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Chesapeake Bay Program  
A Watershed Partnership



**Local Government  
Advisory Committee**

to the Chesapeake Executive Council

September 19, 2022

Michael Regan, Chair  
Chesapeake Executive Council  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington District of Columbia 20460

Re: LGAC 2022 Annual Recommendations

As Chair of the Local Government Advisory Committee (LGAC), I represent the collective voice of local elected officials throughout the Chesapeake watershed. We support the vision of healthy local watersheds that has the added benefit of improving the health of the Chesapeake Bay.

LGAC hopes its priorities align with yours for the successful restoration of the Bay. All politics is local. Local leaders serve as a unique vessel that can not only reach out to other local/state/federal leadership, but, most importantly, to our residents, whose support is vital to our shared vision of creating healthy waterways and communities. The time is now for our communities to better know and understand why Bay restoration is vital to their quality of life and, in turn, to see the government investments made to address issues in their communities. If that is achieved, LGAC believes there will be buy-in unlike we have ever seen on the issues that everyone collectively is fighting for.

For several years LGAC has recommended that jurisdictions begin a more concerted focus on the increasingly significant impact caused by extreme localized flooding events. As leaders representing various types of communities, LGAC urge partners to recognize that flooding isn't isolated to coastal communities and isn't always the result of precipitation. As we work to obtain buy-in from our residents and state leaders to invest in flooding - we must also recognize that opportunities must exist to address neighborhood flooding that results from other environmental and man-made factors. In doing so, all levels of government will create sustainable communities while immediately improving citizens quality of life.

LGAC is here as your partner and I am pleased to present the attached 2022 Annual Recommendations to the Chesapeake Executive Council.

Sincerely,

Jasmine Gore, LGAC Chair

Cc: Chesapeake Executive Council  
Kandis Boyd, Director, Chesapeake Bay Program  
Enclosure

Jennifer Starr, Director of Local Government Programs/LGAC Coordinator  
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## 2022 Annual Recommendations to the Chesapeake Executive Council



Each year, LGAC collectively invests a significant amount of time and problem-solving efforts to address the many issues affecting our local governments' ability to participate in and more fully benefit from the Vision contained in the 2014 Chesapeake Bay Watershed Agreement. What we learned over the last year is that local governments are concerned about having the ability and capacity (both human and fiscal) to address these issues in a manner that provides a more equitable distribution of the benefits of our efforts. Additionally, we are concerned about the ever-increasing impacts of the severe flooding we are witnessing, especially as it impacts our infrastructure maintenance needs, and the negative impact it can have on our efforts to grow our local economies. We still need help addressing climate resiliency, workforce development and training, and a variety of other issues that affect the health, safety and welfare of our constituents, as well as the health of the Watershed.

This year (for the first time in many people's lifetime!) the federal government stepped up its efforts to share in our burden, including the federal American Rescue Plan Act, the federal Bipartisan Infrastructure Law, and the newly-signed Inflation Reduction Act. There is now and will be significant funding made available for the needed infrastructure construction and maintenance needs we face, as well as additional funds to help us deal with addressing our climate-related improvements.

Beneficial as these new opportunities are, they have unnecessarily created a uniquely new challenge for local governments as we are having to compete for limited expertise, manpower and resources to implement projects. These challenges include building the local capacity to research innovative solutions that support green efforts, in addition to applying for and accessing new funding. If a municipality has the staff and resources to overcome the hurdles noted above, they still face obstacles related to completing the project in the required timeframe, complying with all the grant reporting/project management requirements, and dedicating funding to future maintenance, which are all incredibly difficult to overcome.

As a result, communities are reverting to the "status-quo" and that which they know rather than taking this opportunity to support cutting-edge technology because it is new or requires in-depth research or required skilled labor to initiate and/or maintain that may not be locally available. New solutions are needed, as traditional pathways to training, credentialing and/or employment are strained due to a limited pool of resources available in relation to the many communities in need.

Developing and supporting workforce development efforts, especially in traditionally-underrepresented communities, and addressing flooding impacts and other climate resiliency initiatives are thus not supported to the extent that local leaders would like for a number of real reasons. It should also be noted that the current situation is a perfect storm resulting from years of advocacy for state and federal leadership to invest in local government, employment, and infrastructure.

Therefore, we recommend the Executive Council take the following actions to advance Chesapeake Bay watershed restoration and protection efforts at the local level.

### **Identify jurisdiction workforce development training programs to support blue/green jobs**

Federal resources under the American Rescue Plan Act and the Bipartisan Infrastructure Law have created unique opportunities for local governments to proactively and thoughtfully address community infrastructure needs. The challenge now is, due to concise timeframes for spending these funds, local governments are heavily competing with other communities for trained, certified, and qualified contractors to design and implement these infrastructure projects and frequently not being successful. Efforts to identify the needed skills, develop training and certification programs to address those needs, and reach a broadly represented and inclusive employable workforce are a challenge. Jurisdictions need to identify barriers to this challenge to improve community resilience and quality of life.

LGAC urges jurisdiction Governors and the District of Columbia Mayor to require their Cabinet leadership to:

- Collect a listing of all training opportunities, including categories for recruitment, development, retention, education related to green jobs at the local/state levels to support the planning, design and maintenance of watershed goals.
- List all jobs in high-demand or hard to fill within their state Environmental Offices

These lists will provide results that will determine where there is need and where to focus future efforts. Results and efforts should be publicly available on all relevant web pages and dispersed widely. LGAC also suggests that a more concentrated focus on making this training available for underrepresented communities occur, and developing blue/green job programs, promoting them widely and through multiple channels, and supporting opportunities for growth within the programs to ensure a livable wage will support jurisdiction efforts to revitalize communities and residents.

***LGAC calls on the Chesapeake Executive Council to take the leadership role in promoting the requisite green infrastructure workforce development, training and certification programs as a means to support local economies and continue watershed restoration efforts.***

### **Develop jurisdiction-specific consolidated funding application portals**

Given this once-in-a-lifetime outpouring of federal funding opportunities that are being funneled directly to local governments and through jurisdictions, LGAC encourages the development of a one-stop-shop application portal for project proposal submission. This priority is critical and timely.

Currently federal funds are directed to numerous federal agencies who are or have, in turn, established guidelines and procedures for applying for and dispersing such funds. All have separate deadlines and unique requirements. LGAC recognizes that this process is competitive and each agency has unique goals to achieve success. The immediate challenge for applicants is understanding the processes, requirements, deadlines, and, for a number of funding mechanisms, meeting match requirements. Given the human and fiscal capacity challenge many municipalities face on an on-going basis, keeping track of all of the varying funding opportunities is daunting. In addition, currently deadlines are tight and do not factor in the statutorily required time frames which municipal applicants face as they issue bids and procure

qualified and experienced contractors.

Therefore, and recognizing that LGAC's ask is not an easy one, we nonetheless request some out-of-the-box thinking to re-assess how funding is made available, what the requirements are, how proposals are submitted and how selection is determined. LGAC recognizes this is an overly-simplistic example but the EC should consider using the Common Application process colleges and universities have developed for undergraduate applicants as a model. LGAC acknowledges that some jurisdictions have developed and/or are in the process of developing examples of these portals (i.e., Maryland's new Resilience and Restoration Grants Gateway and Delaware Database for Funding Resilient Communities).

LGAC urges jurisdiction Governors and the District of Columbia Mayor to require their Cabinet leadership to:

- Collect all funding sources available from Chesapeake Bay Program federal and jurisdiction partners and simplify the application process.

***LGAC calls on jurisdiction members of the Chesapeake Executive Council to develop consolidated and easy-to-use grant portal to include all federal funding opportunities, and calls on EPA and its federal partners to simplify and streamline grant application processes relating to Chesapeake Bay priorities for the purpose of inclusion and full representation of the watershed communities.***

LGAC hopes its priorities align with yours for the successful restoration of the Bay. As your advisors on issues related to local government engagement, we stand ready to assist in achieving our collective vision for a clean and healthy Chesapeake Bay watershed through the implementation of these recommendations.



## Citizens Advisory Committee

TO THE CHESAPEAKE EXECUTIVE COUNCIL

September 22, 2022

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The Honorable Michael S. Regan  
U.S. EPA Administrator  
Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Dear Administrator Regan,

Created in 1984, the Citizens Advisory Committee (CAC) works cooperatively, and on a nonpartisan basis, to advise the Chesapeake Executive Council on restoration and protection of the Chesapeake Bay Watershed. As independent volunteers, we travel throughout the watershed to meet with agency representatives, thought leaders, and practitioners to discuss issues impacting the ecosystem and local communities. We learn from diverse communities and organizations about their economic and social connections to the health of their local waterways. Through these interactions we witness innovative programs that produce valuable results. We also learn about emerging issues that would benefit from Chesapeake Bay Program's (CBP) unique ability to tap into science and cross-jurisdictional guidance and policy for the watershed.

The CAC represents a diversity of stakeholders across the Chesapeake Watershed and embraces the shared value of a healthy, sustainable watershed for all of the residents who live and work in our region. We appreciate that substantial progress toward the Bay restoration has occurred and we recognize the many persons, organizations, agencies and others who have made a difference.

We acknowledge the challenging work which remains. In that regard, we take our volunteer time seriously to watch over the progress being made on the aspects of the restoration effort that can foster and strengthen the health of our ecosystem and quality of life for watershed residents. We aim to offer the Program Partnership meaningful insights and suggestions that can be translated into policy changes or concrete actions that we strongly believe would help accelerate the progress as we approach the 2025 deadline for practices in place to meet the water quality targets and goals of the *Chesapeake Watershed Agreement*.

