the refinement to be more specific in the naming convention.

milestones to support these BMP implementation targets. In the sector-specific sections below, EPA provides its evaluation of these programmatic milestones and the connection to increased implementation.

Looking Forward for Future Reviews of Progress

The CBP partnership is just a few years away from the 2025 date that has been agreed upon for several of the goals and outcomes under the [2014 Chesapeake Bay Watershed Agreement](#), including the 2025 Goal. Given the number of changing conditions (e.g., human and animal population growth, 2025 and 2035 climate impacts, model updates) that have and will continue to impact progress and the level of effort towards meeting these goals, it is critical to begin planning for the future.

Source Sector Review

Agriculture

Delaware is predominantly relying on agriculture BMP implementation to meet its 2025 targets based on its Phase III WIP. Delaware continues to make incremental progress toward its goals however, the current pace of implementation is not on track to meet its overall nutrient and sediment targets. EPA expects Delaware to accelerate BMP implementation in the agricultural sector.

2020-2021 Milestone Achievements

- Exceeded its target to implement 74,738 acres annually of cover crops within this milestone period.
- The Sussex Conservation District (SCD) implemented a shallow water pond and riparian buffer in the Broad Creek Watershed.
- Delaware Department of Natural Resources and Environmental Control (DNREC) completed analysis of tax ditch segments to be prioritized for BMP implementation.
- Delaware Department of Agriculture (DDA) secured an increase of \$2.9 million in state funding to promote planting of cover crops.

2020-2021 Milestones Missed

- Did not meet its milestone of DDA employing a full-time employee tasked with CAFO inspections, did not increase CAFO inspection numbers over the milestone period, and missed several related programmatic milestones due to staffing challenges.
- Did not issue any CAFO permit coverage during the milestone period. As a result, Delaware did not achieve its milestone of bringing the percentage of permitted CAFOs to 50 percent of known universe by processing 75 permits in 2020. Delaware also did not meet its milestone of processing an additional 75 permits in 2021.
- Did not meet its milestone of inspecting each permitted farm at least once every five years, with a goal to meet or exceed 20 percent of permitted facilities inspected annually, in addition to inspections of new or problem facilities. This milestone was also missed in the 2018-2019 milestone period.
- Did not renew the CAFO General Permit for Large, Medium, & Designated Poultry Operations with No-Land Application of Manure (GP1).

- Did not issue the CAFO General Permit for Large, Medium, & Designated Non-Poultry Operations (GP3).
- Proposed to implement 164,916 acres of Soil Conservation and Water Quality Plans annually but did not hit that target.
- Proposed to implement 132,000 acres covered by Nutrient Management Plans (NMP) annually but did not identify how many were developed during the milestone period.

2022-2023 Milestone Strengths

- Commits to carry programmatic milestones missed or delayed during the 2020-2021 period through to 2022-2023 to maintain accountability and to continue to support WIP implementation.
- Commits to develop a best practices guidebook for tax ditch officers that includes an explicit link to the numeric target of 600 acres of grass buffers and 10 acres of wetland enhancement projects. This provides a clear connection between programmatic milestones and a numeric BMP target. This detail could be expanded to more milestones for the agricultural sector.

Key Areas to Address in the 2022-2023 Milestone Period

- Identify the programs that will help Delaware achieve the numeric targets for the 13 priority BMPs Delaware identified in its Phase III WIP. Delaware should consider including language linking to specific BMP targets in a larger set of programmatic milestones.
- Delaware proposes to “Provide funding to assist in relocating a minimum of 4,500 tons of manure annually.” Please identify the total funding needed to relocate this amount of manure and the source of this funding.
- Delaware proposes “Annual funding to support implementation of cover crops through cover crop cost share programs in-part funded through the CBIG grant.” Please identify the amount of annual funding that Delaware is proposing for this milestone period and the source of the funding.
- Increase its CAFO permit issuance numbers. Delaware did not register all of the submitted CAFO permit applications under CAFO GP1 (issued in 2016), and to date Delaware has not registered any CAFOs under CAFO General Permit for Large, Medium & Designated Poultry Operations with the Land Application of Manure (GP2) (issued in 2019).
- Delaware proposes to “Bring percentage of issued CAFO GP2 to 50 percent.” Please identify the total number of Notices of Intent (NOI) that Delaware has received for GP2 and the number of CAFOs that need to be permitted to achieve Delaware’s goal of 50 percent.
- Provide a more specific timeframe for reissuing CAFO GP1 than “2022-2023”.
- Provide a more specific timeframe for issuing CAFO GP3 than “2022-2023”.
- Increase its CAFO inspection numbers to achieve the annual inspection goal of 20 percent. Delaware only conducted 1 CAFO inspection in FY20 and FY21.
- Identify the number of farms that developed a whole-farm conservation plan in 2020-2021 that is the starting point for the 2022-2023 goal of 100 whole-farm plans. Please update the timeframe for this programmatic milestone, which still reads 2020-2021.

