2021

CHESAPEAKE BAY State of the Blueprint

Pennsylvania, Maryland, and Virginia

HEATHER REES

CHESAPEAKE BAY FOUNDATION

Saving a National Treasure

WHAT IS THE BLUEPRINT?

Established in 2010 after years of efforts to clean up the Chesapeake Bay that fell short, the Chesapeake Clean Water Blueprint is our best chance for success. It includes pollution limits for nitrogen, phosphorus, and sediment set by the U.S. Environmental Protection Agency (EPA); plans to meet those limits for each of the six Bay states and the District of Columbia; and two-year, incremental goals—known as milestones—to keep progress on track.

2020 POLLUTION-REDUCTION PROGRESS SUMMARY

All sectors compared to 2025 Phase III WIP. Total compared to EPA Planning Target.

		WASTEWATER	URBAN/ SUBURBAN RUNOFF	AGRICULTURE	SEPTIC	OVERALL
PENNSYLVANIA	NITROGEN	ON TRACK	OFF TRACK	OFF TRACK	OFF TRACK	**OFF TRACK**
	PHOSPHORUS	ON TRACK	OFF TRACK	OFF TRACK	N/A	**IN DANGER OF BEING OFF TRACK**
MARYLAND	NITROGEN	ON TRACK	OFF TRACK	IN DANGER	OFF TRACK	**ON TRACK**
	PHOSPHORUS	ON TRACK	ON TRACK	OFF TRACK	N/A	**ON TRACK**
VIRGINIA	NITROGEN	ON TRACK	OFF TRACK	OFF TRACK	OFF TRACK	**ON TRACK**
	PHOSPHORUS	ON TRACK	OFF TRACK	OFF TRACK	N/A	**ON TRACK**

No state is completely on track. Model projections indicate Maryland and Virginia will be close to meeting their 2025 targets overall, though not for agriculture and urban/suburban runoff pollution. Pennsylvania remains far off track.

- **ON TRACK**: Projected loads less than 10% off target
- **IN DANGER OF BEING OFF TRACK**: Projected loads within 10–25% of target
- **OFF TRACK**: Projected loads more than 25% off target or pollution is increasing

J. PAUL WELCH

Time is running out. A healthy Bay, clean streams, and resilient rivers are at risk without a major acceleration in pollution reduction.

Less than four years remain to the 2025 implementation deadline for the historic Chesapeake Clean Water Blueprint—our last, best chance to save the Chesapeake Bay and its rivers and streams. Its success is critical to our region's health, economy, outdoor heritage, and quality of life. Make no mistake, the Blueprint is working, but much work remains in a short amount of time.

Our *State of the Blueprint* report looks at one question: Are the Bay states on track to reduce pollution by the Blueprint's 2025 deadline?

Based on our assessment of progress in Maryland, Pennsylvania, and Virginia, which together account for roughly 90 percent of the Bay's pollution, the answer collectively is 'no.' **If progress continues at its current pace, the Bay partnership will not achieve the Blueprint by 2025.**

Individually, Maryland and Virginia are mostly on track to meet their pollution-reduction commitments overall. But their progress to date is largely due to wastewater treatment upgrades, which, while important, are not enough to finish the job. To do so, they need a major acceleration of efforts to address agricultural pollution and a concerning rise in pollution from urban and suburban development.

Pennsylvania remains far off track, threatening the Blueprint's success, and equally as important, the ability to restore its local waterways. Getting the Commonwealth on track is essential and will require a massive influx of technical and financial assistance to provide farmers the resources to implement conservation practices.

The Blueprint is working. Over the long term, nitrogen and phosphorus pollution in many areas is decreasing, along with summer dead zones. **But the road to finishing the job is steep.** Climate change and the continuing loss of forests and farms to development are serious threats for which the states are not adequately accounting.

Time is running out. The states—and the federal government—must take aggressive, urgent action if we are to leave a legacy of clean water to future generations.

Pennsylvania's Blueprint for Clean Water: *Is it on track?*

Despite reducing over four million pounds of nitrogen pollution in 2020, Pennsylvania is not on track to achieve its 2025 pollution-reduction targets, and the Commonwealth is significantly behind in implementing the practices necessary to close the gap. More than 90 percent of its remaining pollution reductions must come from agriculture. While farmers are adopting conservation practices, a massive influx of technical and financial assistance is required to provide the resources to put these practices in place at the scale and pace necessary. Across the watershed in Pennsylvania, the wastewater sector remains the one area of noteworthy success. However, the loss of farms and forests to development, coupled with more severe storms linked to climate change, pose new challenges for stemming rising pollution from urban/suburban runoff.

We used the Chesapeake Bay Program's scientific model to estimate pollution reductions made between 2009 and 2020 and if those reductions are on a trajectory to meet the 2025 targets. Pennsylvania's pollution-reduction progress is summarized in the table below.