In preparation for the Chesapeake Executive Council 2022 annual meeting, below we offer our top three recommendations of issues and opportunities for (1) Progress Toward the 2025 Deadline and Beyond, (2) Inclusive Engagement Fostered by Volunteer Stipends for Wage Replacement, and (3) Large-Scale Solar Development as an Emerging Issue in the Chesapeake Bay Watershed.

Respectfully submitted,

Julie Patton Lawson  
Chair, Citizens Advisory Committee



Jessica M. Blackburn, CAC Coordinator  
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## **2022 Citizens Advisory Committee Annual Recommendations To the Chesapeake Executive Council (Issued September 22, 2022)**

Since the December 2021 Executive Council meeting, the Citizens Advisory Committee has held quarterly meetings and panel discussions, hosted virtual learning sessions, updated our bylaws, and discussed our role in advancing DEI both internally and at the Chesapeake Bay Program. We have heard from a variety of local, state and federal representatives; NGOs; and representatives of business and industry. Based on these discussions, the following recommendations are respectfully submitted to the executive leadership of Chesapeake Bay Program.

### **Progress Toward the 2025 Deadline and Beyond**

We believe the decades-long effort to restore and protect our national treasure, the Chesapeake Bay and its watershed, is at a crucial moment. Public trust and confidence will hinge on the Executive Council's leadership and transparency as we approach the 2025 deadline for the *Chesapeake Bay Watershed Agreement*. As your independent advisors, we see that the challenge to meet in the next two years is confirming the credibility of the Chesapeake Bay Program. CAC believes this is accomplished in two fundamental ways: (1) clearly communicating progress and adapting to new approaches not envisioned when the last *Agreement* was signed, and (2) following through on the promise of accountability for the Bay TMDL water quality outcomes.

First, the CAC supports the Executive Council's resolution to charge the Principals' Staff Committee to assess the CBP's science, restoration and partnership. As a part of that work, we encourage a comprehensive examination of the 2014 *Chesapeake Watershed Agreement* to inform and communicate the continued effort after the 2025 deadline. We suggest addressing key questions, for example: What about the *Agreement* worked? What didn't work well? What was the accountability factor that made it different from previous *Agreements*? What challenges emerged that we could not envision in 2014 and how will they be addressed? A clear understanding and communication about these lessons learned will help to engender public trust and investment in the effort beyond 2025.

Secondly, the CAC calls on the membership of the Executive Council for strong leadership. To the signatory states, we encourage you to prioritize watershed recovery in the next two years by delivering on the promise of enforcement of existing regulations and verification of practices. Particularly for states with budget surpluses, invest in your environmental agencies by hiring the staff required to fulfill their mission to protect human health and waterways. To the Environmental Protection Agency (EPA), we strongly support your authority afforded by the federal Clean Water Act to increase inspections, enforcement, permitting oversight and other "backstops" to help the signatory states advance progress on water quality targets. In our view, the credibility of the Chesapeake Bay Program depends on the strong leadership of the EPA to coordinate the accountability for the billions of dollars taxpayers contribute toward a healthy and productive Chesapeake ecosystem.



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**Recommendation: Prioritize the Chesapeake Bay Watershed recovery by hiring agency staff to enforce existing regulations, target priority practices with co-benefits, and provide technical assistance for implementation. Confirm the credibility of the Chesapeake Bay Program with transparent accountability to the *Chesapeake Bay Watershed Agreement* and steadfast reliance on state and federal environmental authorities.**

Additionally, we respectfully disagree with the August 5, 2022, letter issued to the EPA on behalf of the State Agricultural Secretaries with a request for a funding course correction that would divert new Chesapeake Bay Program funds away from the Small Watershed and Innovative Nutrient and Sediment grant funding programs. The CAC supports the Congressionally appropriated process that allows funding to be competitively distributed to NGOs for on-the-ground implementation in local communities. We believe the current process provides stringent project oversight, ensures timely and cost-effective expenditures of funds, and leverages additional resources for local impact and ownership in the restoration effort.

### **Inclusive Engagement Fostered by Volunteer Stipends for Wage Replacement**

As stated in our August 8, 2022, letter to the Chair of the Executive Council, the CAC strongly supports the August 2020 Chesapeake Executive Council (EC) *Statement in Support of Diversity, Equity, Inclusion and Justice*, where the following commitments are articulated:

- “The Chesapeake Bay Program partners believe the full diversity of people who live, work and recreate in the Chesapeake Bay Watershed have a right to benefit from, **and help guide**, the future of an environmentally and economically sustainable Chesapeake Bay watershed...”
- The partnership commits to “Foster a culture of inclusion, respect and mutual learning by leading organizational change and **empowering new voices** and perspectives in our outreach, engagement and internal decision-making.”
- Furthermore, it is stated the partnership will “Ensure the benefits of our science, restoration and **partnership programs are distributed in a fair and equitable manner without adverse, disproportionate impacts on vulnerable populations**, especially those of lower economic status, indigenous, historically underrepresented communities and people of color.”

**Recommendation: Help advance the CBP’s commitments to DEIJ by providing stipends to eligible volunteers of the Advisory Committees and Chesapeake Bay Program workgroup members who are not paid by their jobs to participate. A CBP financial priority to support volunteer stipends is an actionable solution to a barrier of inclusive engagement by intentionally uplifting the voices of traditionally excluded watershed residents.**

Additionally, volunteer stipends demonstrate commitment to the DEIJ Action Statement endorsed by your Principals’ Staff Committee to Advance DEIJ Internally by,

“increasing diversity and inclusion for staff, appointees and volunteer bodies; building a common understanding of, and expanded capacity for, DEIJ; and institutionalizing efforts to advance DEIJ values and practices internally” and Advance DEIJ through Mission-Related Work by, “...incorporating community leaders’ input into decision-making and implementation...”

The vast majority of the Chesapeake Bay Program partnership is populated by state and federal agency staff with some members from the NGO community. There are key CBP workgroups, for example the Diversity and Stewardship workgroups, and the Citizens Advisory Committee that provide valuable input from residents with



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community-level experience and perspectives. The volunteer nature of these groups tends to favor participation from environmental professionals, employees with company pro bono paid time off, or retirees. Members who do not fall into those categories often must take personal time off from their jobs to participate in committee work. This unintentional bias limit or even precludes participation from small nonprofits, community advocates and grassroots organizations, including those led by BIPOC members.

Internally for the CAC, we believe a volunteer stipend will help advance CAC's internal DEI by allowing members who are eligible (approximately 25% of the CAC membership) for volunteer time compensation to have additional time for the internal CAC operations and deliberations, thereby increasing access to CAC decision-making, CAC leadership positions, and opportunities for interaction with CBP leadership. Traditionally, this level of participation has been limited to only the members who can financially afford it. The opportunity to replace wages through paid committee activities will help break down the existing system where only those who can afford to participate are able to give freely of their time to CBP-related work, and subsequently create more equitable access to CBP leadership and power.

The CAC's most recent panel discussion hosted during our September 2022 quarterly meeting focused on equitable access to grantmaking. Through internal discussion and panel participation, we have identified a number of barriers and potential solutions to important resources and funding mechanisms that can help support capacity building of frontline communities seeking to engage residents in environmental stewardship. We look forward to sharing these findings with you and your staff in the coming months.

## **Large-Scale Solar Development as an Emerging Issue in the Chesapeake Bay Watershed**

The CAC believes renewable energy is a positive move toward reducing greenhouse gases from fossil fuels to address climate change and reduce our dependence on foreign oil. We strongly support the 2021 [Chesapeake Executive Council: Directive No. 21-1 Collective Action for Climate Change](#) that calls on the Chesapeake Bay Program to utilize their scientific, modeling, monitoring and planning capabilities to prioritize the communities, working lands and habitats that are most vulnerable to the risks of a changing climate.

In May 2022, the CAC hosted a panel discussion about land use and water quality impacts of large-scale solar development in the Chesapeake Bay Watershed. According to the Solar Energy Industries Association, the solar industry is set to quadruple over the next decade. We also learned from a recent national study co-authored by the Ohio State University Agricultural and Resource Law Center and West Virginia University College of Law that farmland is often the preferred location for new solar development.

The CAC views large-scale solar development as an emerging issue that, without proper planning and understanding, could have an impact on the CBP Partners' ability to meet a number of the *Chesapeake Watershed Agreement* Goals and Outcomes including, but not limited to: (1) Water Quality and 2025 Watershed Implementation Plan Outcome; (2) Forest Buffers Outcome; (3) Protected Lands Outcome for wetlands and forest land; and (4) Stream Health Outcome. Now is the time to create a watershed-wide approach to large-scale solar development for near-term and future planning beyond the 2025 TMDL deadline. The CBP is uniquely structured in that it can learn from its partners and proactively craft common sense policy for the future.

