

Evaluation of Pennsylvania’s Final Amended Phase III Watershed Implementation Plan (WIP)

Background

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 in the CBP partnership (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) agreed to develop Watershed Implementation Plans (WIPs), in three phases, to provide a framework for meeting that goal. In 2010, the U.S. Environmental Protection Agency (EPA) worked with the CBP partnership to establish the Chesapeake Bay TMDL (Bay TMDL)¹ based primarily on the states’ final Phase I WIPs. The CBP partnership agreed that each Bay jurisdiction would develop Phase II and Phase III WIPs using an adaptable approach for achieving the pollutant reductions and programmatic commitments in each Phase to meet its portion of the 2025 Goal.

The CBP partnership agreed that EPA should help provide accountability by assessing (1) whether each jurisdiction’s WIP sets out sufficient commitments to meet the 2025 goals, and (2) whether there is an adequate level of confidence that the jurisdiction will achieve those specific commitments. While EPA does not approve or disapprove a WIP, EPA provides the assessment for the benefit of the public and the CBP partnership and, as appropriate, may provide additional recommendations for strengthening the WIP or its components.²

Executive Summary

Pennsylvania’s 2019 Phase III WIP fell 9.8 million pounds short of achieving its nitrogen target. In 2020, Pennsylvania committed to amending its Phase III WIP by the end of calendar year 2021 to address its nitrogen gap. Pennsylvania submitted its draft amended Phase III WIP to EPA on December 30, 2021, which superseded Pennsylvania’s 2019 Phase III WIP. EPA published its evaluation of Pennsylvania’s draft amended Phase III WIP on April 18, 2022 and gave Pennsylvania 90 days to submit a final amended Phase III WIP. Pennsylvania submitted its final amended Phase III WIP on July 18, 2022.

During the period between Pennsylvania’s submission of its 2019 Phase III WIP and its draft amendment in 2021, the CBP partnership agreed on additional commitments to address new challenges that would be incorporated in WIP targets for all jurisdictions. Phase III WIP planning targets for sediment were approved by the CBP partnership’s Management Board on October 17, 2019, and approved by the Principal Staff Committee (PSC) on January 24, 2020. Pennsylvania incorporated its sediment targets into the final amended Phase III WIP.

Although Pennsylvania did provide additional details about new funding sources in the 2022-2023 commonwealth budget, plans for federal infrastructure funding, additional existing state programs that could result in reductions, and ongoing efforts to innovate BMP verification, tracking, and reporting between the draft and final amended Phase III WIPs, those changes did not result in any significant increase in proposed implementation. Pennsylvania has not provided a final plan that demonstrates a sufficient acceleration of implementation to meet its 2025 target; Pennsylvania still has a 9.3 million pound

¹ The Chesapeake Bay TMDL (Bay TMDL), which is an informational planning tool, set the amount of nitrogen, phosphorus, and sediment that could go into the Bay and still meet applicable water quality standards.

² This Evaluation is not a final agency action, and does not create any right, responsibility, or benefit, substantive or procedural, enforceable by law or equity. Pursuant to the Anti-Deficiency Act, 31 U.S.C. §§ 1341 and 1342, all commitments made by EPA in this Evaluation are subject to the availability of appropriated funds and budget priorities. Nothing in this Evaluation obligates EPA to obligate or transfer any funds.

nitrogen gap. Using current CBP partnership approved practices and decisions, simulations using the CBP partnership’s Chesapeake Assessment Scenario Tool 2019 (CAST-19) indicate that full implementation of Pennsylvania’s final amended Phase III WIP would achieve 72% of the statewide Phase III WIP planning target for nitrogen, 99% of the phosphorus target, and 93% of the sediment target. At the basin-scale, the final amended Phase III WIP meets the 2025 nitrogen target in the Western Shore basin and meets the 2025 phosphorus target in the Potomac, Eastern Shore, and Western Shore basins, but does not meet the sediment targets in any basins.

This evaluation includes some strengths and recommended enhancements included in EPA’s evaluations of Pennsylvania’s 2019 Phase III WIP and 2021 draft amended Phase III WIP that still apply to this submission, as well as new feedback on the portions of the final amended document that did change.

The final amended Phase III WIP continues to include practices that are not eligible for credit based on the CBP partnership practices and decisions. This information is documented in the April 18, 2022 evaluation and in the “Load Reduction Review” section of this evaluation. Table 1 provides the loads that are eligible for credit in CAST-19 based on CBP partnership practices and decisions as compared to the 2025 targets. These targets were expected to be met in the final amended Phase III WIP.