WASTEWATER

Pennsylvania is on pace to meet its 2025 Blueprint targets for wastewater ahead of schedule, largely by installing better technology at treatment plants, enhancing the efficiency of existing treatment plant technologies, or purchasing credits that reduce their contribution to nitrogen and phosphorus pollution. Combined sewer overflows are a challenge for many communities, particularly older cities and boroughs; however, they represent less than 2 percent of Pennsylvania's wastewater nitrogen pollution to the Bay.

ON TRACK Continue to provide "enhanced technical assistance" to help wastewater treatment plants optimize nutrient load reductions with existing technology.

Steps taken: Pennsylvania has offered assistance to a number of publicly-owned wastewater treatment plants to help optimize pollution reductions. While the approach can vary depending on the plant, some examples of optimization techniques include changes to computer programming and more precise regulation of water temperature at key points of the treatment process.

Steps needed: Continue to offer assistance, including financial incentives when available, to help wastewater treatment plants remove as much pollution as possible. This is particularly important for treatment plants serving financially distressed and environmental justice areas.

PENNSYLVANIA 2020 POLLUTION-REDUCTION PROGRESS

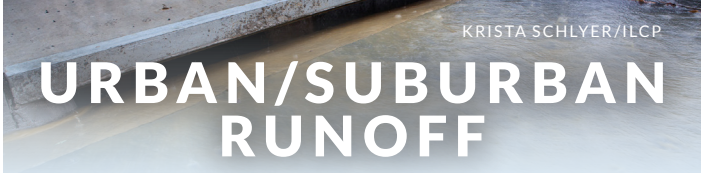
Individual sectors compared to 2025 Phase III WIP. Total compared to EPA Planning Target.

	WASTEWATER	URBAN/ SUBURBAN RUNOFF	AGRICULTURE	SEPTIC	OVERALL
NITROGEN	ON TRACK	OFF TRACK	OFF TRACK	OFF TRACK	**OFF TRACK**
PHOSPHORUS	ON TRACK	OFF TRACK	OFF TRACK	N/A	**IN DANGER OF BEING OFF TRACK**

ON TRACK: Projected loads less than 10% off target

IN DANGER OF BEING OFF TRACK: Projected loads within 10–25% of target

OFF TRACK: Projected loads more than 25% off target or pollution is increasing



KRISTA SCHLYER/ILCP

URBAN/SUBURBAN RUNOFF

The loss of fields and forests to development and the increasing frequency and severity of storms due to climate change are increasing polluted runoff from urban and suburban areas. Despite these new challenges, Pennsylvania has not substantially updated its 15-year-old manual for designing and implementing practices that reduce polluted runoff, called stormwater, including for development projects after construction.

OFF TRACK Complete revisions to the Pennsylvania Stormwater Best Management Practice Manual by the end of 2021.

Steps taken: Pennsylvania continues to work with Villanova University and a subcontractor to update the 2006 manual.

Steps needed: The updated manual has yet to be released. In 2022, Pennsylvania must finalize, release, and encourage broad adoption of the updated manual to achieve greater reductions in polluted runoff from new development and redevelopment activities. To help ensure the manual is embraced, the state and its partners will need to conduct outreach and education to municipal engineers and officials, developers, and others.

OFF TRACK Implementation of stormwater control practices in urbanized areas, construction stormwater permits, and on developed areas outside of the scope of the permitting programs.

Steps taken: The state continues efforts to engage municipalities and, where possible, provide technical and grant funding assistance to implement practices that reduce polluted runoff. The ongoing effects of the pandemic, however, continue to strain state and municipal resources.

Steps needed: Many municipalities struggle with finding the technical and financial resources to implement programs that reduce polluted runoff from streets, buildings, and other hard surfaces common to developed areas. Pennsylvania should pass the recently proposed Pennsylvania Clean Streams Fund (Senate Bill 832/ House Bill 1901), which would direct $25 million to assist municipalities with these challenges. It also includes up to $6.25 million toward tree plantings along community streets and stream sides, which help trap pollution before it enters the water. Municipalities should also consider forming partnerships like a regional stormwater joint venture. These partnerships can help reduce costs and maximize benefits by allowing communities to work collaboratively on projects.

ISTOCK

AGRICULTURE

Pennsylvania is counting on agriculture to achieve more than 90 percent of its remaining nitrogen-pollution reductions. Although each farm's circumstances are unique, and many lack resources, in 2020, model estimates indicated conservation practices by Pennsylvania farmers would result in over two million pounds of additional nitrogen-pollution reductions. Despite that progress, Pennsylvania remains significantly behind, and a major acceleration of financial and technical assistance is essential to help farmers establish the conservation practices needed to reach Pennsylvania's commitment.

OFF TRACK Help farmers implement crop- and soil-management practices that improve long-term soil health.