**Recommendation: Convene the Chesapeake Bay States and relevant federal agencies to coordinate a watershed-wide approach to planning for large-scale solar development in our region. CBP guidance of best practices informed by science and a comprehensive look at solar development practices and policies will help meet the demands of renewable energy while also protecting the high-quality ecosystem functions,**



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**sustainable agriculture, and water quality targets outlined in the *Chesapeake Bay Watershed Agreement*, the 2025 Chesapeake Bay Watershed TMDL, and beyond.**

The CAC identified the following topics that would benefit from cross-jurisdictional learning and the development of CBP guidance on watershed-wide large-scale solar development:

- Involvement of agricultural leaders in renewable energy decision making to:
  - Understand the potential long-term impact on agricultural soils that could be used for sustainable farming, providing food and healthy soils that capture carbon;
  - Craft policies that protect prime soils for agriculture;
  - Understand trends and prepare for potential increased leasing costs for farmers due to land competition in areas where solar development is occurring;
  - Incentivize dual-use agricultural practices, like agrivoltaics and pollinator strips;
- Understand and address competing policies between state and local governments that can complicate the solar development process;
- Understand long-term impacts on forests, which clean air, capture carbon, filter water, control erosion, and sustain biodiversity, habitat and recreation;
- Create guidance for mitigation measures for solar conversion on farms or forest land greater than 50 acres;
- Create a watershed-wide distinction of pervious or impervious surface on solar development to manage stormwater impacts and adapt decision-making models;
- Create guidance to decommission the panels after their life cycle; and
- Create policies that promote equity in solar development and benefits.

We wish to thank the Executive Council for your leadership in watershed recovery. Please look to us, your advisors, to help bring forward the insights of many stakeholders in our region. At your direction, we look forward to the Bay Program's acknowledgement and response to these recommendations and the continued discussion. We support you to take bold and innovative action to protect and restore the Chesapeake Bay Watershed for the benefit of our environment and the residents in our region.



**Chesapeake Bay Program**  
**SCIENTIFIC AND TECHNICAL ADVISORY COMMITTEE**  
645 Contees Wharf Road, PO Box 28, Edgewater, MD 21037  
Phone: (410)798-1283 | Fax: (410)798-0816  
<http://www.chesapeake.org/stac/>

September 23, 2022

The Honorable Michael Regan, Chair  
Chesapeake Bay Partnership Executive Council  
200 Pennsylvania Avenue, NW  
Mail Code: 1101A  
Washington District of Columbia 20460

Dear Administrator Regan and Distinguished Members of the Executive Council:

The Chesapeake Bay Program (CBP) is globally recognized for its leadership in managing and restoring large aquatic ecosystems. The Scientific and Technical Advisory Committee (STAC) plays a vital role in the CBP's commitment to advancing science-based decision-making by coordinating a range of collaborative efforts to guide established priorities and characterize emerging concerns. During FY2022, STAC coordinated 5 workshops and published 4 reports. STAC continues its pledge to advancing science-based decision-making related to the CBP Program Goals with members hailing from 23 research-affiliated organizations across the Bay watershed. In 2022, STAC members contributed more than 5,000 hours, valued at more than \$500,000 to the Bay Program effort.

When the CBP established the 2025 implementation targets nearly ten years ago, CBP managers acknowledged that uncertainties regarding ecological threshold responses, lag times, and dynamic patterns in land use/land cover and climate change could complicate restoration efforts. However, the Bay system's response continues to lag significantly more than expected, with some indicators declining further despite our water quality project installations. Since the 2021 EC and advisory committees' meeting, STAC has continued to explore underlying causes and identify urgent information gaps that could limit our collective capacity to advance the CBP goals within the targeted timeframes. We explored these challenges at multiple levels of the Bay Program's adaptive management structure based on a review of STAC reports, workshops, meetings, and expert contributions shared in various CBP technical discussions. From these, we offer the following linked insights and recommendations to consider as the Partnership considers reevaluating its milestones.

*At the CBP Goal Implementation Team Level:*

- Voluntary best management practice (BMP) adoption remains far short of targets. Developing more effective outreach strategies is essential to increasing stakeholder willingness and capacity to implement priority BMPs across diverse communities, including the agricultural and urban sectors.
- Relatively small geographic areas impose disproportionate impacts on our Bay resources. Targeted rather than opportunistic BMP implementation is essential to achieving desired outcomes.
- The Bay Program's goals are inextricably linked and thus require simultaneous consideration when evaluating threats and restoration benefits. Accordingly, a process-based trade-off analysis framework considering all outcomes is essential to identify the most cost-effective opportunities for advancing the Bay Program's multiple goals under changing climate conditions (e.g., addressing water quality and habitat concerns while building resiliency to extreme weather events).

*At the CBP Management Level:*

- Degraded soil health and associated effects of reduced soil fertility, increased erosion, and elevated nutrient loss represents a significant concern among agricultural and urban turf management experts. BMPs that improve soil health largely overlap with those specified for water quality benefits. Further consideration of soil health as an integrative indicator of healthy watersheds would elevate key stakeholder concerns and highlight opportunities to provide on-site as well as downstream benefits associated with practice adoption.
- Historical and current hydrologic alterations have increased connectivity between contaminant sources and our waterways, speeding up water flows and pollutant delivery, and altering habitat conditions throughout our watersheds. Advancing a watershed planning framework focused on slowing down these flows using riparian buffers, floodplains, and coastal and non-coastal wetlands is essential to mitigating decades of overlooked human impacts and addressing multiple CBP goals.
- The Bay's condition varies widely among its sub-estuaries, where many Bay species of concern concentrate and water conditions are more sensitive to land management. Accordingly, increased CBP focus on nearshore environments is essential to engaging stakeholders and advancing restoration.
- Strengthening our understanding of how the Bay system will respond to CBP management under changing conditions requires an all-hands-on-deck collaboration and commitment to learning while implementing practices. Explicit efforts to improve connections among the jurisdictions, the Goal Implementation Teams, and the Partnership's science community are essential to advancing the CBP as efficiently and effectively as possible.

*At the CBP Executive Level:*

- BMP implementation levels and strategies vary widely across the CBP jurisdictions. The 2025 milestones provide an opportunity to reevaluate and refine CBP governance to better coordinate implementation strategies and address emerging challenges.
- Federal, state, and local commitment to restoring the Bay, enhancing climate resiliency, restoring impaired wetlands and waterways, and supporting regenerative agriculture have outpaced technical capacity to invest resources effectively. There is an urgent need to invest in strengthening and diversifying a technical and construction workforce that can help communities across the Bay watershed to advance our collective goals.

Finally, STAC is completing an assessment of how CBP policy actions have reduced pollutants, improved water quality, and enhanced abundant living resources, titled a "Comprehensive Evaluation of System Response" (CESR). The CESR report examines whether Total Maximum Daily Load (TMDL) implementation programs are producing the expected pollutant reductions and water quality response in the Bay. The report also provides a framework to assess how the Bay's living resources are responding to water quality changes by assessing the consequences and options for future policy choices. We aim to complete the report and disseminate lessons learned by December 2022.

Our recommendations reflect stakeholder concerns presented at the monthly Management Board (MB) meetings, participation in Goal Implementation Team (GIT) discussions, and collaborations with STAR (Scientific, Technical Assessment and Reporting team). STAC looks forward to continuing our support through collaborative workshops, focused seminars, and active participation in CBP initiatives.

On behalf of the STAC,

*Kathleen Boomer, Ph.D.*

Kathleen B. Boomer, Ph.D.

Chair, Chesapeake Bay Program's Scientific and Technical Advisory Committee

## **Attachment**

### **Summary of STAC Activities June 2021- June 2022**

STAC-sponsored Scientific and Technical Workshops (5)

- *Improve the Understanding and Coordination of Science Activities for PFAS in the Chesapeake Bay Watershed*
- *Evaluating a Systems Approach to BMP Crediting*
- *Improving modeling and mitigation strategies for poultry ammonia emissions across the Chesapeake Bay Watershed*
- *Advancing Monitoring Approaches to Enhance Tidal Chesapeake Bay Habitat Assessment including Water Quality Standards for Chesapeake Bay Dissolved Oxygen, Water Clarity/SAV, and Chlorophyll-a Criteria*
- *Understanding Genetics for Conservation and Restoration of Resilient Chesapeake Bay Brook Trout Populations*

### **Reports Published by STAC June 2021 – September 2022 (4)**

Links to reports are available on STAC's website at [chesapeake.org/stac](https://chesapeake.org/stac)

- *Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap*
- *Overcoming the Hurdle: Addressing BMP Implementation Through a Social Science Lens*
- *Rising Watershed and Bay Water Temperatures—Ecological Implications and Management Responses (Programmatic Workshop)*
- *Incorporating Freshwater Mussels into the Chesapeake Bay Restoration Efforts*

### **Planned Activities June 2022 – June 2023**

STAC-sponsored Scientific and Technical Workshops (5)

- *Using Local Monitoring Results to Inform the Chesapeake Bay Program's Watershed Model (Programmatic)*
- *Using Ecosystem Services to Increase Progress Toward, and Quantify the Benefits of, Multiple CBP Outcomes (Programmatic)*
- *The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Inform Better Implementation, Assessment and Outcomes (State of the Science)*
- *Best Management Practices to Minimize Impacts of Solar Farms on Landscape Hydrology and Water Quality (State of the Science)*
- *Using Carbon to Achieve Chesapeake Bay (and Watershed) Water Quality Goals and Climate Resiliency: The Science, Gaps, Implementation Activities and Opportunities (State of the Science)*



**Chesapeake Bay Program Partnership**  
**Executive Council Charge to the Principals' Staff Committee: Charting a Course to 2025 and Beyond**  
**Adopted October 11, 2022**

As the Chesapeake Bay Program (CBP) partnership nears the 2025 date that the partnership set for several of the goals and outcomes under the *Chesapeake Bay Watershed Agreement (Watershed Agreement)*, there are many successes to celebrate. At the same time, emerging issues and changing conditions (e.g., climate change, growth, new scientific data) have impacted the levels of effort needed to meet our collective restoration priorities. We, as a partnership, remain committed to using the best available science in restoring the Chesapeake Bay as we accelerate toward the deadline and anticipate continued progress post-2025.