Table 1: Nutrient and Sediment Loads in Pennsylvania’s Final Amended Phase III WIP achieved from creditable practices vs. 2025 Target Loads by Basin in millions of pounds

State-Basin	2025 Final Amended Phase III WIP Nitrogen Load	2025 Target Nitrogen Load	Percent of Nitrogen Goal³ Achieved
Susquehanna Basin	75.90	66.87	69%
Potomac Basin	6.71	6.14	81%
Eastern Shore Basin	0.53	0.46	74%
Western Shore Basin	0.02	0.02	100%
All Basins ⁴	82.75	73.49	72%
State-Basin	2025 Final Amended Phase III WIP Phosphorus Load	2025 Target Phosphorus Load	Percent of Phosphorus Goal Achieved
Susquehanna Basin	2.591	2.544	93%
Potomac Basin	0.297	0.338	100%
Eastern Shore Basin	0.021	0.022	100%
Western Shore Basin	0.001	0.001	100%
All Basins	2.911	2.905	99%
State-Basin	2025 Final Amended Phase III WIP Sediment Load	2025 Target Sediment Load	Percent of Sediment Goal Achieved
Susquehanna Basin	1,879	1,838	92%
Potomac Basin	300	296	97%
Eastern Shore Basin	29	27	86%
Western Shore Basin	0.3	0.3	97%
All Basins	2,209	2,161	93%

³ Percentage calculation of the amount of reductions Pennsylvania would achieve if it implemented all of the practices identified in its final amended Phase III WIP that are creditable as per CBP partnership decisions.

⁴ All Basin totals for “2025 Final Amended Phase III WIP Nitrogen Load” and “Percent of Nitrogen Goal achieved” include estimated nitrogen load reductions to the Chesapeake Bay from atmospheric emission reductions related to Pennsylvania’s Volkswagen settlement and uses 2020 Numeric Progress as the baseline for WIP reductions.

While Pennsylvania’s final amended Phase III WIP does not achieve the nitrogen and sediment 2025 targets, it demonstrates a considerable increase in stakeholder engagement across the Commonwealth. Some of the notable strengths identified in Pennsylvania’s final amended Phase III WIP include the:

- State Fiscal Year 2022-2023 budget commitment of \$154 million for the new statewide Agricultural Conservation Assistance Program.
- Investment of resources in technical support and analysis of local water quality issues to support Countywide Action Plan (CAP) development and implementation.
- Commitment to ongoing engagement with sector teams to review progress toward programmatic and numeric goals.
- Development of innovative communication tools and strategies that achieved an unprecedented level of local engagement on WIP development and water quality management.

EPA expects Pennsylvania to strive to demonstrate to the CBP partnership a path forward to address its 9.3 million pound nitrogen gap. Pennsylvania does demonstrate commitment to accelerate implementation rates by approving \$154 million to the new Agricultural Conservation Assistance Program and commitments to increase funding to support best management practice (BMP) verification. However, these additional funds do not fully address the funding shortfall identified in Pennsylvania’s final amended Phase III WIP and are only committed for one year at this time. Without long term dedicated funding and programmatic commitments, EPA lacks confidence that Pennsylvania will achieve its portion of the 2025 Goal. EPA has confidence that Pennsylvania will continue to make incremental progress, but not at the accelerated rate needed to meet its portion of the 2025 Goal.

In its role to help Pennsylvania improve its accountability to the CBP partnership, EPA recommends the actions summarized in Table 2 and in the Detailed Review below; note that most of the expected enhancements in Table 2 are carried forward from EPA’s evaluation of Pennsylvania’s draft amended Phase III WIP. EPA will continue to encourage these recommendations via ongoing programmatic discussions with Pennsylvania.

Table 2: Expected Enhancements to be Addressed by Pennsylvania to satisfy its CBP partnership commitments

Expected Enhancements	Recommended Actions
Close the 28% nitrogen gap that remains after implementation of CBP partnership approved practices and current decisions and numerically account for 2025 climate change as agreed to by the CBP partnership.	Pennsylvania should explain how it will develop and implement new state programs, enhance existing state programs, enact new legislation, and increase funding levels for BMP implementation and technical assistance across all sectors to meet the 2025 Goal. Pennsylvania should include a timeline for implementation of new actions and initiatives.
Provide additional information to increase confidence that CBP partnership creditable practices being used to achieve the majority of load reductions will be implemented. An explanation of creditable practices is provided in the “Load Reduction Review” section of this evaluation.	Develop specific, actionable programmatic commitments and strategies that accelerate implementation for those BMPs expected to account for at least 80% of the nitrogen reductions between now and 2025: Animal Waste Management Systems; Forest Buffers; Nutrient Management; Core Nitrogen Cover Crop with Fall Nutrients (Rye Normal Drilled); Soil Conservation and Water Quality Plans; Tillage Management-Continuous High Residue; Forest Buffer - Streamside with Exclusion Fencing; Grass Buffers Cover Crop (Rye Normal Drilled)
Develop a plan to commit to additional state actions that Pennsylvania will take, across all sectors, if Pennsylvania is not able to meet the 2025 Goal with existing programs and resources.	The plan should identify actions and a timeline to commit to programmatic, policy, and regulatory changes needed across all sectors to meet the 2025 Goal.
Provide more details about agricultural program commitments, as Pennsylvania plans to achieve 95% of its nitrogen reductions and 80% of its phosphorus reductions from the agriculture sector.	Pennsylvania should explain actions and timelines to implement new state programs, enhance existing state programs, and provide additional funding and technical assistance levels to increase agricultural BMP implementation to meet the 2025 Goal. Additional information is provided in the “Detailed Evaluation” section of this document.
Identify additional reductions through National Pollutant Discharge Elimination System (NPDES) permits.	Pennsylvania should consider appropriate conditions to include in the NPDES permits (e.g., CAFO, MS4, Industrial Stormwater), that are upcoming for renewal, to achieve additional nutrient load reductions to meet the 2025 Goal.
Explain how Pennsylvania will achieve reductions from the urban sector that is not regulated by the NPDES program that accounts for almost 70% of the urban sector load.	Pennsylvania should explain actions and timelines to implement new state programs, enhance existing state programs, and increase funding levels to support stormwater BMP implementation to meet the 2025 Goal. Additional information in the “Detailed Evaluation” section of this document.
Identify reductions from practices and methods currently approved by the CBP partnership.	Pennsylvania should outline its plan to verify existing practices or to commit to additional sources of reduction to meet the 2025 Goal. The amended WIP includes practices and methods not currently approved by the CBP partnership. Pennsylvania should continue to elevate these issues within the CBP partnership, following the protocols established by the CBP partnership.
Establish alternative measures to achieve reductions if pending legislation is not enacted.	Pennsylvania passed a 2022-23 budget bill with funding increases for the Commonwealth and a bill that will limit some fertilizer application. However, several pieces of legislation did not pass. Estimate the potential reductions that could come from the proposed legislation and identify alternative strategies to achieve these reductions if the Pennsylvania legislature does not pass one or more bills impacting the ability to achieve the 2025 targets.