Urban/Suburban Stormwater

Delaware is expecting additional nutrient reductions from the stormwater sector by 2025 based on its Phase III WIP. EPA expects Delaware to accelerate BMP implementation in the urban/suburban stormwater sector.

2020-2021 Milestone Achievements

- Issued a stand-alone construction stormwater general permit and revised regulations appropriately to allow for its use.
- Completed the implementation of a living shoreline project in Riverview Park on the Nanticoke River.
- Completed a stormwater infrastructure inventory with accompanying mapping for the City of Seaford along with identification of stormwater retrofit opportunities.
- Increased the number of certified applicators under the Livable Lawns program to six statewide and increased the acreage enrolled in the Livable Lawns program by 10 percent.
- Planted 1,500 trees in the Nanticoke watershed.
- Completed the development of an on-line, on-demand Contractor Training certification program.

2020-2021 Milestones Missed

- Did not issue the Phase II Municipal Separate Storm Sewer Systems (MS4) general permits. However, the draft permits were reviewed and accepted by EPA and published for public notice and comment. Due to comments received and changes made as a result of public comments, the permits will be published for a second round of public notice and comment and resubmitted to EPA for review. This milestone was carried over into 2022-2023.
- Did not issue the industrial stormwater general permit. This draft permit was reviewed and accepted by EPA and DNREC intends to publish it for public notice and comment in 2022. This milestone was carried over into 2022-2023.
- Did not reissue the New Castle County Phase I MS4 permit. This milestone was carried over into 2022-2023.

2022-2023 Milestone Strengths

- Commits to conduct public outreach for the upcoming reissuance of the industrial stormwater general permit.
- Commits to restore or verify a specific number of practices for each of the following urban categories during the milestone period: stream restoration, conservation landscaping, stormwater treatment, runoff reduction, urban tree planting, street sweeping, and urban nutrient management.
- Commits to continue to evaluate, develop, and offer online training programs to be available 365 days/year to enhance compliance assurance for Contractor Certifications.
- The Nanticoke Watershed Alliance commits to host a minimum of two BMP workshops targeting homeowners and homeowners' associations (HOAs).
- The Sussex Conservation District will work with regulated communities and entities in Sussex County to implement the requirements of the MS4 permit once it is reissued.

- Commits to work with U.S. Fish and Wildlife Service and Delaware Department of Transportation on a pilot project to replace culverts and improve fish habitat in the Choptank watershed.
- Commits to work with Sussex County to establish a tracking and reporting mechanism, pending the approval of the riparian buffer ordinance for new subdivisions.
- Commits to increase the number of certified applicators and acreage enrolled in the Livable Lawns program.

Key Areas to Address in the 2022-2023 Milestone Period

- Provide a more specific timeframe for reissuance of expired MS4 permits and the industrial stormwater general permit since these milestones are carried over from the previous milestone cycle.

Wastewater Treatment Plants and Onsite Systems

2020-2021 Milestone Achievements

- Issued the Invista permit in 2021.
- Transferred Bridgeville's wastewater to Seaford in 2021

2020-2021 Milestones Missed

- The Seaford permit was not reissued as planned for May 2021.

2022-2023 Milestone Strengths

- Commits to reissue the Seaford permit and terminate the Bridgeville permit.

Key Areas to Address in the 2022-2023 Milestone Period

- Reissue the Seaford permit. DNREC should timely address issues that arise during permit development to ensure this milestone commitment is met.
- Terminate the Bridgeville permit in 2022 since it has been a year since Bridgeville's wastewater was diverted to Seaford. DNREC is waiting for the demolition to be completed so they can inspect the site.
- Consider adjusting the programmatic milestone for the Delaware Environmental Navigator (DEN) to include interim steps that will occur in 2022-23 that may improve tracking and reporting prior to 2025.

Growth, Offsets, and Trading

2020-2021 Milestone Achievements

- Assessed nutrient loads from the urban sector by working with conservation partners, through Delaware's Livable Lawns Program.

2020-2021 Milestones Missed

- None.

2022-2023 Milestone Strengths

- Develops its implementation scenarios on 2025 forecasted growth conditions, per the CBP partnership decision, with assumed growth directed towards areas zoned for growth or with the necessary infrastructure and capacity to support growth.
- DNREC reports that Sussex County introduced a draft Buffer Ordinance requiring riparian buffers in new residential subdivisions. Pending the approval of the ordinance, DNREC will work with the county to establish tracking and reporting mechanism as necessary. This effort supports WIP Section 6: Accounting for Growth.

Key Areas to Address in the 2022-2023 Milestone Period

- Continue to work with EPA in offsetting any new or increased nutrient and sediment loads in Delaware's portion of the Chesapeake Bay watershed.