Thus, this Executive Council charges the Principals' Staff Committee (PSC) in recommending a critical path forward that prioritizes and outlines the next steps for meeting the goals and outcomes of the *Watershed Agreement* leading up to and beyond 2025. The PSC is to report back to the Executive Council at our 2023 annual meeting with recommendations on how to best address and integrate new science and restoration strategies leading up to 2025. At our 2024 annual meeting, the PSC is to prepare recommendations that continue to address new advances in science and restoration, along with a focus on our partnership for going beyond 2025.

In undertaking such a process, the PSC should address the following considerations:

**Science**

- Identify new and emerging scientific data and studies which could modify our progress reporting and adaptive management approach, as well as the goals and outcomes under the *Watershed Agreement*.
- Enhance our monitoring and reporting capabilities to improve our understanding of existing conditions and trends.
- Define the existing and emerging challenges (e.g., climate change conditions, increasing growth, diversity, equity, inclusion and justice considerations) to accomplishing the partnership's work under the *Watershed Agreement*, and how addressing those challenges might alter our collective restoration priorities, including the possibility of extending the target date for completing restoration of water quality beyond 2025.
- Identify opportunities to leverage action across multiple goals and outcomes of the *Watershed Agreement*.

**Restoration**

- Develop and begin to implement a communication strategy that identifies key partnership successes, associated ecosystem improvements and areas where more effort is needed.
- Provide snapshots of outcome attainability under the Agreement (e.g., which outcomes are likely to be met by the date(s) set by the partnership, which won't, and why) and options for communicating these snapshots to demonstrate progress in achieving our outcomes and the remaining work to be done, including gaps to be addressed.

**Partnership**

- Focus on moving beyond 2025 by seeking ways in which restoration can be relevant to all communities within the watershed.
- Assess the overall partnership to determine whether we
  - Are effectively hearing from and listening to all stakeholders, and
  - Have systems of evaluation and decision-making to enable meaningful action and allocation of partnership resources.
- Based on this assessment, develop recommendations for potential improvement.



# Bay Barometer

**An Annual Report on the State of the Program  
and the Health of the Chesapeake Bay**

**2021-2022**





# Letter from the Director



Since becoming the Chesapeake Bay Program's new director in June 2022, I have been inspired by the talented and dedicated team working within this historic partnership. Our staff of over 100 experts, enthusiasts, scientists and specialists use their expertise for the betterment of the Chesapeake Bay watershed, truly demonstrating a passion for the Bay

Program's three pillars of science, restoration and partnership.

As you will see in this report, the science indicates that improvements in watershed health are being made. Despite a growing population with more potential sources for pollution, the amount of nitrogen, phosphorus and sediment entering the Bay has declined since monitoring began in 1985. And yet we still have more work to do. As outcomes related to water quality, blue crabs and Bay grasses worsen or fluctuate, it is imperative that we guide restoration within the Chesapeake using sound data and sophisticated monitoring and modeling.

Though we often think of the Bay for its iconic wildlife, restoring the watershed is both an ecological and human issue. As we celebrate the 50th Anniversary of the Clean Water Act, which in many ways was the impetus for the creation of the Chesapeake Bay Program, we strive to provide healthy lands and water for people to enjoy, make communities more resilient to the impacts of climate change, and create new opportunities for businesses, schools and families to benefit from this priceless natural resource.

The Chesapeake Bay Program celebrates its 40th anniversary in 2023. And the verifiable fact is that we are better off now due to a partnership approach toward restoring the watershed. For the next 40 years, we will continue to strengthen collaboration and expand our network of partners to include all communities within the region, especially those historically underrepresented in restoration.

Now is the time to take a big step forward in cleaning up Chesapeake waters as we look toward 2025 and beyond. New funding from the American Rescue Plan and the Bipartisan Infrastructure Law will supercharge future initiatives through the lens of diversity, equity, inclusion, accessibility and justice, and will allow us to further our impact in neighborhoods with environmental concerns and communities of color.

I hope you all will join us in this critical endeavor.

**Dr. Kandis Boyd**  
*Director*  
Chesapeake Bay Program

# Chesapeake Bay Health

## STATUS



### Toxic Contaminants

In 2018, 84% of the Chesapeake Bay's tidal segments were partially or fully impaired by toxic contaminants. This is an increase from 81.5% in 2016.



### Underwater grasses

Approximately 67,470 acres of underwater grasses were mapped in the Chesapeake Bay in 2021, a 7% increase from 2020.



### Blue Crabs

Between 2021 and 2022, the abundance of adult (age 1+) female blue crabs in the Chesapeake Bay decreased 39% from 158 million to 97 million.



### Water Quality

An estimated 29.6% of the Bay and its tidal tributaries met water quality standards during the 2018-2020 assessment period, a 3.5% decrease from the 2017-2019 period.

# Chesapeake Bay Restoration

## STATUS



### Forest buffers

In 2020, 169 miles of forest buffers were planted along rivers and streams in the Chesapeake Bay watershed.



### Sustainable schools

In 2021, 14% of public and charter schools in the Chesapeake Bay watershed—597 schools in all—were certified sustainable.



### Public access

Thirty-one new public access sites were opened on or around the Chesapeake Bay in 2021, with 237 opened since 2010.



### Oysters

As of 2021, oyster habitat has been restored in six of the 10 originally selected tributaries.



### Reducing pollution

Between 2020 and 2021, pollution loads are estimated to have been reduced by:

- Nitrogen: 1.4 million pounds
- Phosphorus: 0.004 million pounds
- Sediment: 74.2 million pounds

## The Chesapeake Bay Program

The Chesapeake Bay Program is a regional partnership that works across political and geographic boundaries to protect and restore the Chesapeake Bay watershed. Our partners include the U.S. Environmental Protection Agency, the Chesapeake Bay Commission, the District of Columbia and the states of Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia. Through the Bay Program, federal, state and local agencies, non-profit organizations, academic institutions and residents come together to secure a brighter future for the Bay region.

## Bay Barometer

This report provides data related to a handful of outcomes outlined in the *Chesapeake Bay Watershed Agreement*, and highlights achievements made by the partnership in 2022. The nine outcomes showcased in the report—which were all updated in 2022—provide an overview of marine life, water quality and community engagement within the watershed. A full list of the status of all 31 outcomes is provided on the last page of this report.

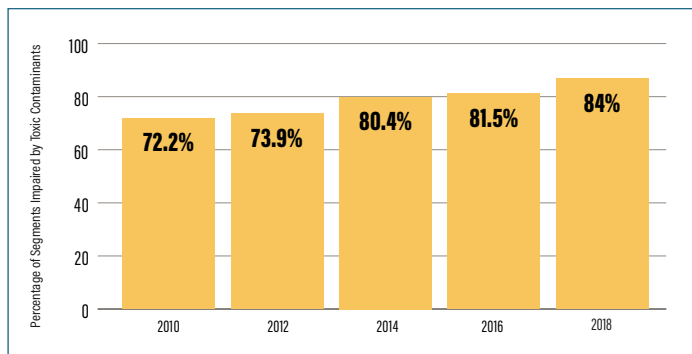
## Where do we get our data?

Data for this report is provided by a number of partners working within the Chesapeake Bay Program. Additional information for each outcome, including data sources, can be viewed at [chesapeakeprogress.com](https://chesapeakeprogress.com). ChesapeakeProgress includes accurate, up-to-date and accessible data and information on more than two dozen indicators of environmental health, restoration and stewardship. The data and information on this site are drawn from a range of trusted sources, including government agencies, academic institutions, nongovernmental organizations and direct demographic and behavior surveys. In some cases, this data and information dates back three decades, and in others, data collection began shortly before the *Chesapeake Bay Watershed Agreement* was signed.

**All of these outcomes were updated by the partnership in 2022. Learn more at: [chesapeakeprogress.com](https://chesapeakeprogress.com)**



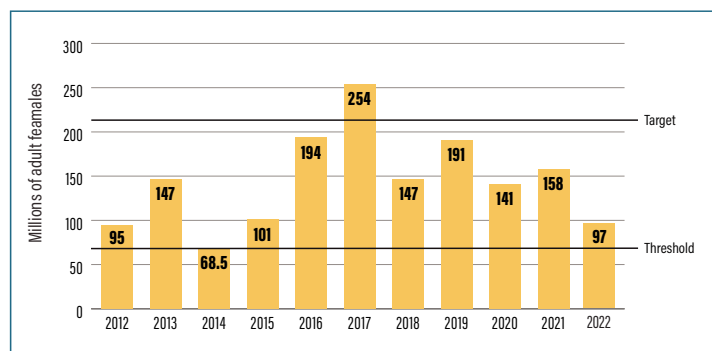
## TOXIC CONTAMINANTS



Since 2010, each biennial update has seen the number of tidal segments in the Chesapeake Bay that are listed as fully or partially impaired due to toxic contaminant increase, with the number reaching 84% in 2018.



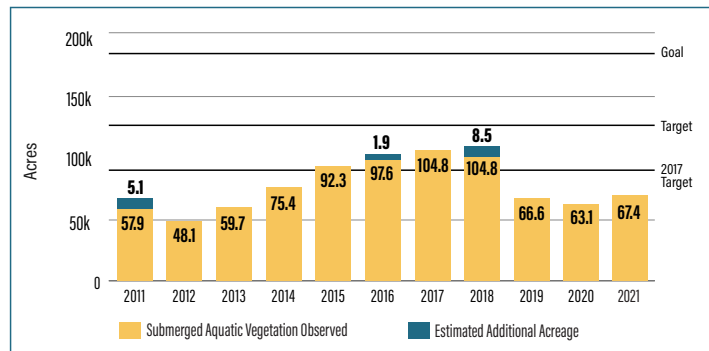
## ADULT FEMALE BLUE CRABS



Outside of 2014, the abundance of adult (age 1+) female blue crabs has remained above the 72.5 million threshold since 2003, indicating a sustainable population of blue crabs. However, the population has declined over the past few years. Since overfishing was not estimated to be occurring in 2021, the decline between 2021 and 2022 is of concern to experts who are in the process of identifying and addressing potential causes.