Federal Oversight

EPA plans to continue to commit staff, contractual and funding resources to support the implementation of Pennsylvania’s Phase III WIP and future two-year milestones; examples of EPA’s detailed assistance are listed in the subsequent section.

Detailed Evaluation of Overall Load Reduction and Source Sectors

Pennsylvania’s final amended Phase III WIP consisted of: (1) more than 70 CAST scenarios submitted to show how it would achieve the numeric Phase III WIP planning targets and (2) a narrative document submitted to describe the programs, funding and plans that support those scenarios and demonstrate confidence that the reductions can be achieved. The following sections provide specific highlights of key strengths and areas for enhancement to assist Pennsylvania in implementing its amended Phase III WIP and to provide confidence that Pennsylvania will achieve its portion of the 2025 Goal.

Load Reduction Review – Whether Pennsylvania Meets its Numeric Phase III WIP Targets

EPA’s evaluation indicates that implementation of Pennsylvania’s final amended Phase III WIP, based on current CBP partnership approved practices and decisions, will achieve 72% of the statewide Phase III WIP planning target for nitrogen, 99% of the phosphorus target, and 93% of the sediment target.

EPA used current CBP partnership approved practices and decisions when evaluating whether Pennsylvania’s final amended Phase III WIP numeric commitments met Pennsylvania’s Phase III WIP planning targets. EPA modeled Pennsylvania’s implementation scenarios using the CBP partnership’s Phase 6 suite of modeling tools and compared those simulated nutrient and sediment loads to Pennsylvania’s statewide and state-basin Phase III WIP planning targets. EPA’s evaluation determined that Pennsylvania did not meet most of those targets, as discussed below.

Pennsylvania provided more than 70 unique CAST scenarios for the draft and final amended Phase III WIP. EPA, with input from Pennsylvania on the calculation methods, combined multiple CAST scenarios into one consolidated CAST scenario in order to best determine if Pennsylvania’s plan would achieve its 2025 targets. This consolidation conformed with current CBP partnership decisions regarding the use of CAST and made the final amended Phase III WIP consistent with previous WIPs submitted by Pennsylvania and all other Bay jurisdictions. Pennsylvania did not modify any of the CAST scenarios covered by EPA’s evaluation of the draft amended WIP but in response to EPA’s evaluation submitted more detail for scenarios related to the state’s category “Additional from Existing Non-Reported Programs”. Table 3 provides a summary of Pennsylvania’s proposed load reductions by category, as defined by Pennsylvania, and EPA’s numeric evaluation of what is creditable using CBP partnership approved protocols for WIPs and historic stakeholder decisions.

Table 3: Anticipated Load Reductions to the Chesapeake Bay (million pounds)

Pennsylvania Defined Load Reduction Categories	PA WIP Proposed Nitrogen	Creditable Nitrogen	PA WIP Proposed Phosphorus	Creditable Phosphorus	PA WIP Proposed Sediment	Creditable Sediment
County Action Plans	17.331	17.331	0.582	0.583	589	589
Additional from State Recommendations	6.126	5.500	0.271	0.252	117	31
Additional from Model Excess/Cutoff	0.784	0	0.036	0	11	0
Additional from Credit Duration Expiration	7.873	0	0.243	0	367	0
Additional from Existing Non-Reported Programs	0.611	0.411	0.019	0	15	0
Total Statewide Reductions	32.725	23.242	1.151	0.834	1,099	620

Based on a review of the information Pennsylvania provided and discussions with Pennsylvania, there are several reasons that EPA cannot credit all proposed reductions included in the CAST scenarios that Pennsylvania submitted:

