

Evaluation of Pennsylvania’s Draft 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. The seven jurisdictions (Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia) in the CBP partnership agreed to develop Watershed Implementation Plans (WIPs), in three phases, to provide a framework for meeting that goal. In 2010, EPA worked with the CBP partnership to establish the Chesapeake Bay TMDL (Bay TMDL)¹ based primarily on the states’ 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 commitment to the CBP partnership’s 2025 goals.

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 CBP partnership, and as appropriate, may provide additional recommendations for strengthening the WIP or its components.²

Pennsylvania committed to amending the Phase III WIP by the end of calendar year 2021 to address the 9.8-million-pound nitrogen loading gap identified in EPA’s evaluation of the Phase III WIP submitted in 2019. Pennsylvania submitted its draft amended Phase III WIP to EPA on December 30, 2021, which supersedes Pennsylvania’s 2019 Phase III WIP but also includes several sections that were not significantly modified. This document is EPA’s evaluation of Pennsylvania’s draft amended Phase III WIP. As some portions of what Pennsylvania submitted did not change, this evaluation includes some strengths and recommended enhancements included in EPA’s evaluation of Pennsylvania’s 2019 Phase III WIP that still apply to this submission as well as new feedback on the amended document.

During the period between Pennsylvania’s initial submission of its Phase III WIP in 2019 and the 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 the state’s sediment targets into the draft amended Phase III WIP. In 2020 the CBP partnership’s PSC set an expectation that jurisdictions will account for additional nutrient pollutant loads due to 2025 climate change conditions in a Phase III WIP addendum or in its two-year milestones beginning in 2022.

EPA identified sector-by-sector strengths in Pennsylvania’s revised commitments as well as areas of enhancement that Pennsylvania should address in its final amended Phase III WIP. EPA stands ready to assist Pennsylvania with amending and implementing its WIP and two-year milestone commitments.

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.

Overview

Based on current CBP partnership approved practices and decisions, simulations using the CBP partnership’s Chesapeake Assessment Scenario Tool (CAST) indicate that implementation of Pennsylvania’s draft amended Phase III WIP is expected to achieve 70% of the statewide Phase III WIP planning target for nitrogen, 99% of the phosphorus target, and 93% of the sediment target. Pennsylvania provided a narrative summary of additional loads related to 2025 climate change conditions but did not address these additional loads in a CAST scenario.

Pennsylvania included several best management practices (BMPs) in the CAST scenarios submitted with the draft amended Phase III WIP that are not eligible for credit based on the CBP partnership practices and decisions. This information is documented in the “Load Reduction Review” section of this evaluation. Table 1 provides the loads that were creditable in CAST by state-basin as compared to the 2025 targets expected to be addressed in the draft amended Phase III WIP. Based on the information provided Pennsylvania met the 2025 nitrogen target in the Western Shore basin, met the 2025 phosphorus target in the Potomac, Eastern Shore, and Western Shore basins but did not meet the sediment targets in any basins.

Table 1: Creditable Nutrient and Sediment Loads in Pennsylvania’s Draft Amended Phase III WIP vs. 2025 Target Loads by Basin in millions of pounds

State-Basin	2025 Draft Amended Phase III WIP Nitrogen Load	2025 Target Nitrogen Load	Percent of Nitrogen Goal 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	83.16	73.49	70%
State-Basin	2025 Draft 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 Draft 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%

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

- 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.
- Demonstrated commitment to investing resources within the Pennsylvania Department of Environmental Protection (PADEP) to support advancement of partnership goals and increased communication among Pennsylvania agencies and between Pennsylvania and the CBP partnership.

In its role to help Pennsylvania improve its accountability to the CBP partnership, EPA recommends that the actions summarized in Table 2 be included in Pennsylvania’s final amended Phase III WIP. Additional information is included in the “Detailed Review” section of this document.