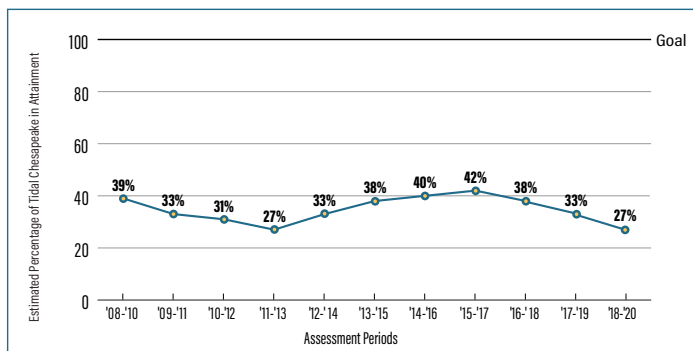
## UNDERWATER GRASSES



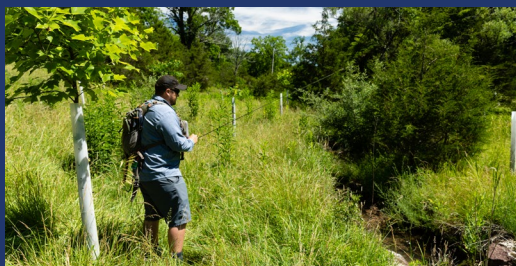
Underwater grasses (or submerged aquatic vegetation) continue to recover from a decline in 2019. The 67,470 acres mapped in 2021 is a 7% increase from 2020. This is 52% of the partnership's 2025 restoration target and 37% of our 185,000-acre goal.



## WATER QUALITY



Between 2018 and 2020, an estimated 29.6% of the Chesapeake Bay and its tidal tributaries met water quality standards. This score is lower than the previous 33.1% received during 2017 and 2019 and marks a consecutive decline in the assessment status since the record high of 42.2% achieved during 2015 and 2017.

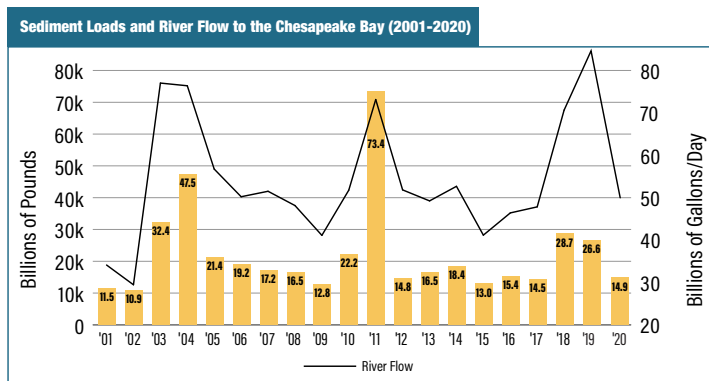
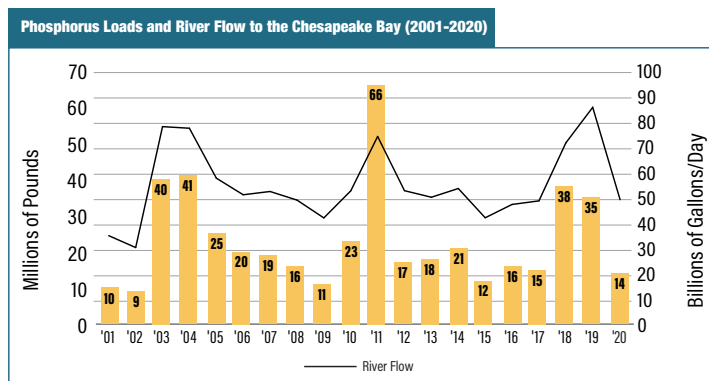
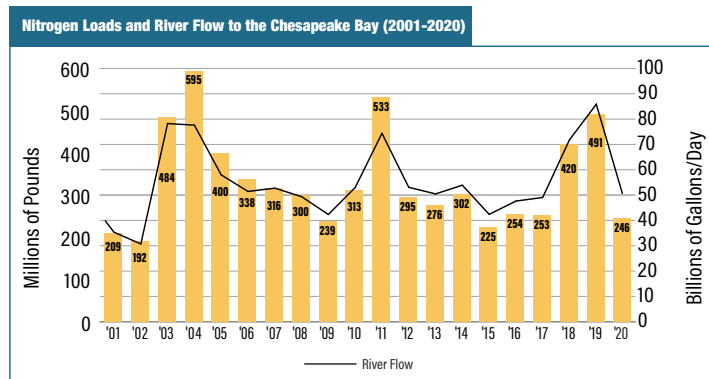


Trout Unlimited used forest buffers to help restore Reed Creek in Baker, West Virginia. (Photo by Will Parson/Chesapeake Bay Program)

## New actions to accelerate forest buffers & wetlands

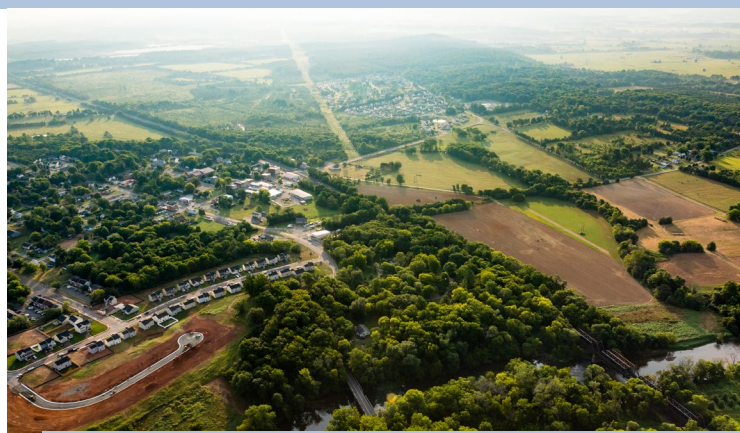
This year, two separate workshops were held in response to a Principals' Staff Committee recommendation to identify strategies for accelerating progress toward achieving the Forest Buffers and Wetlands outcomes, both of which have been identified as lagging in their progress. The Forest Buffers workshop provided information and discussion for the jurisdictions to build out their strategic action plans, while the Wetlands workshop sought to better understand the barriers toward meeting the outcome and identified approaches to increase the implementation of wetlands for 2025 and beyond. The outcome of the Wetlands workshop is the development of an action plan, that when implemented, will move the partnership closer to the 2025 target.

## Pollution loads from river flows



The United States Geological Survey reported that during 2020, average river flow to the Bay measured 50.3 billion gallons per day, a 40% reduction from the previous year, which, at 83.7 billion gallons per day, was the highest recorded river flows to the Bay since measurements began in 1937. The corresponding pollutant loads entering the Bay in 2020 were approximately 246 million pounds of nitrogen, 14.4 million pounds of phosphorus and 14.9 billion pounds of sediment, a reduction of 49%, 47%, and 34% from the previous year, respectively.

For more detailed information go to:  
[chesapeakeprogress.com/clean-water/water-quality](https://chesapeakeprogress.com/clean-water/water-quality)



A railroad trestle spans the Rappahannock River where it divides Culpeper County, bottom right, and Fauquier County, Virginia. (Photo by Will Parson/Chesapeake Bay Program)

## Ground-breaking technology advances restoration

In spring 2022, new data was released to update the 2013-14 one-meter-by-one-meter high-resolution dataset. In addition to updating the High-Resolution Land Cover and Land Use Data Project, the [new data](#) provides new land use and cover information captured in 2017-18 and includes a new data product that describes the changes in land use and cover throughout the Chesapeake Bay watershed. These data cover 99,000 square miles—an area comprising 206 counties that intersect or are adjacent to the watershed. The land change data product is the first such tool to map change at this large of a scale and is free to use.

## Sustaining, enhancing & funding monitoring networks

At the request of the partnership's Principals' Staff Committee, the Scientific, Technical Assessment and Reporting Team [prepared a report](#) detailing a strategy to enhance current monitoring programs while addressing their shortcomings. The report found that while monitoring is critical to assess progress toward *Watershed Agreement* outcomes, it is often insufficient for many of them. Opportunities to address these shortfalls exist but funding them remains a challenge. The report suggests that the partnership invest in addressing these monitoring gaps by identifying which elements they wish to financially support. A meeting to discuss these recommendations will be held in fall 2022 with high-level monitoring program managers.