- Additional from State Recommendations - Pennsylvania included different load reduction results in the summary provided in its final amended Phase III WIP narrative than what it included in the associated model scenario but did not provide any rationale for that discrepancy.
- Additional from Model Excess/Cutoff – Current CBP partnership decisions do not allow more than a 100% implementation level for BMPs applied to land areas and animal populations, at all modeled spatial scales. Pennsylvania’s final amended Phase III WIP took BMP amounts over a 100% implementation level and distributed them in the WIP scenarios without any connection to planned new management actions on the ground. EPA, using CBP partnership tools, cannot credit these “excess” BMPs in determining if the 2025 targets are met.
- Additional from Credit Duration Expiration – The CBP partnership set an approved credit duration for each BMP – i.e., the amount of time for which a state can get credit for that particular BMP. If a state wants to continue to get credit for that BMP after the approved amount of time, the CBP partnership requires verification that the BMP has been implemented and is still functioning. Pennsylvania’s final amended Phase III WIP proposed including BMPs that had expired or not been verified. As of October 2022, the partnership’s BMP Verification Ad Hoc Action Team has not reached consensus on applying partial credit to expired, unverified federally funded, multi-year agricultural practices. The partial credit proposal was called to a vote in February 2022, but consensus could not be reached. Therefore EPA, using CBP partnership tools and decisions, is unable to credit expired, unverified BMPs as new planned BMPs in determining if states are meeting their 2025 Goal. In the case of wetland mitigation, the CBP partnership has not agreed to allow model credit since there is currently no evidence of a net gain to the environment.
- Additional from “Existing Non-Reported Programs” – These are practices that Pennsylvania states are “reductions for which Pennsylvania would have received credit if the practices installed from the implementation of these programs from 2013 through 2018 had been reported.” In other words, this is historical BMP cleanup, which is accepted by the CBP partnership if the practices have been verified.

Pennsylvania provided BMP data for five scenarios in this category, as recommended in EPA’s evaluation of Pennsylvania’s draft amended Phase III WIP, but did not provide verification. EPA discounted the load reduction estimates for these practices, primarily because they do not reflect future management actions that would yield load changes needed to meet water quality standards.

- EPA did credit estimated nitrogen load reductions for Pennsylvania’s line item “Reductions from the Volkswagen Settlement” because they represent future management actions beyond forecasted Clean Air Act benefits accounted for in the Bay TMDL. The estimated 411,000-pound nitrogen load reduction to the Bay follows the EPA guidance on load reductions associated with emission reductions.

Key Strengths

- Provided specific BMPs identified within each CAP that focus efforts to reduce nutrient and sediment loads within Pennsylvania.
- Included details about Pennsylvania’s request for a CBP partnership Scientific and Technical Advisory Committee (STAC) workshop to determine if there are any nutrient and sediment reduction benefits to Acid Mine Drainage (AMD) treatments. EPA supports Pennsylvania’s efforts to work through CBP partnership processes to define the magnitude of potential benefits.

Enhancements

- Develop a plan to either verify existing practices or commit to implementing additional BMPs to meet the 2025 targets.
- Submit one CAST scenario that accommodates all interactions among BMPs, BMP interactions with the lands and animal manure, and follows CBP partnership decisions; this would be consistent with previous WIPs submitted by Pennsylvania and all WIPs submitted by the other Bay jurisdictions.
- Provide additional information to substantiate load reductions associated with existing non-reported programs and provide clarity on the calculations used to demonstrate meeting the 2025 targets.
- Develop a plan to take additional actions across all sectors if Pennsylvania is not able to meet its portion of the 2025 Goal with existing programs and resources. Anticipating changes to partnership decisions could be explored with the CBP partnership and considered as part of a contingency plan but should not be relied upon to meet the 2025 Goal.

Source Sectors

Agriculture

Key Strengths

- Supported the development and implementation of CAPs to provide local reduction targets.
- Initiated elements of the 2019 Phase III WIP such as: implementation of the Conservation Excellence Grants program; the creation of the Center for Water Quality Excellence, including the recent large Regional Conservation Partnership Program award to the Lancaster Clean Water Partners; and the dissemination of a third round of the voluntary farmer survey to more fully account for conservation practices in the Tier 2 counties.
- Included \$154 million for the new statewide Agricultural Conservation Assistance Program in Pennsylvania’s Fiscal Year (FY) 2022-2023 budget.
- In 2022, Pennsylvania’s State Conservation Commission approved the Pennsylvania Agricultural

Conservation Stewardship (PACS) program verification to the list of approved BMPs for Resource Enhancement and Protection (REAP) program tax credits.

- Provided additional details about the projects funded by Most Effective Basin, Conservation Excellence, and Growing Greener Plus grants.