Climate

In 2020, the Principals' Staff Committee (PSC) issued a directive that by 2022 all jurisdictions would account for the additional nutrient pollutant loads due to 2025 climate change conditions in a Phase III WIP addendum, or in the two-year milestones, if they had not already done so in their Phase III WIP. Delaware addressed the 2025 climate change loads through its 2019 Phase III WIP. Therefore, this evaluation reflects the work and effort that Delaware put toward addressing the 2025 climate loads understanding that expectations related to 2025 climate change conditions could change as a result of future PSC decisions and future model updates.

At its August 29, 2022 meeting, the PSC decided to address "unaccounted additional loads" after 2025. The CBP partnership will define "unaccounted additional loads" and will determine how to address them. This decision came after Delaware completed the work and effort noted in this section to address the 2025 climate loads.

2022-2023 Milestone Strengths

- Met the 2020 PSC directive to address the additional nutrient loads due to 2025 climate change conditions by including a CAST scenario in its 2019 Phase III WIP that demonstrates an ability to account for the additional nutrient pollutant loads.
- Includes narrative in its 2022-2023 two-year milestones to describe the current understanding of the 2035 climate change conditions.
- Includes programmatic milestones related to the "Tree for Every Delawarean Initiative" and Delaware's 2021 Climate Action Plan that establish preliminary strategies to account for nutrient loads associated with 2025 climate change conditions.

Key Areas to Address in the 2022-2023 Milestone Period

- None.

Other (BMP verification, Segment-shed Goals for the Tidal Jurisdictions, Local Engagement, etc.)

2020-2021 Milestone Achievements

- Hosted citizen engagement workshops in 2021 to incorporate diversity and environmental justice goals.

2020-2021 Milestones Missed

- None.

2022-2023 Milestone Strengths

- Commits to develop and incorporate diversity and environmental justice goals into projects and programs.
- Commits to increase conservation practice outreach using funding from the United States Forest Service including specific targets for afforestation BMPs through increased landowner engagement.

Key Areas to Address in the 2022-2023 Milestone Period

- Consider including specific BMP implementation targets/estimates in milestones related to all outreach efforts including SCD promotional videos and advertising and farmer workshops and Nanticoke Watershed Alliance native tree planting training for land.

Potential Federal Actions and Assistance

As noted in its Phase III WIP evaluations, EPA remains prepared to assist each of the seven watershed jurisdictions in implementing the 2022-2023 milestones. EPA will work with each jurisdiction to develop a specific oversight and assistance activities to provide prioritized support for implementation efforts, including funding, technical assistance and analysis, training, and regulatory reviews.

EPA plans to continue to commit staff, contractual and funding resources to support the seven watershed jurisdictions in implementing the 2022-2023 milestones and future two-year milestones. This support includes evaluation of the most-effective practices and locations, annual funding assistance to address priority implementation needs, evaluation of Bay jurisdictions' implementation capacity under various staffing, funding, regulatory and programmatic scenarios, local planning outreach, legislative and regulatory gap analysis, and monitoring trend analyses.

In addition, EPA will continue to work with federal partners to provide leadership and coordinate with Bay jurisdictions on WIP and two-year milestone implementation to reduce pollution from federal lands. EPA will continue its commitment to track annual progress of the Bay jurisdictions and make those results available to the partnership and the public. [See: <https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay> and <https://www.chesapeakeprogress.com/>]

Monitoring Trends Summary

The CBP partnership's Chesapeake Bay Program Nontidal Water Quality Monitoring Network, supported by EPA, the U.S. Geological Survey (USGS), the Susquehanna River Basin Commission (SRBC), and the Bay jurisdictions, generates water quality monitoring data in

freshwater rivers and streams throughout the watershed that is analyzed by USGS for nutrient and sediment loads and trends. The most recent USGS results (www.usgs.gov/CB-wq-loads-trends) over the long-term period 1985-2020 and short term 2009-2020 for most stations were made available in September 2020. New nutrient and suspended-sediment load and trend results became available for the nine River Input Monitoring (RIM) stations for the long-term period 1985-2020 and short term 2011-2020.

While identifying drivers behind individual trends is often complex, the monitoring results are worthy of Delaware's consideration as it develops the programs and BMPs planned for the next two years. EPA's initial summary of how the monitoring results in Delaware's watersheds can potentially inform planning are below.

- Of the three monitored stations to which Delaware's watershed contributes, all are degrading for both nitrogen and phosphorus. These watersheds are all high-loading areas within the Chesapeake Bay watershed and implementing efforts in these high loading areas can potentially yield the greatest nutrient reduction benefits.
- All of Delaware's monitored watersheds are agricultural. While more information would be needed to determine what is driving individual trends, agricultural areas should be a continued focus for both nitrogen and phosphorus.
- Additional exploration of these trends can help elucidate what may be sources and drivers, which can in turn help inform adaptation of programs, policies, or practices.
- While groundwater can contribute to a delayed response in nitrogen levels, phosphorus loads are most associated with overland runoff. The degrading phosphorus trends at these monitored stations suggest that the Eastern Shore continues to be important places to focus implementation.