# Chesapeake Restoration / TRENDS

## New tool targets resources to accelerate watershed restoration

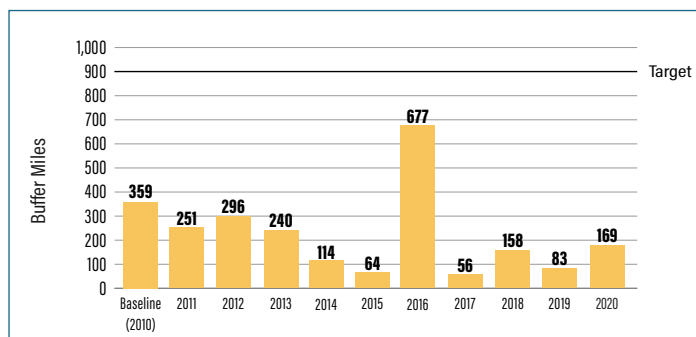
Accelerated Conservation and Restoration, a new GIS tool, is helping Chesapeake Bay Program partners identify locations and activities throughout the watershed in which they can focus their funding to benefit multiple outcomes of the *Chesapeake Bay Watershed Agreement*. Interwoven with opportunities to enhance climate resiliency, the tool uses the themes of improving fish and wildlife populations and their habitats, increasing benefits to all people, water quality improvements and expanding land conservation efforts. The U.S. Geological Survey and the CBP GIS team has brought together various science-based applications, maps and tools into one convenient location so that partners can increase their return on funding investments while benefiting more outcomes.

## Maryland Healthy Watersheds Assessment completed

The Maryland Healthy Watersheds Assessment (MHWA) completed in 2022, establishes a framework of watershed health and vulnerability indicators for Maryland waters and watersheds. The state-specific assessment builds upon the completed Chesapeake Bay Healthy Watersheds Assessment and integrates state-specific data, as well as newly available high resolution land use land cover (2017/18) metrics. It is intended to inform watershed management decision-making to sustain the health of state-identified healthy watersheds, which has been defined in Maryland as the watersheds associated with its designated high-quality Tier II waters. Next steps are to expand the MHWA to the entire watershed and build upon the findings and recommendations in the assessment.



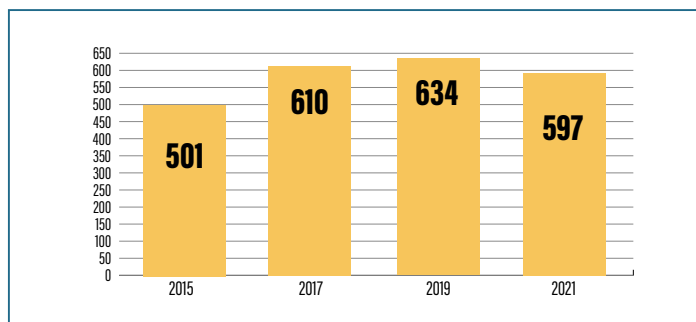
### PLANTING FOREST BUFFERS



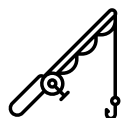
In 2020, 169 miles of forest buffers were planted along rivers and streams in the Chesapeake Bay watershed. While this is an increase from 2019 in which 83 miles of forest buffers were planted, it is 731 miles below the 900-mile-per-year target. Since 2010, the miles of forest buffers planted each year has averaged just 25% of the yearly restoration target that will help us reach our clean water goals.



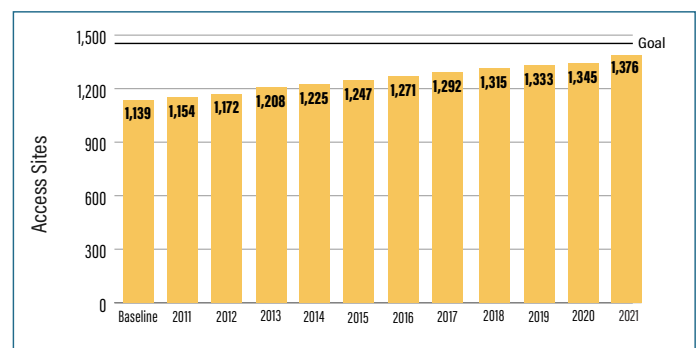
### GREENING SCHOOLS



In 2021, 14% of public and charter schools in the Chesapeake Bay watershed—597 schools in all—were certified sustainable. This marks a 6% decrease from the number of sustainable schools in the watershed in 2019. Experts believe the decrease is likely due to a decline in reporting during the COVID-19 pandemic.



### INCREASING ACCESS TO THE BAY



Since 2010, when there were just 1,339 existing public access sites, 237 sites have been opened on and around the Chesapeake Bay. This marks 79% achievement of the partnership's goal to add 300 new access sites to the watershed by 2025.

## A plan to move forward on the Conowingo Watershed Implementation Plan (WIP)

In January 2022, the EPA released their evaluation of the [final Conowingo WIP](#), finding that the plan outlining the best management practices necessary to reduce an additional six million pounds of nitrogen and 0.26 million pounds of phosphorus would be effective. However, the evaluation noted that jurisdictions at the time did not have dedicated funding in place or firm commitments that would support the implementation of these practices by 2025. At the July Principals' Staff Committee meeting, members reached consensus that Maryland, New York and Pennsylvania could plan for reducing this extra pollution using a phased approach that extends beyond 2025, so it would allow the states more time to build an organizational infrastructure to implement the WIP. In 2026, implementation progress of the Conowingo WIP will be reassessed to determine if any adaptive management strategies are needed.

## Phase III WIPs account for climate change

In 2020, the Principals' Staff Committee (PSC) updated the loads for nitrogen and phosphorus to account for climate change conditions through 2025 and issued a directive that by 2022 all jurisdictions would account for the additional nutrient loads in the existing 2019 Phase III WIP, a Phase III WIP addendum or in the two-year milestones. To determine the additional reductions needed, modeling scenarios were run for the years 2025, 2035, 2045 and 2055 to show the impacts from different competing climatic influences, such as sea level rise and temperature changes. The overall assessment predicts that future climate change impacts will continue and accelerate in the near-term, increasing the need for additional efforts to reduce pollution. At the August 2022 Principals' Staff Committee meeting, members reached consensus on extending the timeframe for jurisdictions to address additional climate-related reductions.



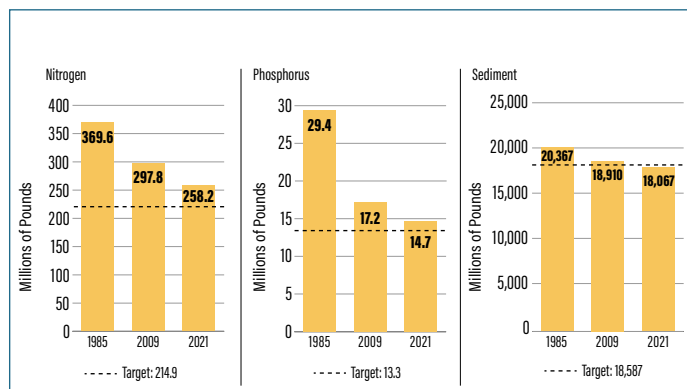
### RESTORING OYSTER HABITAT

Tributary	Tributary Restoration Plan	Reef Construction & Seeding	Monitoring & Evaluation	Completed/Target Acreage
Harris Creek (Md.)	Complete	Complete	In Progress	348/348
Little Choptank (Md.)	Complete	Complete	In Progress	358/358
Tred Avon (Md.)	Complete	Complete	In Progress	130/130
Upper St. Mary's (Md.)	Complete	In Progress	In Progress	49/60
Manokin (Md.)	Complete	In Progress	In Progress	35/441
Lafayette (Va.)	Complete	Complete	In Progress	82/80
Piankatank (Va.)	Complete	Complete	In Progress	444/438
Lynnhaven (Va.)	Complete	In Progress	In Progress	114/152
Lower York (Va.)	Complete	In Progress	In Progress	55/200
Great Wicomico (Va.)	Complete	Complete	In Progress	124/122
Eastern Branch of the Elizabeth River (Va.)	N/A	Complete	In Progress	24/20

As of the end of 2021, six of the 10 selected tributaries have been restored, in addition to an 11th bonus tributary, the Eastern Branch of the Elizabeth River. Restoration work is underway in the remaining four tributaries under this outcome and are expected to be completed by 2025.



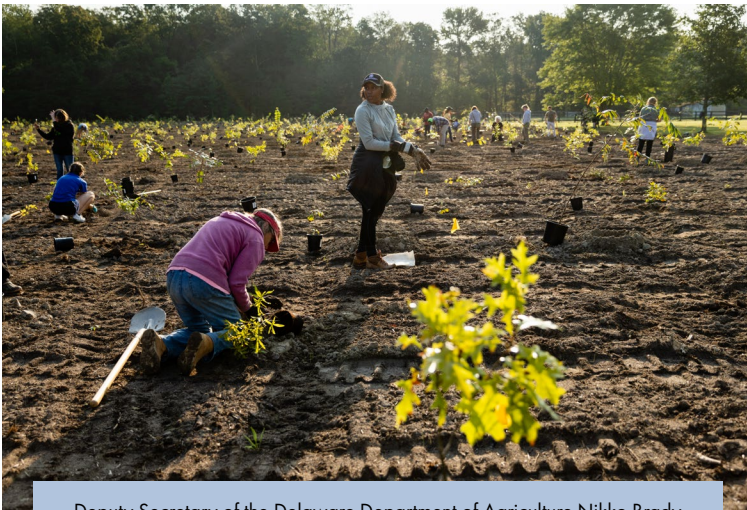
### MODELED POLLUTION LOADS



As of 2021, the best management practices in place to reduce pollution are estimated to achieve 49% of the nitrogen reductions, 64% of the phosphorus reductions and 100% of the sediment reductions needed to attain applicable water quality standards when compared to 2009 levels. According to our models, the pollution controls put in place in the Chesapeake Bay watershed between 2009 and 2021 are estimated to lower nitrogen loads 14%, phosphorus loads 14% and sediment loads 4%.

Between 2020 and 2021, nitrogen, phosphorus and sediment pollution were estimated to have decreased 1.4 million pounds, 0.004 million pounds and 74.2 million pounds, respectively. While the sediment reduction from 2020 to 2021 is above the average annual reduction for 2009 through 2020, nitrogen and phosphorus reductions for 2020 to 2021 are below average.