Steps taken: Farms across Pennsylvania are shifting toward production systems that improve the health of their soils to reduce erosion, nutrient and pesticide loss, and polluted runoff to local streams draining to the Chesapeake Bay. However, Pennsylvania is far off track meeting targets for practices such as rotational grazing and the implementation of soil and water conservation and nutrient management plans at the whole-farm level.

Steps needed: The Commonwealth should pass legislation to create the Agricultural Conservation Assistance Program (ACAP) to provide dedicated, stable funding sources and farm-specific technical assistance to implement these practices.

IN DANGER OF BEING OFF TRACK Implement Agricultural Compliance and Enforcement Strategy to inspect farms in the Chesapeake Bay Watershed and ensure they have plans to limit pollution from erosion, manure, and fertilizer.

Steps taken: From 2016 to 2020, the Commonwealth verified that 11,162 farms had the required plans. In 2019, the majority of farms already had plans in place at the time of inspection, many by taking advantage of the cost-share provided by the Agricultural Plan Reimbursement Program. By the end of the fiscal year, 98 percent of the inspected farms had the necessary plans.

Steps needed: Farms now require financial and technical assistance to implement the practices outlined in the plans. State lawmakers need to pass Senate Bill 832 and House Bill 1901 to create the Clean Streams Fund and establish ACAP, a dedicated, stable, state agricultural cost-share program to help farmers invest in conservation practices. Additionally, inspections still need to be completed on more than half of Pennsylvania farms in the Bay watershed.

OFF TRACK A comprehensive communication/ outreach strategy to engage farmers/landowners in planting and maintaining riparian forest buffers and technical assistance and funding sources to achieve 95,000 acres of forested buffers by 2025.

Steps taken: The Pennsylvania Department of Conservation and Natural Resources (DCNR) provides financial support through the Riparian Forest Buffer Grant program and the TreeVitalize program, a public-private partnership to build capacity within communities to plan for, plant, and care for trees.

Steps needed: Pennsylvania established just over a quarter of the buffers its two-year milestone commitment calls for by 2021. Increased funding and technical assistance are required to accelerate the creation of new buffers and maintain existing buffers.

ISSUE IN FOCUS:

LAND DEVELOPMENT

Preliminary data produced by Chesapeake Conservancy, University of Vermont, and U.S. Geological Survey suggest changes in the watershed's land use between 2014 and 2018 with important implications for water quality. States may or may not have milestone commitments dedicated to addressing these land-use changes, and therefore they cannot be assigned an 'on track' or 'off track' rating. However, in this section, we outline findings from the data, any steps the state has already taken to address the issue, and further steps that are needed.

Land use planning and management in Pennsylvania is done by local municipalities. There are over 1,100 such municipalities in the state's Bay watershed alone. Preliminary data suggest that each year, Pennsylvania loses about 6,000 acres of valuable forests, fields, and farmland to development, including for new residential land uses and massive commercial warehouse and distribution facilities. Recently, large-scale solar arrays have also emerged as a new threat to these sensitive lands. While solar power is essential to address climate change, clearing forests, wetlands, or prime farmland for solar arrays can diminish the land's ability to naturally filter water and capture carbon—undermining clean water and climate targets. Large-scale arrays are proposed for several farms and even forests across the Commonwealth, and more proposals are likely to come as Pennsylvania seeks to achieve clean-energy goals.

Rising pollution from urban and suburban areas—made worse by extreme rainfall linked to climate change—makes it imperative for the Commonwealth to addresses these challenges.

Steps taken: Established in 1988, Pennsylvania's nationally recognized farmland preservation program has preserved over 600,000 acres, statewide, from development.

Steps needed: Local governments should update planning and zoning policies to preserve sensitive landscapes. These include intact and contiguous, quality forests, forest buffers, steep slopes, and wetlands. They should also direct solar arrays and new development away from these areas in favor of already developed land and brownfields; adopt ordinances that limit sprawl outside of towns; limit land disturbance and the creation of hard surfaces; and manage polluted runoff with green infrastructure practices. Pollution from new development that occurs on forests and prime farmland should be offset—achieving a net reduction in pollution—by using onsite best management practices, and, when necessary, implementing practices that reduce pollution at a nearby location.

Finishing the Job in PENNSYLVANIA

Pennsylvania is off track to meet its 2025 pollution-reduction targets. Right now, wastewater treatment is the only sector that is meeting its targets, and it is not enough to make up for the enormous amount of pollution reductions that must still come from agriculture. Growing pollution from urban and suburban areas further impedes progress. There is no easy or inexpensive solution. It will take strong commitment and aggressive actions to close the gap in time.