Enhancements

- Report additional details about agricultural program commitments that would strengthen EPA’s confidence that a plan can fully be implemented that would meet the nutrient and sediment targets. For example, Pennsylvania could provide additional details for the programs identified below:
 - Chesapeake Bay Agriculture Inspection Program (CBAIP): Accelerate implementation of Phase 2 of the CBAIP to ensure that the state-required plans and the practices associated with them are fully implemented on schedule. The plan mentions focusing first on three counties and then expanding to additional counties; however, no details are provided on the number of counties that will be addressed, the timeframe, and what actions will be taken to address non-compliance.
 - Agriculture Plan Reimbursement Program: Provide details on why this successful program was not renewed.
 - Manure Storage Goals: Providing details on how the goal of “75% of other livestock operations have adequate manure storage facilities” will be met.
 - Industry-Driven Programs: Provide details on how Pennsylvania will incentivize these programs.
- Contingencies if pending and proposed legislation (such as a bill to remove the prohibition on requiring livestock stream exclusion) do not pass.
- Additional commitments for Agriculture Permitting and Compliance Programs, such as:
 - Including priority agriculture BMPs from the Phase III WIP in NPDES permits for Concentrated Animal Feeding Operations (CAFOs) and their Nutrient Management Plans (NMPs).
 - Determining appropriate conditions and expectations that will be included in the 2023-2028 NPDES general permit for CAFOs to achieve additional nutrient load reductions.
 - Identifying the timeframe and number of NPDES permit writer trainings that will be provided for state agency staff.
 - Increasing technical assistance for the review of NMPs.
 - Requiring additional priority agricultural BMPs from the WIP to be incorporated in NMPs for Concentrated Animal Operations (CAOs).
 - Expanding the Nutrient Management Program to require NMPs for additional farms beyond the current CAOs.

Stormwater

Key Strengths

- Additional programs were developed to improve tracking and reporting of erosion and sediment control practices to achieve the phosphorus targets and to help meet the sediment targets.
- Passed fertilizer legislation that will limit nitrogen and phosphorus in consumer-level fertilizer as well as applications by professional lawn companies unless they prepare a site-specific NMP.

- Emphasized practices that provide strong local co-benefits. For example, Pennsylvania envisions about 12 miles of stream restoration per year, and thousands of acres of reforestation, buffers, and urban tree canopy. These practices provide co-benefits such as reductions in flow rate, impervious cover, and stream erosion. They are also cost-effective and work best in rural and suburban areas.

Enhancements

- Additional reductions through the Municipal Separate Storm Sewer System (MS4) NPDES permits. The amended Phase III WIP does not include a discussion about what might be included in the next MS4 general permit, which is due for reissuance in 2023. In 2018, the Pennsylvania Phase III WIP Stormwater Workgroup (SWWG) presented Pennsylvania with several options to include in the 2023 MS4 permit and worked with EPA to determine additional potential reductions that could be accomplished from the various options, but Pennsylvania did not incorporate any of the SWWG’s suggestions. EPA recommends that PADEP revisit the SWWG recommendations and CAST scenarios and consider additional actions to achieve reductions in this sector. Several of the recommendations are:
 - The final amended Phase III WIP discusses developing frequently asked questions (FAQs) to serve as guidance to MS4 communities to encourage the use of MS4 program flexibilities to select and locate projects that could reduce sediment and nutrient impairments. Pennsylvania could consider accomplishing urban reductions by allowing installation of BMPs on agricultural land, which-could be beneficial to both sectors.
 - The CAST scenarios presented in the amended Phase III WIP show significant increases in urban practices associated with MS4 permit requirements such as stream restoration and Illicit Discharge Detection and Elimination (IDDE) starting in 2020. The WIP does not indicate the programs and/or practices that PADEP has in place to increase urban BMP implementation. Pennsylvania could consider including pollutant reduction requirements in the 2023 MS4 permit to support continued implementation of urban BMPs.
 - The numeric outputs associated with the final amended Phase III WIP show that Pennsylvania plans to achieve a net reduction of nitrogen in the urban sector. However, in the stormwater sector, significant nitrogen reductions may only be realized via retrofits. PADEP should consider including retrofitting requirements as part of the 2023 MS4 permit reissuance to complement the WIP.
 - PADEP could consider incorporating the use of a Regional/Watershed MS4 permitting strategy to achieve necessary pollutant reductions and decrease the administrative load for PADEP.
- Pennsylvania could include requirements for green infrastructure practices in upcoming stormwater permits as a strategy to mitigate climate change.
- Explain how Pennsylvania will achieve reductions from the urban sector that is not regulated by the NPDES program, especially because this accounts for almost 70% of the urban sector load. Below are several options Pennsylvania could consider:
 - Provide information about specific grant programs and/or legislative actions that Pennsylvania will put into place to restore or direct funding to municipalities and counties for stormwater management planning required by Act 167.
 - Provide details about use of permit requirements or other programs that will support PADEP’s stated prioritization of Act 167 compliance and enforcement.
 - Explain incentives that will be established to promote planting of new acres of forest buffers in these areas.

- Provide adequate assurance that reductions will take place on non-regulated land outside of the Chapter 102 Erosion and Sediment Control (E&S) Plans and Post Construction Stormwater Management (PCSM) program. The Chapter 102 program is not intended to achieve additional pollutant reductions; it mostly serves to ensure that when new or redevelopment occurs, no increase in pollutant loading results.

Wastewater

Key Strengths

- Addressed Bay nutrient limits by requiring nutrient cap loads in NPDES permits consistent with the Bay TMDL for significant dischargers, as well as for expanding nonsignificant and new dischargers.
- Met the 2017 reduction goals ahead of schedule and is on track to meet the 2025 goals.
- PADEP has clarified the revision to the 2025 sediment target for the wastewater sector.