Deputy Secretary of the Delaware Department of Agriculture Nikko Brady, center, volunteers during a tree planting at Blackbird State Forest in New Castle County, Delaware, on Sept. 17, 2022. (Photo by Will Parson/Chesapeake Bay Program)

## Partnership responds to climate change impacts

In response to Executive Council Directive No. 21-1, *Collective Action for Climate Change*, signed in October 2021, a volunteer implementation team of Bay Program partners was formed to oversee its execution. The group completed a crosswalk of partner activities before drafting a workplan. Activities in the workplan are expected to be completed or substantially in progress by 2024 and calls for collaborative partner participation with regular Management Board direction. Also in response to the directive, federal partners of the Chesapeake Bay Program released a summary of actions they plan to take to counter climate change impacts in the Chesapeake Bay watershed. Each agency also committed to advance environmental justice and build partnerships with tribes and underserved communities, to assist in building their climate adaptive capacity.

## Empowering change-makers in underrepresented communities

In 2022, the Chesapeake Bay Program advanced multiple aspects of its Diversity, Equity, Inclusion and Justice Implementation Plan (released in December 2021). A project that identified barriers and inequities encountered by underrepresented groups when engaging with the partnership was finalized. Based on those findings, the partnership is supporting a second effort that will help to bolster our partners' equitable funding strategies and reduce barriers that organizations from underrepresented communities face when accessing grant funding for their restoration work. The Bay Program also hosted an allyship training series to equip staff with the knowledge and skills to advance a culture of inclusion. Finally, the Bay Program translated key program documents to improve accessibility and expanded the dataset and capabilities of the partnership's Environmental Justice and Equity Dashboard.

# Investments for the Bay

National funding supports the partnership's work

## Infrastructure Investment and Jobs Act of 2021

This law boosts funding for the Chesapeake Bay Program by \$238 million over five years. The \$1.2 trillion infrastructure law also contains multiple other provisions that bring billions of dollars to the Bay watershed for improving water and air quality, fish passage, coastal resilience, transit upgrades and climate-friendly renewable energy.

## Inflation Reduction Act

The historic Inflation Reduction Act of 2022 includes \$369 billion in federal authorizations to invest in clean energy, reduce greenhouse gas emissions and invest in climate resiliency for landscapes across the United States, including coastal communities.

## American Rescue Plan Act

With funding from this 2021 law, states and local governments of the Chesapeake Bay watershed are investing in improved water quality, sustainable energy, green jobs and more. The U.S. Environmental Protection Agency also received \$100 million in funding from the act, split in half between environmental justice initiatives and air-quality monitoring.

## Chesapeake WILD Act

Included in America's Conservation Enhancement Act, the Chesapeake WILD Act created a new grant program within the U.S. Fish and Wildlife Service to support habitat restoration in the Bay watershed. The program is authorized at \$15 million.

## America the Beautiful Initiative

In 2021, President Biden issued a call to action to conserve, connect and restore 30% of the nation's lands and waters by 2030. Partners within the Bay Program can apply for funding through this initiative annually to advance progress toward goals related to conservation and habitat for fish and wildlife.

# Engagement and education

Bay Program takes part in events across the watershed

## Smithsonian Folklife Festival

For 10 days during the Smithsonian Folklife Festival in Washington, D.C., the Chesapeake Bay Program sought to inspire conservation action to the over one million visitors. Our partners from Delaware, the District of Columbia, Maryland, Virginia and West Virginia each participated in a day of the festival alongside Bay Program staff.

## Penn State's Ag Progress Days

Chesapeake Bay Program staff attended Pennsylvania's largest outdoor agricultural exposition to learn from the region's farmers and promote conservation practices and funding opportunities.

## Naturally Latinos Conference

The Chesapeake Bay Program sponsored and exhibited at the Audubon Naturalist Society's 2022 Naturally Latinos Conference. Located in Washington, D.C., this conference is dedicated to connecting and empowering Latino/Latinx environmental leaders.

## Chesapeake Bay Awareness Week

The Chesapeake Bay Program hosted its annual Chesapeake Bay Awareness Week with the theme "Restoration Brings Results." Events such as the Bernie Fowler Wade-In and Chesapeake Bay Foundation's Clean the Bay Day bookended the 10-day event, with a social media campaign celebrating restoration within the watershed.

## Citizen's Advisory Committee

In 2022, the Citizens Advisory Committee (CAC) called upon the Chesapeake Executive Council to help enhance internal Diversity, Equity, Inclusion and Justice at the Bay Program by providing stipends to advisory committee members who are eligible for compensation as wage replacement for volunteer time and creating a watershed-wide approach to large-scale solar development for near-term and future planning beyond the 2025 Bay TMDL deadline.



Richard O'Keefe, left, and his husband John Chanik restored roughly 100 acres of forest and wetland on a property they own outside of Morris, New York. (Photo by Will Parson/Chesapeake Bay Program)

## Increasing environmental stewardship with Chesapeake Behavior Change

Chesapeake Behavior Change—an online tool designed to assist organizations and behavior change practitioners in promoting environmentally friendly stewardship behaviors—was launched in April 2022. The website integrates the data and findings from the groundbreaking Stewardship Index, first published in 2017, into a platform that is easily accessible for organizations interested in using the data to build their own behavior change campaigns. Chesapeake Behavior Change includes a database of behavior change campaigns, an introduction to behavior change complete with worksheets and helpful links, and trends and data from the Stewardship Index. The Stewardship Index was the first comprehensive survey of stewardship actions and attitudes in the Chesapeake Bay region, revealing what actions watershed residents were taking to protect clean water and restore environmental health.

## Advising local governments on future restoration efforts

In 2022, the Local Government Advisory Committee (LGAC) played a key role in educating local decision-makers on how to use historic state and federal funding to resolve environmental challenges. The Advisory Committee hosted a webinar for over 170 local government leaders on how they could acquire funding from the Bipartisan Infrastructure Investment and Jobs Act for initiatives related to clean drinking water and wastewater and stormwater infrastructure. LGAC also brought back its Wandering Waterways series where local decision makers from all parts of the watershed tour new and influential environmental efforts happening in their state and learn from each other on restoration efforts. Two-day tours took place in Maryland, Virginia and Pennsylvania, focusing on tourism and recreation, solutions to agricultural runoff, flood mitigation and more.

## Examining high-profile scientific topics

The Scientific and Technical Advisory Committee (STAC) tackled several critical subjects in their 2022 workshops. Some covered topics that are often in the news, such as the implications of rising water temperatures in the Bay, and the impacts of PFAS on the Chesapeake ecosystem. Other workshops addressed improving modeling and mitigation strategies for ammonia emissions coming from the poultry industry; developing recommendations on monitoring and assessment for the next version of the tidal monitoring program by looking at chlorophyll a criteria, dissolved oxygen and water clarity; and evaluating opportunities to incentivize habitat benefits while better understanding how wetlands are considered in conservation practices.

# Envisioning a greener future

## Working with communities on green infrastructure blueprints

As sea level rise creates increased flooding across the Chesapeake Bay watershed, many low-income neighborhoods and communities of color are most vulnerable to its impacts.

To help manage flooding, the Chesapeake Bay Program advises a mix of “grey” infrastructure such as seawalls and storm drains and “green” infrastructure such as trees, rain gardens, swales and other natural landscapes. These green solutions not only absorb floodwater but add an array of community benefits, such as shading, wildlife habitat and beautified scenery.

This year, the Chesapeake Bay Program’s Habitat Goal Implementation Team (GIT) completed a pilot project in which they worked with four separate communities to develop conceptual ideas that add green infrastructure to neighborhoods. Through a collaborative process known as Targeted Outreach for Green Infrastructure (TOGI), four communities were identified based on vulnerability to climate change and demographic criteria related to diversity, equity, inclusion, justice and accessibility. The communities were: Williamsport, Pennsylvania; Cambridge, Maryland; and the Upper Mattaponi Tribe and Mattaponi Tribe from Virginia.

The TOGI process brought together community stakeholders, experts from the Bay Program and an infrastructure contractor for a series of listening sessions and workshops to identify community needs and design solutions. For Cambridge, a conceptual plan was created for a 6.2 acre community park that includes multiple recreational areas plus a community garden. In Williamsport, the community designed a concept for an expanded urban garden to include pollinators and rain gardens, as well as green infrastructure along a popular boulevard to calm traffic and manage stormwater.

The Upper Mattaponi tribe used the TOGI process to develop a conceptual plan to convert degraded farm land in into a sustainable reservation with a tribal center and housing. With the Mattaponi Tribe, a blueprint was developed to use green infrastructure such as living shorelines and terraced slopes to reduce erosion of the tribe’s reservation, which is located on a steep cliff.

Delivered in a final report to the communities, the designs can be used in grant applications for construction and implementation. Having partnered with the communities up-front, the Bay Program can ensure future infrastructure investments will be ecologically sound while also best serving the people who live in the areas.



This summer, Anna He, an intern working with our partners at the National Oceanic Atmospheric Administration, pioneered the use of an innovative oyster monitoring technology on the Harris Creek near Talbot County, Md. (Photo by Will Parson/Chesapeake Bay Program)

## Intern projects advance our work

Six interns worked with the Chesapeake Bay Program this summer on a range of projects that are critical to the partnership’s work. Efforts included monitoring oyster reefs, enhancing web products, chronicling the development of flood prone neighborhoods, engaging with organizations from underrepresented communities and more. Interns working within the partnership included those from the Chesapeake Research Consortium’s Student Recruitment, Early Advisement, and Mentoring ([C-StREAM](#)) program. C-StREAM focuses on assisting students who identify as people of color and/or who are first generation college students.