Pennsylvania's original plan to finish the job (Phase III WIP) fell far short of its 2025 pollution-reduction commitments. Though it has promised to submit an updated plan to EPA, the fact remains the Commonwealth is far behind where it needs to be and it has an enormous amount of work to catch up—circumstances no plan alone will change. To be clear, this failure falls squarely on the General Assembly. Despite incredible efforts by local conservation districts, farmers, and many others working for clean water, their dedication cannot overcome the woefully inadequate state funding and assistance to date. Bottom line, Pennsylvania's leaders have not made clean water a priority, and that must change.

Fortunately, it still can. To meet its commitments, Pennsylvania must urgently undertake a major acceleration of financial and technical assistance to provide farmers the resources they need to adopt conservation practices at the scale and pace necessary. It can start by passing the Pennsylvania Clean Streams Fund and establishing the Agricultural Conservation Assistance Program (ACAP)—a dedicated, stable, state agricultural cost-share program—with sufficient funding. The federal government can—and should—amplify these efforts by directing more funding to its agricultural conservation programs in Pennsylvania. The Clean Streams Fund will also provide municipalities with much-needed investment to implement practices that reduce polluted runoff from urban and suburban areas, a problem that will only worsen as climate change drives more erratic and severe storms.

Local governments, which hold much of the decision-making authority over land use in Pennsylvania, must also update planning and zoning policies to preserve sensitive landscapes and limit the proliferation of hard surfaces.

These challenges are difficult but necessary to address. Doing so will improve the health of Pennsylvania's farms and soils, reduce polluted storm runoff that damages property and streams, and ultimately attain clean water in rivers, streams, and the Chesapeake Bay.

Maryland's Blueprint for Clean Water: *Is it on track?*

Maryland is currently on track to meet the state's 2025 pollution-reduction targets overall. Significant and ongoing investments in wastewater treatment technology and conservation practices on farms have substantially reduced pollution. However, recent maintenance and permit compliance failures at some of the state's largest wastewater treatment plants threaten this progress. Pollution is still increasing from urban/suburban runoff as more land is developed and forests are lost. And more work is needed on farms. To stay on track, the state must redouble efforts to protect and restore natural filters like forests, streamside buffers, and wetlands that reduce pollution and fight climate change in both urban and rural settings.

We used the Chesapeake Bay Program's scientific model to estimate pollution reductions made between 2009 and 2020 and if those reductions are on a trajectory to meet the 2025 targets. Maryland's pollution-reduction progress is summarized in the table below.

WASTEWATER

Improvements to wastewater treatment plants have had remarkable success reducing excess nitrogen and phosphorus pollution to the Chesapeake Bay. This progress represents about half of the total pollution reductions Maryland needs to meet its 2025 Blueprint targets. It demonstrates the value of science-based regulation and sustained investment in cost-effective pollution-reduction practices. However, ensuring permit compliance and full implementation of technology upgrades at treatment plants is essential to realize real-world benefits to water quality.

ON TRACK Upgrade nutrient removal technology at wastewater treatment plants to reduce nitrogen and phosphorus pollution.

Steps taken: The state and local jurisdictions have now completed technology upgrades at 64 of the state's 67 largest plants and are ahead of schedule improving smaller facilities across the state.

Steps needed: Several major exceedances of permit pollution limits have occurred at some of the state's largest wastewater treatment plants. This will require more frequent inspections and enforcement to catch and resolve problems. A related commitment to upgrade septic systems or connect them to high-performing wastewater treatment plants has not held pace. Concrete plans are needed to upgrade or retire septic systems in neighborhoods struggling with this source of pollution.

MARYLAND 2020 POLLUTION-REDUCTION PROGRESS

Individual sectors compared to 2025 Phase III WIP. Total compared to EPA Planning Target.

	WASTEWATER	URBAN/ SUBURBAN RUNOFF	AGRICULTURE	SEPTIC	OVERALL
NITROGEN	ON TRACK	OFF TRACK	IN DANGER	OFF TRACK	**ON TRACK**
PHOSPHORUS	ON TRACK	ON TRACK	OFF TRACK	N/A	**ON TRACK**

ON TRACK: Projected loads less than 10% off target

IN DANGER OF BEING OFF TRACK: Projected loads within 10–25% of target

OFF TRACK: Projected loads more than 25% off target or pollution is increasing

KRISTA SCHLYER/ILCP

URBAN/SUBURBAN RUNOFF

Due to new development and lagging efforts to reduce pollution in established neighborhoods, nitrogen pollution from urban/suburban runoff is increasing and is Maryland's second largest pollution source. Some permit renewals that govern local stormwater systems, construction activity, and industrial sites are overdue, and others contain insufficient protection and restoration requirements.

OFF TRACK Issue new permits with updated requirements to treat polluted runoff in urban and suburban areas.