Enhancements

- Provide more details regarding Pennsylvania’s plan to carry out and implement the Onsite Septic System Inspection and Pumping Programs tracking system considering the lack of the funding noted in the final amended Phase III WIP.
- Provide clarity on how and when Pennsylvania intends to expand its Plant Optimization Program.
- Utilize actual discharge data to evaluate and report on whether nonsignificant dischargers are in fact meeting the aggregate wasteload allocation. PADEP should identify whether there are any gaps in its nonsignificant wastewater discharge data that should be addressed with additional permit requirements for nutrient monitoring.

Trading & Offsets

Key Strengths

- Provided additional information about PADEP’s Nutrient Credit Trading Program Manure Treatment Technology Nutrient Credit Calculation Methodology. The methodology has gone into effect upon Pennsylvania’s finalization of its Chesapeake Bay Nutrient Trading Tool (CBNTT). Pennsylvania has transitioned to this new tool and the new TMDL-based agriculture baseline analysis. PADEP has updated its “Nutrient Trading Program Supplement” which is part of its final amended Phase III WIP. The CBNTT will be used in the 2022 credit trading season that ends on November 28, 2022, for calculating nonpoint source agriculture credits using the correct Chesapeake Bay TMDL baseline.

Enhancements

- None.

Federal Facilities

Key Strengths

- Accounted for specific federal agencies and their portfolios of properties in the watershed.
- Committed to providing nitrogen and phosphorus targets in Tables 4.1 (Nitrogen) and 4.2 (Phosphorus): Reduction targets for Department of Defense (DoD), National Park Service (NPS), US Fish and Wildlife Service (USFWS), and General Services Administration (GSA).
- Recognized that federal reductions are expected only from developed land through stormwater, which is the primary land type that federal agencies have available for BMP planning.
- Provided discussion regarding the crediting of BMPs and reported a high rate of BMPs credited for

DoD (i.e., in 2020, 99% of the DoD BMPs reported to PADEP were fully credited).

- Included federal agency plan addendums which are a helpful addition but may need to be updated.

Enhancements

Pennsylvania should address the following to satisfy its CBP partnership commitments:

- Confirm that the EPA default method has been correctly applied to include the focus on developed land and stormwater. Tables 4.1 (Nitrogen) and 4.2 (Phosphorus) values did not change from the tables in the 2019 Phase III WIP.
- Determine if reduction targets for US Army Corps of Engineers are needed in Table 4.1 (Nitrogen) and 4.2 (Phosphorus).
- Coordinate with federal agencies to update the federal agency plans based upon the final amended Phase III WIP. Each agency was expected to submit a plan to address the nutrient loadings assigned to their respective facilities and these plans are an addendum in the final amended Phase III WIP. In addition, Pennsylvania should determine if GSA requires a plan.

Changing and Local Conditions

Growth

Key Strengths

- Continued monitoring for new or increased loads from wastewater treatment plants (WWTPs) through the Pennsylvania Chapter 94 required planning process. In 2021, PADEP used the reported flow and concentration over a three-year period (reporting years 2018, 2019, and 2020) in the final amended Phase III WIP scenario as opposed to the design flow capacity.
- Used data from the Center for Rural Pennsylvania to update projected population growth. The percent increase in population based on the current and estimated 2025 populations is 5.2%. Pennsylvania accounted for a projected 75% increase in the Bay watershed area and, assuming equal change in population over the 2010 to 2025 time period, added a flow increase of 1.04% to the three-year average flows for all sewage facilities other than small flow sewage treatment facilities which are already shown at their design capacity. Industrial facility flows and loads are not expected to increase so no adjustment was made to these flows or loadings.

Enhancements

- Explain how Pennsylvania will maintain implementation levels necessary to address changes in loads from all sectors, especially the stormwater sector. Pennsylvania is projecting a shift in the land use between 2017 and 2025 due to projected sector growth.
- Develop a plan to continue to track new or increased sediment and nutrient loads to ensure that the Phase III WIP planning targets would be maintained once the targets are met.

Climate

In 2020, the Principals' Staff Committee (PSC) issued a directive that by 2022 all jurisdictions would account for the additional nutrient 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.

Pennsylvania addressed the 2025 climate change loads through its 2022 amended Phase III WIP.

Therefore, this evaluation reflects the work and effort that Pennsylvania 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. EPA expects that the CBP partnership will define “unaccounted additional loads” and will determine how to address them. This decision came after Pennsylvania completed the work and effort noted in this section to address the 2025 climate loads.

Key Strengths

- Provided a narrative summary of additional loads related to 2025 climate change conditions and included a CAST scenario to address nutrient loads from climate conditions by 2025.
- Included a narrative to describe the current understanding of the 2035 climate change conditions.

Enhancements

- None.

Local Engagement Strategies

Key Strengths

- Established a mechanism to incorporate county and local input and recommendations within the CAP framework to improve Pennsylvania’s progress.
- Incorporated CAPs for the remaining counties with significant contributions within the Bay watershed into the WIP and submitted associated CAST scenarios.
- Developed detailed analyses of water quality conditions in each county and provided ongoing technical support to county coordinators to develop CAPs.
- Provided additional detail about plans to address county recommendations as they move into the CAP implementation phase of the WIP.

