



Chesapeake Research Consortium



Annual Report 2022

We have all known the long loneliness, and we have found that the answer is community.

Dorothy Day



This past year was certainly one of extremes, from moments of divisiveness in the world to rediscovering the joy of gathering; I'll never forget the almost-delirious level of happiness of being together in the office, of gathering for an in-person conference, of feeling the energy of a hundred conversations over cookies and coffee. I'm certain that it wasn't the cookies nor the coffee providing all the joy.

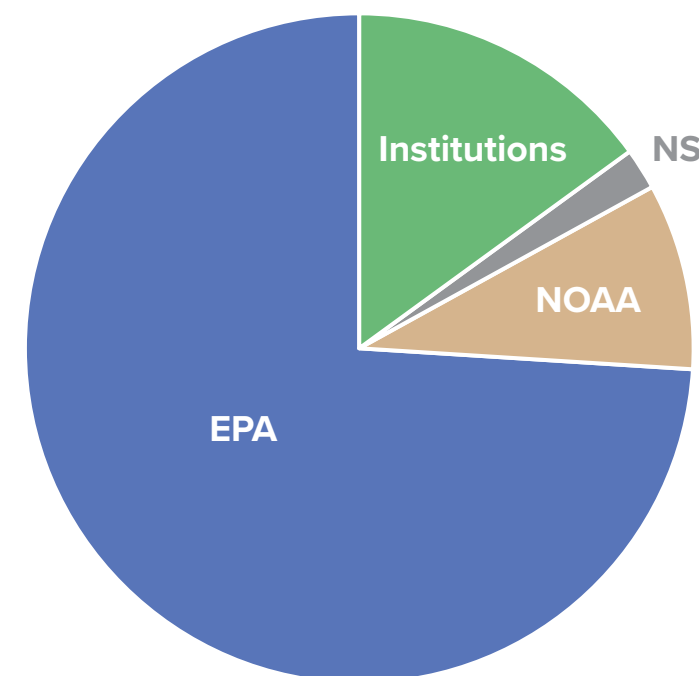
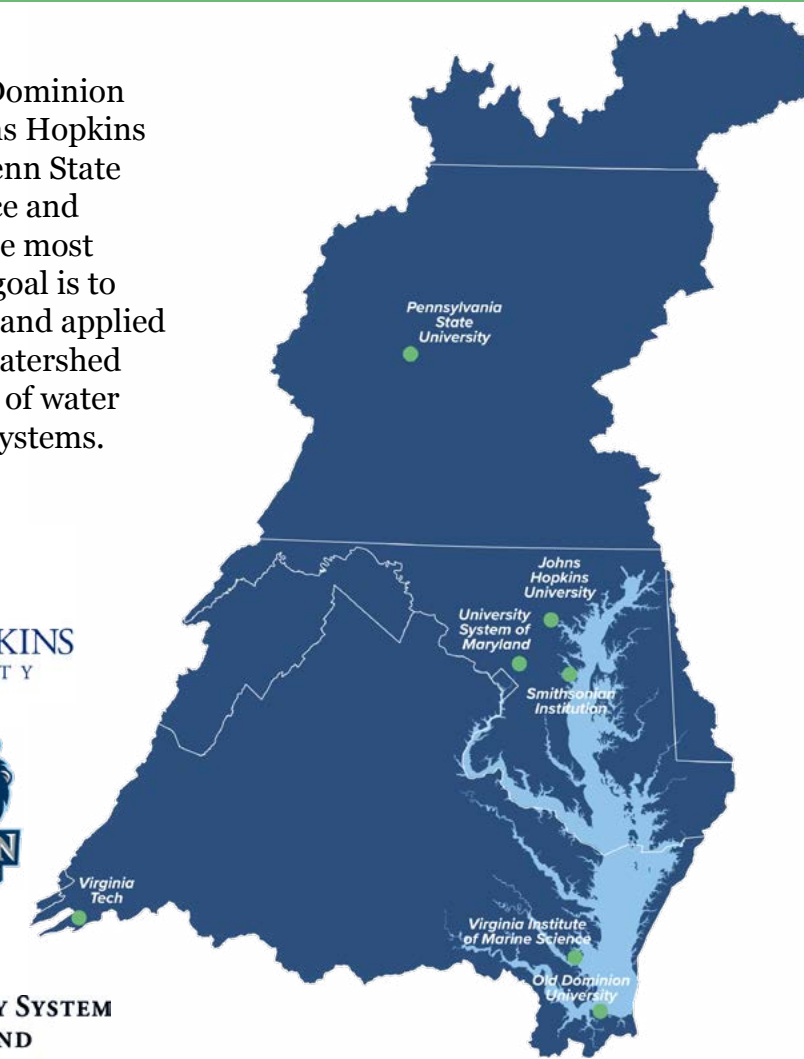
Was there a cost to that loneliness? A recent article¹ illuminated some of its impact, utilizing email data between MIT researchers during the halt of in-person work due to Covid-19 in March 2020 and their return to campus in July of 2021. The researchers were distinguishing between two types of communication: weak ties, which represents communication between two people with no mutual contact, and strong ties, in which such a mutual contact exists. The utility in this characterization lies in its relationship to innovation: weak ties are the foundation of an exchange of new ideas and often foster innovation, while strong ties generally represent repeated exposure to the same ideas. When remote work began, there was a significant decrease in email communications between different research units with a concomitant decrease in weak ties (about 1.8 ties per person), while strong ties increased. This is not to say that remote work and hybrid gatherings are without benefits (there are many), but the study sheds light on the tradeoffs that we must consider as we navigate the new normal of work.