Steps taken: The state recently issued some overdue permit renewals for Municipal Separate Storm Sewer Systems (MS4s) in its most populous regions. But the new permits fail to protect water quality, especially as climate change brings more frequent, severe rainstorms. Instead, they cut in half the pace at which populated areas are required to replace hard surfaces—one of the most effective ways to reduce urban/suburban runoff pollution. They also allow populated areas to continue relying on practices that do not control runoff—such as stream restoration, street sweeping, or the purchase of water-quality credits from wastewater treatment plants—to comply with their permits. CBF and Blue Water Baltimore are currently suing the Maryland Department of the Environment (MDE) over the shortcomings in the MS4 permits for Baltimore City and Baltimore County.

Steps needed: The state must strengthen the MS4 permits, which should increase the use of natural filters like bioswales and tree plantings in developed areas, and account for increased precipitation from climate change. It must also issue related permits to control runoff, including: the Construction General permit for stormwater from construction sites, which should include stronger protections for Maryland's highest-quality creeks and streams; and the Industrial General permit for stormwater discharged from industrial facilities, which should ensure vulnerable communities do not suffer disproportionately from toxics in industrial runoff. All of these permits must better account for increasingly severe rainfall and other effects of climate change.

ISTOCK

AGRICULTURE

Programs that support conservation practices on farms, like cover crops and phosphorus management, have made important pollution reductions. But these broad strategies alone are not enough to put Maryland on pace to meet its targets for agriculture by the Blueprint's 2025 deadline. With just four years to go, Maryland must accelerate the pace of restoration on farmland and give more attention to restoring natural filters such as streamside forest buffers and pastures.

ON TRACK Fully implement Maryland's phosphorus management program.

Steps taken: Farmers, industry representatives, regulators, and environmental advocates cooperatively developed a program and identified funding to ensure phosphorus, in the form of manure for fertilizer, is only applied to fields that can absorb it. A phase-in of the program was expected to reach every farm by the end of 2021.

Steps needed: Timely reporting of phosphorus levels in the soil and changing to farm practices that reduce excessive phosphorus levels will be critical as the program extends to cover more farmland. Identifying best practices to appropriately manage phosphorus should be a priority over the coming year.

IN DANGER OF BEING OFF TRACK Increase natural filters and healthy soil cover on agricultural land.

Steps taken: Over the past two years, the General Assembly has made it substantially easier for farmers to access funding and technical assistance for restoration using natural filter practices like tree plantings and pasture establishment.

Steps needed: The state's targets for establishing natural filters on farms are not ambitious enough and the pace of implementation is not fast enough to meet pollution-reduction targets and make lasting gains for clean water. Strengthening incentives for farmers to maintain diverse, year-round crop or pasture cover in their fields should be a high priority. The state should also work to maximize enrollment in the federal Conservation Reserve Enhancement Program (CREP), which is currently decreasing and far below the amount allowed, and make restoration of natural filters standard practice on lands subject to conservation easements.

ISSUE IN FOCUS:

LAND DEVELOPMENT

Preliminary data produced by Chesapeake Conservancy, University of Vermont, and U.S. Geological Survey suggest changes in the watershed's land use between 2014 and 2018 with important implications for water quality. States may or may not have milestone commitments dedicated to addressing these land-use changes, and therefore they cannot be assigned an 'on track' or 'off track' rating. However, in this section, we outline findings from the data, any steps the state has already taken to address the issue, and further steps that are needed.

Preliminary data suggest that Maryland adds about 6,000 acres of rooftops, roadways, parking lots, and lawns every year, an area larger than a city the size of Annapolis. About 2,500 acres of forest and non-urban tree canopy are modified annually due to such land use/land cover changes as timber harvest, urbanization, agricultural expansion, and other drivers. Over 90 percent of the state's net forest loss comes from urban and suburban growth, meaning natural filters like forests are replaced with buildings and hard surfaces that funnel more pollution into waterways. This continued shift in Maryland's landscape degrades local rivers and creeks and makes it harder to clean up the Chesapeake Bay.

Steps taken: Maryland committed to sustain funding for state land conservation and preservation programs, which help protect sensitive natural landscapes from development. Recent annual appropriations by the governor and General Assembly have met the mark, though the state must ensure that repayments for past program cuts directly support land protection.

Steps needed: The state must do better to account for growth and offset the negative impacts of development on water quality. For example, it should strengthen state forest conservation laws, which currently require replanting only one acre of trees for every four acres cut. It should not allow growth to proceed using traditional septic systems when less-polluting systems are available. Regulations intended to protect the state's healthiest creeks and streams must change to fully consider alternatives that could minimize the footprint and impact of new construction. And, as noted earlier in this report, the state must strengthen permits and controls on polluted urban/suburban runoff.