Table 2: Expected Enhancements to be Addressed in Pennsylvania's Final Phase III Amended WIP

Expected Enhancements	Recommended Actions
Close the 30% 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 targets. 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.	Develop specific, actionable programmatic commitments and strategies and numeric BMP implementation targets 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 or strategy to commit to additional state actions that Pennsylvania will take, across all sectors, if Pennsylvania is not able to meet the 2025 targets with existing programs and resources.	The amended Phase III WIP should identify a strategy and a timeline to commit to programmatic, policy, and regulatory changes needed to implement the Phase III WIP across all sectors to meet the 2025 targets.
Provide more details about agricultural program commitments that would strengthen EPA’s confidence that the plan can fully be implemented, 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 targets. 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 targets.
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 update the amended Phase III WIP to 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 targets. 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 targets. The amended WIP includes practices and methods not currently approved by the CBP partnership. The plan should address how Pennsylvania will 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.	Estimate the potential reductions that could come from the new 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.
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Detailed Evaluation of Overall Load Reduction and Source Sectors

Pennsylvania’s draft 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 finalizing its amended Phase III WIP and to provide confidence that Pennsylvania will achieve its 2025 goals.

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

EPA used current CBP partnership approved practices and decisions in evaluating whether Pennsylvania’s draft 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 amended Phase III WIP. Pennsylvania provided a list of relevant CAST scenarios to EPA on January 11, 2022, and completed all work to finalize the CAST scenarios by January 31, 2022. EPA, with input from Pennsylvania on the calculation methods, combined the multiple CAST scenarios into one consolidated CAST scenario in order to 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 draft amended Phase III WIP consistent with previous WIPs submitted by Pennsylvania and all other Bay jurisdictions. 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 the CBP partnership approved practices and decisions.

Table 3: 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	0.582	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	0.449	0	0.014	0	4321	0
Total Statewide Reductions	32.563	22.831	1.146	0.834	1088	620

EPA’s evaluation indicates that implementation of Pennsylvania’s draft amended Phase III WIP, based on current CBP partnership approved practices and decisions, will achieve 70% of the statewide Phase III WIP planning target for nitrogen, 99% of the phosphorus target, and 93% of the sediment target.

Based on a review of the information provided by Pennsylvania and discussions following the amended WIP submission, there are several reasons that EPA cannot credit all proposed reductions included in the CAST scenarios submitted for the draft amended Phase III WIP:

- Additional from State Recommendations - Pennsylvania included different load reductions in the summary provided in the draft amended WIP narrative than what was included in the associated model scenario. Table 3 reflects the discrepancy. There is no rationale provided for the discrepancy between Pennsylvania’s model scenario and Pennsylvania’s amended WIP documentation.
- Additional from Model Excess/Cutoff – Current CBP partnership decisions require no more than a 100% implementation level for BMPs applied to land areas and animal populations, at all modeled spatial scales. Pennsylvania’s draft amended Phase III WIP took BMP amounts over a 100% implementation level in an annual model assessment of progress and distributed them in the WIP scenario without any connection to planned new management actions on the ground. Therefore EPA, using CBP partnership tools, cannot credit these “excess” BMPs in determining if the 2025 targets are met.
- Additional from Credit Duration Expiration - Current CBP partnership decisions require jurisdictions to verify that BMPs have been implemented and are still functioning in order to be credited for them beyond the approved BMP credit duration. The CBP partnership allows states to assume that a BMP is in place for a certain time period once it’s verified as being installed; Pennsylvania’s draft amended Phase III WIP proposed including BMPs that had expired or not been verified. As of February 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. Therefore EPA, using CBP partnership tools, is unable to credit expired, unverified BMPs as new planned BMPs in determining if states are meeting their 2025 targets.
- Additional from Existing Non-Reported Programs - CAST is not able to quantify or credit practices that are not inputs to a model scenario. EPA could not calculate or verify those estimates that Pennsylvania listed under “existing [programs] non-reported”. Therefore, EPA cannot credit those practices in determining if Pennsylvania met its 2025 targets.

In 2020 the CBP partnership’s PSC set an expectation that jurisdictions will account for additional nutrient pollutant loads due to 2025 climate change conditions in a Phase III WIP addendum or in its two-year milestones beginning in 2022. The estimate is that, by 2025, Pennsylvania will need to reduce an additional 1.811 million pounds of nitrogen and an additional 0.095 million pounds of phosphorus due to changing weather patterns. Pennsylvania did not provide information to numerically address the additional loads associated with 2025 climate change conditions as part of this amended WIP submission. It is our understanding from discussion with Pennsylvania in January 2022 that the additional nutrient pollutant loads due to 2025 climate change conditions will be addressed in a CAST scenario developed in coordination with Pennsylvania’s WIP Action Team. Work on the CAST scenario started in February 2022.