Enhancements

- Collectively, the CAPs did not achieve Pennsylvania’s projected planning targets. Pennsylvania should provide details about adjustments to programs at the state level to address this gap.

Other

Enhancements

- Clarify any changes to the funding gap estimates in the final amended Phase III WIP based upon the updated actions to meet the 2025 goals. In 2019, Pennsylvania clearly laid out the annual funding and resource gaps needed to be addressed in order to achieve the Phase III WIP commitments; however, the final amended Phase III WIP does not indicate whether the funding gap has changed.
- Alternative strategies to achieve reductions associated with proposed legislation if the Pennsylvania legislature does not pass one or more bills impacting the ability to achieve the 2025 Goal. Pennsylvania’s final amended Phase III WIP includes strategies based on pending legislation, also included in prior WIPs, that has yet to be acted on.

BMP Verification

Jurisdictions agreed to follow CBP partnership approved BMP verification protocols when developing and implementing the Phase III WIPs. Because Pennsylvania is proposing to increase BMP implementation rates of some BMPs by 10-fold or more in the next several years, Pennsylvania should

ensure that implementation at this higher rate can be tracked, verified, and reported in accordance with the agreed upon verification protocols or by another method established by the CBP partnership.

Regarding Pennsylvania's plans to conduct an inventory of data for BMPs that have already been implemented, it is important that Pennsylvania's future reporting of this data include accurate implementation and inspection dates, following the CBP partnership's verification protocols or by another method established by the CBP partnership.

Pennsylvania's WIP demonstrates a commitment to the development of innovative verification methods and engagement with the CBP partnership on reviewing and approving innovative methods. EPA will continue to support efforts to increase Pennsylvania's verification capacity with approved methods. EPA commends Pennsylvania on its effort to develop a method with Penn State University to verify and report commodity cover crop practices through combining the transect and producer surveys. EPA will continue to observe the development of this method but recognizes that CBP partnership approval is not guaranteed.

EPA Oversight and Assistance

EPA will continue to commit staff, contractual, and funding resources to support the implementation of Pennsylvania's Phase III WIP and two-year milestones. This support includes: evaluation of the most-effective practices and locations; annual funding assistance to address priority implementation needs; evaluation of Pennsylvania's implementation capacity under various staffing, 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 on WIP and two-year milestone implementation to reduce pollutants from federal lands. EPA will continue to track annual progress and make those results available to the partnership and the public.⁵

EPA has worked closely with Pennsylvania to increase and accelerate BMP implementation and identify options to strengthen programmatic commitments. EPA understands the unique challenges facing Pennsylvania and remains committed to providing significant resources to help improve water quality in the Commonwealth. EPA meets with Pennsylvania every two weeks to provide technical assistance and respond to concerns; EPA also meets with Pennsylvania monthly for high level discussions on progress. In addition to these regular meetings with Pennsylvania, EPA has provided specific assistance to directly to Pennsylvania which is described below.

General

- Provides 1.5 full time equivalents (FTEs or staff) annually for technical, managerial and grant administration assistance directly to Pennsylvania and its stakeholders for development and implementation of an amendment to the Phase III WIP and the two-year milestones.
- Performs its routine oversight of Pennsylvania's National Pollutant Discharge Elimination System (NPDES) program through permit reviews, enforcement, and compliance assurance.
- Provides annual grant (e.g., Chesapeake Bay Implementation Grant (CBIG), Chesapeake Bay Regulatory and Accountability Program (CBRAP), Local Government, etc.) and Most Effective Basin

⁵ See: <https://www.epa.gov/chesapeake-bay-tmdl/epa-oversight-watershed-implementation-plans-wips-and-milestones-chesapeake-bay> and <https://www.chesapeakeprogress.com/>

(MEB) funding. These grant resources include funding for up to eight External Coordinators to support the development, implementation, facilitation, and administration of the Countywide Action Plans.

Table 4: Summary of Grant Funding Provided by EPA (FY 2019-FY 2022)⁶

Recipient and Grant	2019	2020	2021	2022	2022 Infrastructure	TOTAL
PADEP – CBIG	\$1,285,800	\$5,359,946	\$2,109,535	\$2,145,279	Not Applicable	\$10,900,560
PADEP – CBRAP	\$5,691,569	\$3,066,819	\$3,673,237	\$3,511,446	Not Applicable	\$15,943,071
PADEP Infrastructure MEB	Not Applicable	Not Applicable	Not Applicable	Not Applicable	\$1,800,000	\$1,800,000
PA Department of Conservation and Natural Resources – CBIG	Not Applicable	\$684,868	Not Applicable	Not Applicable	Not Applicable	\$684,868
PA Department of Conservation and Natural Resources – Infrastructure MEB	Not Applicable	Not Applicable	Not Applicable	Not Applicable	\$3,000,000	\$3,000,000
PA Fish and Boat Commission – CBIG	\$464,213	\$478,214	\$492,484	\$472,412	Not Applicable	\$1,907,323
PA Department of Agriculture – Infrastructure MEB	Not Applicable	Not Applicable	Not Applicable	Not Applicable	\$798,333	\$798,333
National Fish and Wildlife Foundation (NFWF) – PA MEB	-- Not Applicable	\$3,395,112	\$3,395,112	\$3,695,112	Not Applicable	\$10,485,336
NFWF – Pennsylvania Local Government	\$1,190,544	\$1,190,544	\$1,190,544	\$1,190,544	Not Applicable	\$ 4,762,176
TOTAL	\$8,632,126	\$14,175,503	\$10,860,912	\$11,014,793	\$5,598,333	\$50,281,667