Finishing the Job in MARYLAND

Model projections show Maryland is largely on track to meet its 2025 pollution-reduction targets, thanks to the state's long-term commitments to upgrade wastewater treatment plants and adopt conservation practices on farms. However, to fully realize these gains and achieve its Blueprint targets, Maryland must take the following urgent actions:

- First, the state must accelerate work to **restore natural filters on farms and install pollution controls on hardened surfaces** in urban and suburban areas. Action is still needed to protect forests, improve soil health on farms, and provide technical assistance to farmers and local governments.
- Second, Maryland must continue to **inspect and take enforcement action where wastewater treatment facilities have fallen out of compliance**. Failing to do so risks backsliding on hard-won progress, and poses threats to water quality, public health, and the seafood industry.
- Finally, climate change and continued deforestation due to land development will further stress Maryland's waterways. The state must **do more to account for these growing threats** to its Clean Water Blueprint.

Virginia's Blueprint for Clean Water: *Is it on track?*

Virginia is largely on track to achieve its 2025 pollution-reduction targets. The Commonwealth's investment in upgrading wastewater treatment plants is the single largest factor in its progress. Pollution is also declining thanks to investment in conservation practices on farms, but without a major acceleration of these efforts Virginia will not meet targets for agriculture. Meanwhile, pollution from urban and suburban areas is rising—in fact, offsetting pollution reductions in agriculture—and the Commonwealth is losing an area of forest larger than Richmond each year. Virginia must accelerate pollution reductions from agriculture and urban/suburban runoff, maximize wastewater treatment upgrades, and address new sources of pollution driven by climate change, increasing development, and forest loss.

We used the Chesapeake Bay Program's scientific model to estimate pollution reductions made between 2009 and 2020 and if those reductions are on a trajectory to meet the 2025 targets. Virginia's pollution-reduction progress is summarized in the table below.

WASTEWATER

Wastewater accounts for a quarter of Virginia's nitrogen pollution. Efforts to reduce pollution through wastewater treatment upgrades have been highly successful and Virginia should look to continue and optimize these efforts.

ON TRACK Reissuance of the Watershed General Permit and Chlorophyll-*a*-based waste load allocations for the James River.

Steps taken: Virginia made major progress by passing the Enhanced Nutrient Removal Certainty Act in 2021 (SB1354/HB2129), which requires additional pollution reductions from some wastewater treatment facilities. In addition, the Commonwealth continues to invest in wastewater treatment plant upgrades.

Steps needed: Virginia still needs to finalize updated permit limits based on new chlorophyll criteria for wastewater plants in the James River watershed. Updating permit limits for the York River is also warranted.

ON TRACK Manage the Wastewater Infrastructure Workgroup to meet wastewater needs to address septic sources.

Steps taken: The adoption of wastewater equity legislation (SB1396) represents a critical step toward addressing nitrogen pollution from septic systems. This bill creates a fund to help property owners with lower incomes repair or install septic systems. It also establishes an advisory group, called the Wastewater Infrastructure Workgroup, to assess wastewater needs and plan for climate change effects on wastewater treatment systems.

Steps needed: Investments in these programs, along with better planning for the future, are critical to manage pollution from septic systems. For example, Virginia should adopt policies that would prohibit permitting systems in flood-prone areas.

VIRGINIA 2020 POLLUTION-REDUCTION PROGRESS

Individual sectors compared to 2025 Phase III WIP. Total compared to EPA Planning Target.

	WASTEWATER	URBAN/ SUBURBAN RUNOFF	AGRICULTURE	SEPTIC	OVERALL
NITROGEN	ON TRACK	OFF TRACK	OFF TRACK	OFF TRACK	**ON TRACK**
PHOSPHORUS	ON TRACK	OFF TRACK	OFF TRACK	N/A	**ON TRACK**

ON TRACK: Projected loads less than 10% off target

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OFF TRACK: Projected loads more than 25% off target or pollution is increasing

KRISTA SCHLYER/ILCP

URBAN/SUBURBAN RUNOFF

Polluted runoff from growing urban and suburban areas raises significant challenges for achieving Bay restoration targets and has damaging effects on local water quality. Virginia must address existing sources of polluted runoff with restoration and minimize the increases in pollution from newly developed lands.

OFF TRACK Revise and reissue important permits to control polluted runoff from developed areas.

Steps taken: Important steps taken include significant investments in the Stormwater Local Assistance Fund (SLAF), which helps communities pay for effective pollution-control measures, and completion of the Municipal Separate Storm Sewer System (MS4) action plan guidance, which outlines how cities and developed areas can meet their MS4 permit requirements to reduce polluted runoff. We applaud the discontinuation of an outdated practice that allowed cities and counties to meet permit requirements by street sweeping, a change reflected in both the reissued MS4 action plan guidance and the reissuance of the Arlington MS4 permit.

Steps needed: Virginia's plan to reduce urban/suburban polluted runoff included issuing MS4 permits in three, five-year cycles by 2025, with each cycle requiring progressively stricter pollution reductions. However, Virginia is six to 10 years behind that schedule. At the current pace, no more than 40 percent of the overall pollution-reduction requirements will be established by 2025. The Commonwealth needs to promptly reissue MS4 permits and establish a policy to address the longstanding delay. Continued investment in SLAF is also critical to achieve progress in this sector.