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Provided specific BMPs identified within each CAP that focus efforts to reduce nutrient and sediment loads within Pennsylvania.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- A plan to either verify existing practices or committing to implementing additional BMPs to meet the 2025 targets as Pennsylvania continues to work within the CBP partnership to review, revise and propose BMPs that follow the protocols established to and agreed by the CBP partnership. As of February 2022, the partnership’s BMP Verification Ad Hoc Action Team had not reached consensus on applying partial credit to several expired, unverified federally funded, multi-year agricultural practices.
- Submission of one CAST scenario that accommodates all interactions among BMPs, BMP interactions with the lands and animal manure, and follows CBP partnership decisions.
- Additional information to substantiate load reductions associated with existing non-reported programs by including them in the amended WIP model scenario and provide clarity on the calculations used to demonstrate meeting the 2025 nutrient targets. Pennsylvania does not adequately explain all non-reported programs or their approach to investigating the ways in which their data, reporting, and verification methods may contribute to receiving additional model credit for planned implementation.
- Clarifying the process Pennsylvania intends to follow to gain accreditation of new practices, not currently credited that improve water quality and reduce nutrients by 2025. Identify which new practices will be proposed, as noted in the draft amended Phase III WIP. In order to received credit, proposals for new practices should follow the approved CBP partnership BMP Expert Panel protocols to introduce new practices for partnership consideration.
- A plan or strategy to commit to address additional state actions to take across all sectors if Pennsylvania is not able to meet the 2025 targets 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 targets.

Source Sectors

Agriculture

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- 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, included 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.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- Additional details about agricultural program commitments that would strengthen EPA’s confidence that the plan can fully be implemented that would meet the nutrient and sediment targets. For

example, Pennsylvania should provide additional details for the programs identified below to improve confidence in the plan:

- Chesapeake Bay Agriculture Inspection Program (CBAIP): Include commitments to 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, how progress will be reported, and what actions will be taken to address non-compliance.
- Pennsylvania Agriculture Conservation Stewardship: Provide a clear plan on next steps for launching a successful program that for farmers participation.
- Most Effective Basin and Conservation Excellence Grants: Provide details on results of these two important funding sources and plans moving forward to accelerate implementation.
- Agriculture Plan Reimbursement Program: Provide details on why this successful program was sunset and 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 the fertilizer bill, the Agricultural Conservation Assistance Program, and a bill to remove the prohibition on requiring livestock stream exclusion) do not pass.
- Additional commitments for Agriculture Permitting and Compliance Programs, such as:
 - Requiring priority agriculture BMPs from the WIP that will be included in NPDES general permit coverage and individual 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 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).
 - Ensuring that the unpermitted CAFOs apply for either an NPDES general permit coverage or an NPDES individual permit for CAFOs.
 - Expanding the Nutrient Management Program to require NMPs for additional farms beyond the current CAOs.

Stormwater

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Additional programs that were developed to improve tracking and reporting of erosion and sediment control practices to achieve the phosphorus reduction targets and to help meet the sediment reduction targets.
- Proposed fertilizer legislation that if enacted would reduce nitrogen and phosphorus runoff.
- 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

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- Additional reductions through the Municipal Separate Storm Sewer System (MS4) NPDES permits. The draft 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 for conditions to include in the 2023 MS4 permit and worked with EPA’s Chesapeake Bay Program Office (CBPO) to determine potential reductions to be gained from the various options but Pennsylvania declined to incorporate any of the SWWG’s suggestions. EPA recommends that PADEP revisit the SWWG recommendations for the 2023 MS4 permit and consider additional actions to achieve reductions in this sector. Several of the recommendations are discussed below.
 - The Phase III WIP amendment 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 requiring installation of BMPs on agricultural land, which-could be beneficial to both sectors.
 - EPA recommends that PADEP review the scenarios provided by the SWWG, which include reductions that could be accomplished by the stormwater sector using different percentage reductions in the 2023 MS4 permit in conjunction with an offsetting program.
 - The CAST scenarios presented in the draft 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 continue to increase urban BMP implementation in future years. 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 draft 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 should consider incorporating the use of a Regional/Watershed MS4 permitting scheme to achieve necessary pollutant reductions and decrease the overall number of MS4 permittees and associated administrative load for PADEP.
- Additional reductions through the NPDES industrial stormwater general permit (PAG-03). The draft amended Phase III WIP states that PAG-03 can be used to gain additional reductions via

implementation of Chesapeake Bay BMPs and identification of impervious surfaces suitable for retrofit BMPs. However, the draft permit submitted to EPA in November 2021 does not contain any requirements for achieving Bay reductions. EPA recommends that PADEP use the reissuance of this permit as an opportunity to achieve additional pollutant reduction from the stormwater sector.

