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Status of Efforts to Restore Chesapeake Bay Water Quality

Background

For decades, Chesapeake Bay jurisdictions (Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and the District of Columbia), multiple federal and local agencies, and others have worked to improve water quality in the Chesapeake Bay. Despite these extensive restoration efforts, poor water quality in the bay and its tidal tributaries persisted, prompting litigation that ultimately required the U.S. Environmental Protection Agency (EPA) to establish a Total Maximum Daily Load (TMDL)—or a “pollution budget” for the bay. Established in 2010, the TMDL included interim and final goals for each jurisdiction to achieve by 2017 and 2025, respectively.

What Is a TMDL?

The Clean Water Act (CWA) requires states to identify waters that are “impaired” by pollution (i.e., not meeting state water quality standards). For those waters, the act directs states to establish a TMDL, which is a calculation of the amount of a pollutant that can enter a waterbody and still allow the waterbody to meet state water quality standards for that pollutant. TMDLs include a quantitative assessment of the pollutant sources and reductions required to attain water quality standards. TMDLs address both point sources of pollution (e.g., wastewater treatment or industrial plant discharges) and nonpoint sources (e.g., urban runoff and agricultural runoff). The CWA directs states to submit TMDLs to EPA for approval. If EPA disapproves, the act directs EPA to develop a TMDL for the waterbody.

Chesapeake Bay TMDL

EPA established a Chesapeake Bay TMDL in 2010 pursuant to consent decrees resolving litigation over impairment of bay waters in Virginia and the District of Columbia. The TMDL was also a key feature of a 2010 strategy to restore the Chesapeake Bay, which the Federal Leadership Committee for the Chesapeake Bay, chaired by EPA, created in response to Executive Order 13508, issued in May 2009. The order declared the bay watershed a “national treasure” and charged the federal government with developing a new strategy for protecting and restoring the Chesapeake region.

The Chesapeake Bay TMDL is the largest single TMDL developed to date in terms of area covered. It addresses all segments of the bay and its tidal tributaries that are impaired from discharges of nitrogen, phosphorus, and sediment. The TMDL set two broad goals: an interim goal of having 60% of pollution control measures needed to attain water quality standards in place by 2017 and a final goal of having 100% of the measures in place by 2025. EPA is using an accountability framework to implement the TMDL. This framework includes four elements: watershed implementation plans (WIPs), two-year milestones, EPA

tracking and assessment, and backstop federal actions if bay jurisdictions do not meet their commitments. Examples of potential backstop federal actions include expanding CWA permit coverage to unregulated sources, conditioning or redirecting EPA grants, and requiring additional pollutant load reductions from point sources.

WIPs and Milestones

Bay jurisdictions have each created WIPs, which detail specific steps the jurisdiction plans to take to meet and maintain its pollutant allocations under the TMDL. Bay jurisdictions have developed WIPs in three phases. Phase I and II WIPs, submitted to EPA in 2010 and 2012, respectively, described specific actions and controls to be implemented by 2017 and 2025 to achieve applicable water quality standards. Phase II WIPs built upon Phase I WIPs by including more specific local actions. Phase III WIPs include specific steps the jurisdictions intend to take through 2025 to meet the goals of the TMDL (see “Phase III WIPs”). Bay jurisdictions submitted final Phase III WIPs to EPA in August 2019.

Each jurisdiction has also established interim, two-year accountability goals called *milestones*. The bay jurisdictions submitted their first set of milestones to EPA in 2012. These milestones identify short-term goals, which can be used to assess progress toward the longer-term goals. Bay jurisdictions may also use milestones to update programmatic or numeric commitments as part of an adaptive management process. The most recent set of milestones covered 2018-2019.

2017 Midpoint Assessment

The Chesapeake Bay TMDL called for a midpoint assessment in 2017 to review bay jurisdictions’ progress toward meeting the goals established in the TMDL. In 2018, EPA released the results of that assessment. According to data submitted by bay jurisdictions to EPA, the jurisdictions collectively exceeded the 2017 interim goals for reducing phosphorus and sediment, but they did not achieve the 2017 interim goal for reducing nitrogen. Reductions of specific pollutants in individual bay jurisdictions varied widely (**Figure 1**).

EPA also assessed the bay jurisdictions’ implementation of programs to achieve pollution reductions across sectors and found that achievements and shortfalls varied. The wastewater sector, in particular, had much success, achieving its 2025 load reduction goals 10 years ahead of schedule through treatment plant upgrades, technology advances, and limiting discharges of nutrients in CWA discharge permits. Efforts to reduce nitrogen deposition from atmospheric sources (e.g., power plants and vehicles) were also on track to meet the 2025 TMDL goals. However,

while states had improved their urban/suburban stormwater regulatory programs, EPA reported that overall loads in the sector continue to increase due to population growth and development. EPA also found that, in some cases, states were not making sufficient progress in implementing their planned policies and programs in the agricultural sector and were falling short of meeting pollution reduction goals.