OFF TRACK Enhance tree planting and tree canopies as an approach to addressing polluted runoff from developed lands.

Steps taken: Virginia provisionally passed legislation in 2021 to assist counties and cities in enhancing their tree canopies. As a next step, a working group has been established to consider means of preserving and expanding tree canopies. The Virginia Department of Environmental Quality (DEQ) also established a Technical Advisory Committee (TAC) this year to consider using trees to control polluted runoff from development.

Steps needed: The Commonwealth is consistently losing nearly 50,000 acres of forest per year. Virginia needs to enact legislation that will allow cities and counties to conserve and protect tree canopies. Virginia should also revisit its Permit By Rule for solar facilities—a process that automatically grants permits to projects that meet regulatory requirements—in order to preserve forest and prioritize brownfields and other previously developed or degraded sites for solar development.

ISTOCK

AGRICULTURE

Agriculture represents nearly 70 percent of the remaining pollution reductions Virginia must make to meet its Blueprint targets. The Commonwealth has taken several positive steps to help address the problem, but without finding ways to massively accelerate the adoption of conservation practices on farms, it will not meet its targets for agriculture by the 2025 deadline. The proposed state budget for fiscal years 2023-2024 would for the first time provide full funding for the Agricultural Cost-Share program at the levels of assessed need, but its passage by the state legislature remains uncertain.

IN DANGER OF BEING OFF TRACK Implement changes in cost-share practices to increase incentives for forested buffer implantation.

Steps taken: The Virginia Agricultural Cost-Share program's Technical Advisory Committee (TAC) has recommended the creation of a streamside forested buffer maintenance cost-share practice that will pay farmers to maintain forested buffers for the first three years after establishment. Accelerated implementation of this practice is sorely needed.

Steps needed: The Soil and Water Conservation Board should approve adoption of the forested buffer maintenance practice recommended by the TAC. Virginia reported 257 acres of forested buffers planted in 2020. But the state needs to plant more than 6,000 acres of buffers annually to meet its 2025 target of 48,000 total acres. Forested buffers are the most effective pollution-reduction practice, with the most co-benefits.

IN DANGER OF BEING OFF TRACK Implement legislation to track and require livestock exclusion and nutrient management.

Steps taken: Virginia passed legislation in 2020 that sets a clear goal to install fences to keep cattle out of all perennial streams as of 2026 if the Commonwealth has not met nutrient-reduction targets for the agricultural sector. Virginia also conducted pilot studies to evaluate progress and established an approach to evaluate the remaining work.

Steps needed: Livestock exclusion and nutrient management represent critical pieces of Virginia's Clean Water Blueprint, known formally as its Watershed Implementation Plan (WIP). Despite recent increases in investment, Virginia has still yet to fund the cost-share program, which helps farmers pay for these conservation practices, at the level of need. Those investments must happen for Virginia to achieve its targets.

ISSUE IN FOCUS:
LAND DEVELOPMENT

Preliminary data produced by Chesapeake Conservancy, University of Vermont, and U.S. Geological Survey suggest changes in the watershed's land use between 2014 and 2018 with important implications for water quality. States may or may not have milestone commitments dedicated to addressing these land-use changes, and therefore they cannot be assigned an 'on track' or 'off track' rating. However, in this section, we outline findings from the data, any steps the state has already taken to address the issue, and further steps that are needed.

Preliminary data suggest that 50,000 acres of forest and non-urban tree canopy are modified per year in Virginia due to such land use/land cover changes as timber harvest, urbanization, agricultural expansion, and other drivers. Forests naturally filter water and reduce pollution reaching rivers and streams, among many other benefits they provide to communities and wildlife. These changes therefore have significant implications for water quality and are offsetting a significant portion of Virginia's progress toward its pollution-reduction targets. For example, between 2009 and 2020, reductions in nitrogen pollution from agriculture were offset by increases in pollution from urban/suburban runoff.

Steps taken: Virginia has established stakeholder groups to consider trees and tree canopy enhancement as a tool to control runoff, mitigate urban heat islands, and protect water quality.

Steps needed: Virginia needs to adopt policies to minimize impacts of new development on trees and waterways, prioritize solar field development on non-forest lands, and ensure streamside forest buffers and tree canopies are protected. Further, to offset the increasing pollution from development, Virginia needs to incentivize optimization of wastewater treatment facilities. It should upgrade all remaining major facilities in the James and York River watersheds that release high levels of nitrogen pollution (greater than 4.0 mg/L concentration) but were not included in the Enhanced Nutrient Removal Legislation. Virginia should require new developments to adequately reduce and offset harm to the environment, including the increasing impacts associated with climate change.