- Requirements for green infrastructure practices via stormwater permits as a strategy to mitigate climate change. Considering that a few of Pennsylvania’s NPDES stormwater permits are coming up for renewal, this is an opportunity that PADEP should take advantage of.
- 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 to enhance this part of the WIP:
 - 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.
- Alternative plans to achieve urban nutrient reductions associated with proposed fertilizer legislation if the Pennsylvania legislature does not pass the bill prior to 2025.

Wastewater

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- 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 early and is on track to meet the 2025 goals without further enhancements.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- 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 draft amended Phase III WIP.
- More details on Pennsylvania’s implementation plans to provide clarity on how and when Pennsylvania intends to expand its Plant Optimization Program.

- Utilizing actual discharge data to evaluate and report on whether its nonsignificant dischargers are in fact meeting the aggregate wasteload allocation. While it is understood that Pennsylvania is tracking actual total nitrogen (TN) and total phosphorus (TP) data for many non-significant dischargers (as documented through Clean Water Act (CWA) Section 106 grant reporting), it appears that a significant number of dischargers are still evaluated using assumed values.
- Additional clarity in Pennsylvania’s draft amended Phase III WIP CAST scenario to indicate how the wastewater sediment target of 8 million pounds per year by 2025 was derived, and if Pennsylvania anticipates further reductions in this sector. Pennsylvania will need to clarify how its wastewater sediment targets were calculated and explain if any revisions are necessary. If no modifications to the target are needed, Pennsylvania’s draft amended Phase III WIP will need to explain what changes are proposed to ensure the wastewater sector will meet the 2025 sediment target.

Trading & Offsets

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Additional information about PADEP’s [Nutrient Credit Trading Program Manure Treatment Technology Nutrient Credit Calculation Methodology](#) in response to EPA’s related suggested enhancement on the 2019 Phase III WIP. The methodology will go into effect upon Pennsylvania’s finalization of its Chesapeake Bay Nutrient Trading Tool (CBNTT) and will be funded by PADEP’s Chesapeake Bay Implementation Grant (CBIG). Pennsylvania intends to transition to this new tool and the new TMDL- based agriculture baseline analysis and make updates to its “Phase 2 WIP Nutrient Trading Program Supplement” in the 2022 credit trading season that ends on November 29, 2022.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- The addendum to the draft amended Phase III WIP listed on page vii and titled “Phase 2 Watershed Implementation Plan Nutrient Trading Program Supplement.” It’s EPA’s understanding that Pennsylvania developed this supplement to capture revisions to the PADEP’s Nutrient Trading Program made in response to EPA’s concerns and that it will be updated as needed as further enhancements described in the Phase III WIP are implemented.
- An update to Pennsylvania’s CBIG funding request to support the transition to the new trading tool and baseline methodology as well as its continued maintenance. EPA expects that Pennsylvania will provide EPA an opportunity to review PADEP’s new TMDL-based agriculture baseline analysis prior to its finalization. If there is a change in its 25 Pa. Code 96.8 regulation, EPA would need to review the regulation as it implements the CWA.
- Confirmation when this new information is added to its Trading Supplement on the PADEP Nutrient Trading website.

Federal Facilities

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Pennsylvania has accounted for specific federal agencies and their portfolios of properties in the

watershed.

- Provided nitrogen and phosphorous targets Table 4.1 (N) and 4.2 (P): Reduction targets for Department of Defense (DoD), National Park Service (NPS), US Fish and Wildlife Service (USFWS), and General Services Administration (GSA) (review pending).
- 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 provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- Information to confirm that the EPA default method has been correctly applied to include the focus on developed land and stormwater. Table 4.1 (Nitrogen) and 4.2 (Phosphorus) values did not change from the 2019 WIP tables.
- A determination if reduction targets for US Army Corps of Engineers are needed in Table 4.1 (N) and 4.2 (P).
- Coordination with federal agencies to update the federal agency plans based upon the draft 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 draft amended Phase III WIP. In addition, Pennsylvania should determine if GSA requires a plan.