# 100-year study on nitrogen pollution

USGS and Bay Program researchers publish an award-winning report

In 2022, the United States Geological Survey (USGS) received a Blue Pencil & Gold Screen Award, in the category of Technical/Statistical Reports, from the National Association of Government Communications (NAGC) for a report titled *Nitrogen in the Chesapeake Bay Watershed—A Century of Change, 1950–2050*.

USGS co-authored this award-winning report with Chesapeake Bay Program scientists to help inform management decisions and foster public awareness for better balancing the use and control of nitrogen. In this study, researchers provided a unique, long-term perspective of the major drivers of nitrogen pollution to the Bay from 1950–2012, and then simulated potential changes out to 2050, resulting in a 100-year timeline.

Through the monumental study, we can identify major shifts in nitrogen pollution based on climate, hydrology, land use changes and initiatives to reduce its sources.

A decrease in nitrogen from wastewater starting in 1990 matches the investments that jurisdictions made in upgrading wastewater systems to handle population increases. Declines in atmospheric deposition in the 1980's align with the introduction of the Clean Air Act, which reduced emissions from sources such as power plants and vehicles.

Forecasting the next 50 years, researchers found that the greatest opportunities for reducing nitrogen pollution will be in agricultural and developed areas. On farms, this includes the reduction of fertilizer and manure applications and installing best management practices, such as cover crops and forest buffers that manage runoff. For urban areas, this includes implementing green infrastructure to soak up stormwater runoff, as well as continuing to enhance wastewater treatment plants such as separating pipe systems that handle sewer and stormwater into two different systems.



Dr. Boyd joins U.S. Geological Survey (USGS) and other partners to learn about water quality monitoring conducted by USGS at Fishing Creek in Goldsboro, Pennsylvania. (Photo by Will Parson/Chesapeake Bay Program)

## New director hits the ground running

This summer, Dr. Kandis Boyd stepped in as our new director following a period of excellent leadership from acting director, Michelle Price-Fay. With nearly thirty years of experience at some of the nation's top scientific institutions, including the National Center for Atmospheric Research, National Oceanic and Atmospheric Administration, and the National Science Foundation, Dr. Boyd is a proven leader who brings a unique perspective to our mission of restoring the Chesapeake Bay. Since joining the partnership, Dr. Boyd has attended over 50 partner events across the watershed, in a commitment to support all members of the organization.

# What's on the horizon?

## Chesapeake Bay Program gears up for 2023.

### Clean Water Act Anniversary

Through the end of 2022 we will be celebrating the 50th anniversary of the Clean Water Act. This act, which protects the nation's waters, was one of the primary forces behind forming the Chesapeake Bay Program.

### Blue crabs workshop

In fall 2022, the Chesapeake Bay Stock Assessment Committee will host a workshop to try and better understand why the abundance of adult female blue crabs declined so heavily from 2021 to 2022.

### Chesapeake Bay Program 40th anniversary

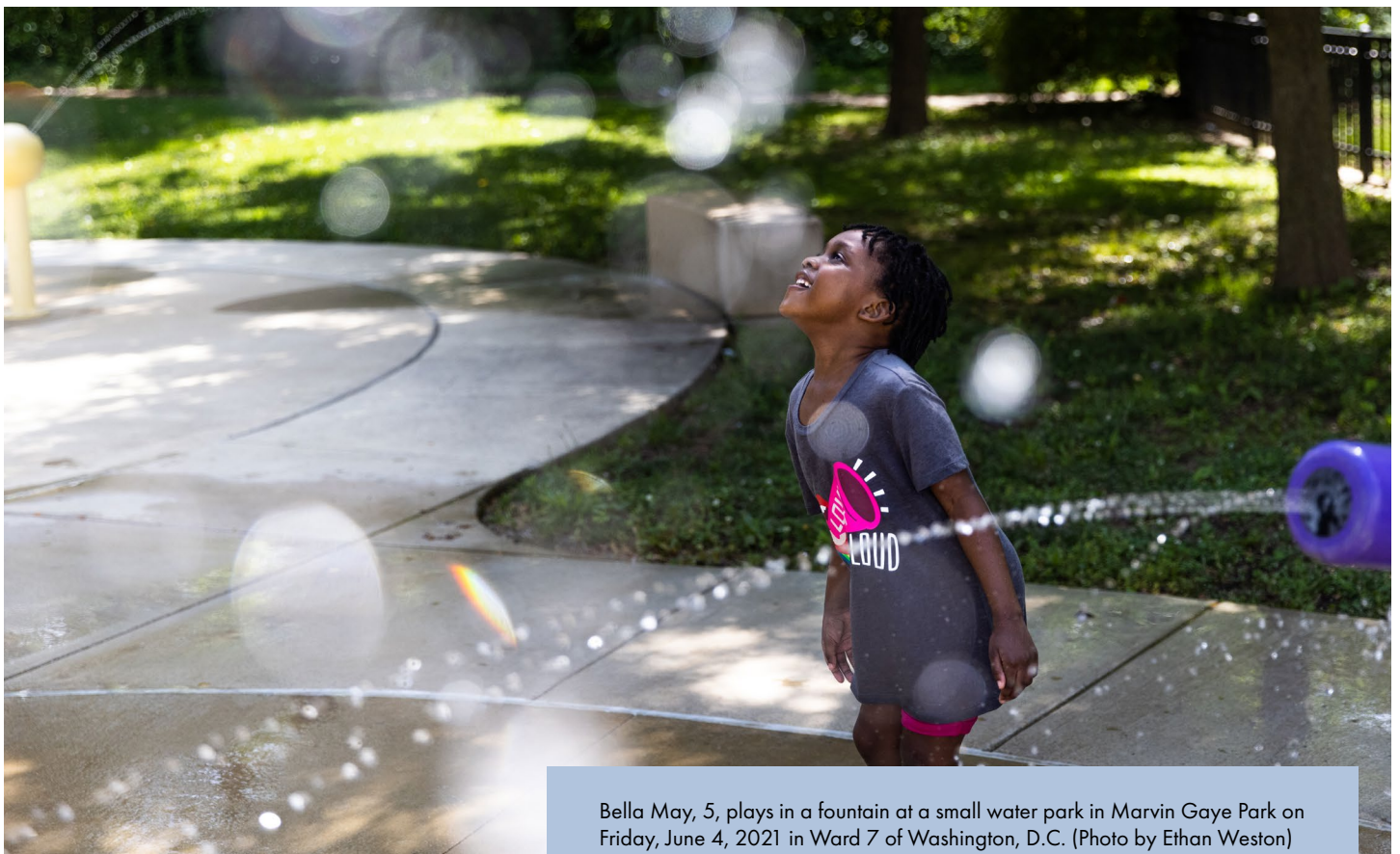
The Chesapeake Bay Program turns 40 in 2023! The anniversary will be celebrated throughout the year with events and commemorations by our partners.

### Strategy Review System

In spring 2023, the fourth biennial Strategy Review System cycle will kick off with a two-day, in-person meeting. This review meeting will delve into the newest science, economic opportunities and policy that impact the work of the partnership.

### New indicators

Both the Local Leadership Outcome and Land Use Methods and Metrics Development Outcome will unveil indicators starting in 2023. These indicators will be used to better track our progress.



Bella May, 5, plays in a fountain at a small water park in Marvin Gaye Park on Friday, June 4, 2021 in Ward 7 of Washington, D.C. (Photo by Ethan Weston)

# Outcome Attainability

Progress toward meeting outcomes of the *Chesapeake Bay Watershed Agreement*.

The 10 interrelated goals of the *Chesapeake Bay Watershed Agreement* are linked to a set of outcomes, or time-bound and measurable targets, that directly contribute to its achievement. Each of the 31 outcomes uses quantitative or qualitative data to collectively advance the protection and restoration of the Bay and its watershed.

According to a recent assessment, two outcomes are completed, 11 outcomes are "on-course" to be achieved by 2025, 11 are "off-course" and 7 are "uncertain." We identified outcomes as uncertain for a variety of reasons, including when the data need to be updated or are no longer being updated, or when new data needs to be collected to determine a trend.

A concerted effort is being made to accelerate outcomes that are off-course, including workshops, targeted outreach and specialized projects. To learn more, visit [chesapeakeprogress.com/outcome-status](https://chesapeakeprogress.com/outcome-status)



## On-course

Blue Crab Abundance  
Oysters  
Fish Passage  
Protected Lands  
Public Access Site Development  
Fish Habitat  
Forage Fish  
Toxic Contaminants Research  
Land Use Options Evaluation  
Land Use Methods and Metrics  
Sustainable Schools



## Off-course

Brook Trout  
Forest Buffers  
Submerged Aquatic Vegetation  
Tree Canopy  
Wetlands  
Black Duck  
2025 Watershed Implementation Plans  
Diversity  
Water Quality Standards Attainments & Monitoring  
Toxic Contaminants Policy and Prevention  
Climate Adaptation



## Uncertain

Stream Health  
Healthy Watersheds  
Local Leadership  
Citizen Stewardship  
Climate Monitoring and Assessment  
Environmental Literacy Planning  
Student MWEEs

## Completed

Blue Crab Management  
2017 Watershed Implementation Plans



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The lower Susquehanna River flows toward the upper Chesapeake Bay, separating Cecil County, left, from Harford County, Md., near Havre de Grace. (Photo by Will Parson/Chesapeake Bay Program).