Finishing the Job in VIRGINIA

While models show Virginia is currently on track to meet its 2025 pollution-reduction targets, troubling trends threaten this progress. Virginia can still meet its 2025 targets, but critical actions are needed.

The Commonwealth's investment in upgrading wastewater treatment plants has made a substantial difference, and the resulting pollution reductions are the largest factor in Virginia's overall progress to date. Taking advantage of all opportunities to further upgrade wastewater treatment facilities will be critical, especially to offset the increasing pollution from urban and suburban development.

Investments in Virginia's Agricultural Cost-Share program and Stormwater Local Assistance Fund, which respectively help farmers and cities adopt practices that reduce polluted runoff, have also contributed to pollution reductions. However, to achieve its 2025 commitments, Virginia must urgently accelerate pollution reductions from developed lands—with a focus on planting much more streamside forest buffer and expanding tree canopy—and from agriculture, by ensuring that the funding for the Commonwealth's cost-share program for agricultural best management practices consistently reaches the assessed need.

Finally, Virginia must confront new challenges. Climate change, increasing development, and forest loss will add new sources of pollution and put additional pressure on existing sources, such as septic systems. Virginia must address these challenges or risk losing the hard-won progress it has made.

Current and Future Challenges

The Chesapeake Clean Water Blueprint is working. Over the long term, polluted runoff in many areas is decreasing, along with summer dead zones. But the road to finishing the job is steep. In addition to the unique challenges each state must overcome to meet the Blueprint targets, climate change and the continuing loss of forests and farmland to development are serious threats to progress. In fact, they are increasing the amount of pollution in the watershed. To address these challenges and meet the 2025 Blueprint targets on time, the U.S. Environmental Protection Agency (EPA) must hold states accountable to their commitments and the federal government should play a larger role in mobilizing the resources necessary to finish the job.

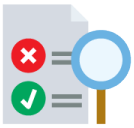
Climate Change

Climate change is affecting the Chesapeake Bay and rivers and streams across the watershed—adding more stress to a system still out of balance. Water and air temperatures are increasing, putting both wildlife and people at risk of dangerous heat and worsening the Bay's low-oxygen dead zone. Sea levels are rising at a rate nearly twice the global historic average, causing damage to habitat and property. And record-breaking storms are becoming more common, washing more pollution into rivers and the Bay. All of this makes achieving pollution-reduction targets more difficult. Watershed-wide, EPA and the states agreed practices need to be in place to reduce an additional 5 million pounds of nitrogen and 0.5 million pounds of phosphorus by 2025 to account for climate change. The states must incorporate these additional reductions into their Blueprint plans beginning in 2022. Preliminary estimates indicate that number could double—requiring 10 million pounds of additional nitrogen reductions—by 2035, highlighting the urgency of addressing climate change impacts now, rather than later.

Land Development and Accounting for Growth

Preliminary data suggest that between 2014 and 2018, the Chesapeake Bay watershed experienced a net change of 270,000 acres of forest and non-urban tree canopy due to such land use/land cover modifications as timber harvest, urbanization, agricultural expansion, and other drivers. Preliminary data suggest that within the watershed, we have added nearly 25,000 acres per year of new urban land over a recent four-year time frame. These are troubling figures for the watershed's future. Forests and other open lands provide wildlife habitat, moderate heat, supply fresh water for drinking, trap carbon, and are crucial for filtering out pollution before it reaches rivers, streams, and the Bay. But none of the states are accounting for or adequately offsetting the effects of this loss. Nor do state regulations adequately account for the additional polluted runoff generated by new roads, lawns, buildings, and other hard surfaces. To achieve the Blueprint by 2025—and protect the long-term health of streams and the Bay—this must change.

Federal Accountability and Partnership



EPA is the only independent party that can hold states accountable to their Blueprint commitments. It is required to exercise its authority under the Clean Water Act to ensure that all Bay jurisdictions develop plans that meet their targets for reducing pollution by 2025. After EPA initially accepted inadequate plans from New York and Pennsylvania, CBF and our partners, in conjunction with three watershed states and the District of Columbia, sued the agency in 2020. But plans alone are not enough. Pennsylvania is due to submit an updated plan to EPA, but the agency must ensure there is reasonable assurance the Commonwealth can implement it on time. Pennsylvania's historically paltry funding for clean water and enormous gap in progress to date indicate the need for drastic change. EPA must take much more forceful action to ensure that change happens. Additionally, the Bay restoration's federal partners must step up to the plate. The best chance to achieve the Blueprint is a major acceleration of conservation practices on farms, particularly in Pennsylvania. The same practices that improve water quality can reduce greenhouse gas emissions and build resilience to climate change. The federal government should urgently direct all possible resources to support this effort and the United States Department of Agriculture (USDA) should establish the Chesapeake Resilient Farms Initiative to ensure that sufficient levels of federal funding for agricultural conservation practices are sent to areas in the watershed that will have the greatest impact.

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