Changing and Local Conditions

Growth

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Continued monitoring of for wastewater treatment plant (WWTP) growth 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 draft amended Phase III WIP scenario as opposed to the design flow capacity.
- Use of data from the Center for Rural Pennsylvania to update growth projections. The percent increase in population based on the current and estimated 2025 populations is 5.2%. Accounting for a projected 75% increase expected in the Bay watershed area and assuming equal change in population over the 2010 to 2025 time period, a flow increase of 1.04% was added 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; no adjustment was made to these flows or loadings.

Enhancements

Pennsylvania should continue to update its implementation strategies included in the draft amended Phase III WIP, by including:

- An explanation of 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 that is included in CAST.
- A plan or strategy to continue to track new sediment and nutrient loads to ensure that the Phase III WIP planning targets are maintained.
- Identifying opportunities to implement and accelerate actions intended to offset growth now in order to address the shortfall in ability to meet planning targets in the draft amended Phase III WIP.

Climate

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- Included a narrative description of its additional nutrient loads due to 2025 climate change conditions in the draft amended Phase III WIP.
- A narrative, per the PSC directive, to describe the current understanding of the 2035 climate change conditions.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP by including:

- One CAST scenario, using CBP partnership approved BMPs and decisions, that demonstrates how it will numerically account for the additional nutrient loads due to 2025 climate change conditions to meet the decision of the PSC.
- Additional details on programmatic strategies to ensure that the additional nutrient loads from 2025 climate change conditions can be achieved.

Local Engagement Strategies

Key Strengths

Key strengths in Pennsylvania’s draft amended Phase III WIP include:

- 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 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.

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended

Phase III WIP, by including:

- More details about plans to address county recommendations. Collectively, the CAPs did not achieve Pennsylvania’s projected planning targets through increased implementation. The county coordinators provided extensive recommendations to the state for strategies to remove barriers to implementation.

Other

Enhancements

Pennsylvania should provide more details on the implementation strategies included in the draft amended Phase III WIP, by including:

- Clarifying if any changes to the funding gap estimates in the draft amended Phase III WIP based upon the updated actions to meet the 2025 goals, the completed CAPs, and additional reductions from 2025 climate change conditions. 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 draft amended Phase III WIP does not address if the funding gap has changed based on the additional CAPs and the 2025 climate change conditions.
- 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 targets. Pennsylvania’s draft 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 within that period 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.

EPA Oversight and Assistance

As it has done since the release of the Bay TMDL, 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 with Pennsylvania on WIP and two-year milestone implementation to reduce pollution from federal lands. EPA will continue its commitment to track annual progress of Pennsylvania and all the other 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/>]

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 (MEB) funding to Pennsylvania to support implementation of its Phase III WIP and two-year milestones. 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's Chesapeake Bay Program Office (FY 2019-FY 2021)³

Recipient and Grant	2019	2020	2021	TOTAL
PADEP – CBIG	\$1,285,800	\$5,359,946	\$2,109,535	\$8,755,281
PADEP – CBRAP	\$5,691,569	\$3,066,819	\$3,673,237	\$12,431,625
PA Department of Conservation and Natural Resources – CBIG	--	\$684,868	--	\$684,868
PA Fish and Boat Commission – CBIG	\$464,213	\$478,214	\$492,484	\$1,434,911
National Fish and Wildlife Foundation (NFWF) – PA MEB	--	\$3,395,112	\$3,395,112	\$6,790,224
NFWF – Pennsylvania Local Government	\$1,190,544	\$1,190,544	\$1,190,544	\$3,571,632
TOTAL	\$8,632,126	\$14,175,503	\$10,860,912	\$33,668,541

- 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,

³ 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 draft amended Phase III WIP.

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 state’s 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.
- Continues to coordinate with Pennsylvania and direct the state to the appropriate CBP partnership workgroups to discuss refinement of the modeling tools used to evaluate state achievement of the Bay TMDL allocations, 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 U.S. Department of Agriculture (USDA)), State and private funding to increase agricultural conservation practice implementation in Pennsylvania.
- 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.
- Perform an update, in collaboration with Pennsylvania, to the animal agriculture assessment which examines jurisdictions’ implementation of federal and state regulatory programs, as well as voluntary incentive-based programs to meet the nutrient and sediment reduction commitments in their WIPs.
- 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 Municipal Separate Storm Sewer System (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 nitrogen reductions, as well as phosphorus and sediment.
- 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 breakout for each sector based on progress data submitted by Pennsylvania each milestone period.