Figure 1. Chesapeake Bay Pollution Reduction Progress Toward 2025 TMDL Goals (by Jurisdiction)

2017 Actual > 2017 Interim Goal * Million pounds/year

	Actual Amounts*		Goals and Targets*			% Reduction Needed	
	2009 Baseline	2017 Pollution Loads	2017 Interim Goal	2025 Goal	Phase III WIP Target	Original 2025 TMDL Goal	Phase III WIP Revised 2025 Target
Nitrogen							
DC	2.9	1.6	2.6	2.4	2.4	---	---
DE	4.5	4.1	3.8	3.4	4.6	17.9%	---
MD	51.9	46.9	45.5	41.2	45.8	12.2%	2.4%
NY	10.7	10.9	9.6	8.9	11.5	18.7%	---
PA	116.6	111.0	94.1	79.0	73.2	28.8%	34.1%
VA	68.1	55.9	58.8	52.6	55.7	5.9%	0.3%
WV	5.5	5.1	5.2	5.0	8.2	1.4%	---
Total	260.1	252.5	219.5	192.4	201.4	23.8%	20.2%
Phosphorus							
DC	0.07	0.07	0.10	0.12	0.13	---	---
DE	0.35	0.27	0.30	0.28	0.11	---	60.1%
MD	3.30	2.72	3.01	2.81	3.68	---	---
NY	0.96	0.75	0.77	0.64	0.59	14.0%	21.5%
PA	4.98	4.20	4.14	3.57	3.04	15.0%	27.5%
VA	8.67	6.43	7.31	6.40	6.19	0.5%	3.7%
WV	0.90	0.65	0.74	0.64	0.43	2.8%	33.8%
Total	19.23	15.10	16.37	14.46	14.17	4.2%	6.1%
Sediment							
DC	16.9	15.6	17.2	17.4	N/A	---	N/A
DE	98.9	81.1	99.5	99.8	N/A	---	N/A
MD	1,395.1	1,185.2	1,367.8	1,349.7	N/A	---	N/A
NY	331.8	321.9	315.4	304.5	N/A	5.4%	N/A
PA	2,644.1	2,377.3	2,224.8	1,945.2	N/A	18.2%	N/A
VA	3,742.9	3,475.3	3,448.0	3,251.4	N/A	6.4%	N/A
WV	445.4	330.8	401.7	372.6	N/A	---	N/A
Total	8,675.3	7,787.1	7,874.4	7,340.5	N/A	5.7%	N/A

Source: CRS analysis of data from ChesapeakeProgress, <https://www.chesapeakeprogress.com/clean-water/2017-watershed-implementation-plans> and https://www.chesapeakebay.net/documents/Phase_III_WIP_Planning_Targets.pdf.

Note: EPA also has a 2025 target for atmospheric deposition of nitrogen to tidal waters (15.2 million pounds/year).

In 2018, as part of its midpoint assessment, EPA updated the oversight levels for four sectors in each jurisdiction: agriculture, urban/suburban stormwater, wastewater, and trading/offsets. The agency identified certain sectors within certain bay jurisdictions as needing *enhanced oversight*, meaning EPA may take additional actions to ensure that the jurisdiction stays on track. For these sectors/jurisdictions, EPA identified specific concerns with the jurisdictions' implementation of strategies to meet TMDL goals. EPA ranked Delaware's agricultural sector, Maryland's urban/suburban stormwater sector, New York's wastewater sector, and Pennsylvania's trading/offsets sectors as

needing enhanced oversight. In addition, EPA identified two sectors in Pennsylvania—agriculture and urban/suburban stormwater—as requiring *backstop action levels*, meaning the agency has substantial concerns with actions to meet the TMDL goals. For these two sectors, EPA has taken actions intended to get the jurisdiction on track to meet its goals, such as establishing an expectation for more frequent and detailed reporting and an expectation that Chesapeake Bay funds provided to Pennsylvania would be applied to specific priority watersheds.

Phase III WIPs

In August 2019, EPA received final Phase III WIPs from bay jurisdictions specifying actions they plan to implement between 2019 and 2025 to achieve the TMDL goals. Phase III WIPs consider the 2017 midpoint assessment results and new science and data, such as improved modeling tools, higher-resolution land cover data, additional monitoring data, and greater variety of approved best management practices. Phase III WIPs also consider changing conditions such as population growth, land use changes, and climate change. In July 2018, a committee comprised of members from EPA and other bay partners revised nitrogen and phosphorus targets reflecting refinements to the most recent version of the program's watershed model (**Figure 1**, "Phase III WIP Target"). Some of these revised targets require additional pollution reductions beyond the original 2025 goals, whereas other targets require lesser reductions. The new targets reflect that pollution controls in some watershed areas may be more effective than similar controls in other areas.

Challenges

EPA and other stakeholders acknowledge that, despite progress in reducing pollutants to the bay, challenges remain. Identified challenges include securing funding for wastewater and stormwater infrastructure upgrades and for best management practices and continuing to reduce nutrients in the face of economic development, population growth, increased storm events, and other factors. Some stakeholders also assert that the largely voluntary approach to restoring waters impaired by nonpoint source pollution, such as some agricultural sources, can make it challenging to achieve targets. EPA asserts that jurisdictions can reduce nutrients from such sources when states have effective regulatory programs, voluntary programs that incentivize farmers to reduce runoff, and/or cost share and other financing programs that supplement U.S. Department of Agriculture programs to support conservation practices on farms.

Congress has funded efforts to restore the Chesapeake Bay and its water quality through EPA and other agencies for decades. The President's FY2020 budget request proposed to reduce the budget for the Chesapeake Bay Program and certain other programs that may be used to address nonpoint source pollution. However, Congress increased FY2020 appropriations for the program to \$85 million (P.L. 116-94). Additionally, in 2018, Congress reauthorized CWA Section 221 grants for municipalities and expanded project eligibility to include measures to address stormwater. P.L. 116-94 provides the first appropriations for this grant program: \$28 million for FY2020.

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