- Supports Pennsylvania in targeting practices in areas with greater nitrogen loading. EPA will provide technical assistance, data, and tools to aid Pennsylvania in conducting assessments at local levels, including water quality monitoring data, model analyses, high-resolution land cover, improved stream networks, BMP opportunity layers and application of management-relevant research findings.
- Tracks Pennsylvania’s progress with its initiatives to support the iterative decision-making process.
- Assists Pennsylvania in identifying BMP opportunities and tracking and reporting implementation. EPA plans to continue to work with Pennsylvania to refine tools such as Field Doc that integrate locally relevant high-resolution watershed data and provide a platform for streamlined local progress tracking and implementation reporting.
- Continues to work with Pennsylvania to address outstanding unliquidated obligations (i.e., unused grant money) and ensure Pennsylvania’s effective use of grant funding.

⁶ Pennsylvania can also use EPA grant funds provided through the Clean Water State Revolving Fund (CWSRF) and the Clean Water Act Sections, 106, 604b, and 319 programs to support water quality management and improvement programs that are included in the final amended Phase III WIP.

- Continues to coordinate with Pennsylvania and direct the state to the appropriate CBP partnership workgroups to discuss refinement of the modeling tools, where issues are identified.

Agriculture

- Continues to work with and support the Pennsylvania Riparian Forest Buffer Initiative. Funding will be provided directly to the Pennsylvania Department of Conservation and Natural Resources.
- Continues to identify opportunities to coordinate and leverage Federal (EPA and USDA), State and private funding to increase agricultural conservation practice implementation.
- Continues to support market-based collaboration approaches to increase BMP implementation.
- Supports direct implementation of Phase III WIP priority practices and watersheds through EPA Chesapeake Bay grants and EPA grant funding available through the National Fish and Wildlife Foundation.
- Performs outreach and engagement with the agricultural community to foster partnerships and work collaboratively to find successes that improve farming practices and water quality.
- Works with Pennsylvania's Department of Agriculture to develop approaches to measure and account for farmers' conservation efforts and the resulting environmental benefits. Outcomes and methodologies from a joint EPA/USGS/Pennsylvania pilot project to more comprehensively account for farmers' practices while addressing USDA data sharing restrictions could help Pennsylvania better track the progress of its agricultural initiatives.
- Collaborates with PENNVEST and local partners to direct Clean Water State Revolving Fund dollars to agricultural priority practices.
- Performs an update, in collaboration with Pennsylvania, to the animal agriculture assessment which examines Pennsylvania's implementation of federal and state regulatory programs, as well as voluntary incentive-based programs.
- Conducts inspections to assist Pennsylvania in implementation of its nutrient management initiative, upon request.
- Advances opportunities to provide EPA grant funding directly to Pennsylvania's Department of Agriculture or the State Conservation Commission, particularly in those instances where it can improve the timely expenditure of Federal funds to support agricultural programs, conservation practice implementation, and nutrient reductions (e.g., Chesapeake Bay Program grants).
- Works with appropriate Pennsylvania agencies to host joint trainings for the agricultural community to ensure effective implementation of Federal and State agricultural regulatory programs and to host EPA trainings for Pennsylvania agencies for delegated programs, upon request.
- Works with Pennsylvania to identify tools and activities to further program compliance and participation and improve communication and support to the agricultural community.

Stormwater

- Conducts NPDES inspector training for state agency staff, upon request.
- Provides technical assistance for the review of any Pollutant Reduction Plans (PRPs) that PADEP has not yet approved, upon request.

- Reviews selected annual reports and review BMPs implemented as part of PRPs as part of oversight inspections to determine progress towards meeting MS4 permit requirements.
- Assists Pennsylvania to determine appropriate conditions to include in the 2023-2028 Phase II MS4 and other general permits to achieve additional nutrient and sediment reductions.
- Coordinates with PADEP to develop options for MS4 communities to work with agricultural communities to implement BMPs outside of the MS4 area. To support Pennsylvania, EPA can:
 - Provide additional MS4 forums as follow-up to those held in 2021 as an opportunity for MS4 communities to collaborate and exchange ideas.
 - Conduct green infrastructure workshops.
 - Identify which projects would be most effective in non-federally regulated areas.
- Review draft policies and rulemakings, and support plan reviews and NPDES permits as needed.

Wastewater

EPA will continue to work with PADEP to assist communities and their water utilities with respect to energy efficiency, wastewater nutrient removal optimization, operator training, and mapping.

Trading and Offsets

EPA can assist Pennsylvania in any revisions to trading and offset programs by reviewing draft regulations, and policies as well as participating on regulatory advisory committees.

Growth

EPA can provide to Pennsylvania a growth analysis for each sector based on progress data submitted by Pennsylvania each milestone period.