In this vein, CRC was on the front lines of searching for the sweet spot while we convened across the full range of in-person, remote, and hybrid environments. The EMDCP Staffers led the way of showing us how it's done as they gracefully and artfully convened dual/hybrid conversations across the CBP, once again fulfilling their reputation as the glue that holds the ship together. The month of May saw us convene our fifth cohort of C-StREAM interns with hybrid work environments bookended by in-person orientation and end-of-summer symposium. June saw the Chesapeake Community Research Symposium with the theme of Chesapeake Bay Restoration, Resilience, and Reflection: Progress and Challenges, our first in-person gathering since 2018. The hybrid format resulted in a record turnout of 270 attendees, and we had a chance to reflect on the first 50 years of the CRC in a video produced for us by our wonderful partners at Green Fin Studios. The month also brought STAC's first in-person meeting since 2019, held in Lancaster PA, with the opportunity to explore soil health issues at local farms. Quite simply, there is nothing like a field trip to remember why we do what we do. The end of summer brought the good tidings of a successful new award with EPA, and the promise of constant effort to find that sweet spot that includes both diverse ways of working and the innovation that drives us forward. Our goal is to dissolve the prospect of the long loneliness, however it is felt. As always, our profound thanks for your passion and partnership.

All the best,

Denice Wardrop
Executive Director
Chesapeake Research Consortium

Established in 1972, the CRC represents Old Dominion University, Smithsonian Institution, The Johns Hopkins University, University System of Maryland, Penn State University, Virginia Institute of Marine Science and Virginia Tech. As an association of some of the most active research centers in the U.S., a primary goal is to ensure continued long-term support for basic and applied research for coastal issues, from land-based watershed considerations through rigorous investigation of water quality and living resources in its aquatic ecosystems.



Thank you to the funders of CRC!

Without the generous support of the Environmental Protection Agency (EPA), CRC's member institutions, the National Oceanic and Atmospheric Administration (NOAA), and the National Science Foundation (NSF), our 2022 accomplishments would not have been possible.

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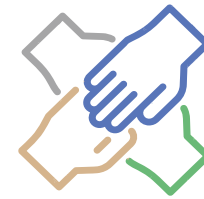
Our Vision

A sustainable and regenerative Chesapeake Bay ecosystem that plays a vital role in the health and well-being of all stakeholders.

Our Mission

The Chesapeake Research Consortium (CRC) fully enables its member institutions and the broader scientific community in the region to inspire and implement solutions to the understanding and management of the Chesapeake Bay and its watershed, by defining, coordinating, and disseminating the research and education needed for its science-based management.

To transition from this mission to strategic action, we translate “to fully enable” into four “enabling” roles: convening managers and provisioners of science, filling the pipeline of environmental professionals, building the big stage for dissemination of solutions, and supporting member institutions in the research and education efforts that are relevant to the Chesapeake Bay partnership efforts. This framework of enabling roles allows us to plot a course forward in our daily work, resulting in the portfolio of programs and efforts highlighted below.



Convening

Convening brings together a diverse team with different areas of expertise to tackle a shared problem, taking advantage of collective intelligence. It requires a clear purpose that a diverse group of participants can work towards in a collaborative effort. In the case of the CRC, restoration of the Bay and watershed provides this clear purpose, albeit at a large scale. Currently, coordination of STAC, the biennial conference, and CRC’s webinar series (CRC Roundtable) are examples.



Filling the Pipeline

CRC’s aim is to evolve and strengthen a leadership pipeline that attracts and retains a diverse community so that the necessary diversity of perspectives is applied to the protection and restoration of complex human-impacted ecosystems. We do this at two professional levels; the Staffer’s program is notably recognized as having high value for young professionals, and the relatively new C-StREAM program serves undergraduate students from diverse backgrounds. These are examples of programs that cannot be provided at the scale of individual institutions, and are effectively delivered by the CRC.



Building the Big Stage

Exchange of information must happen at a large scale within the restoration effort, both between scientists and managers, as well as among scientists with Bay-related expertise. The bi-monthly CRC newsletter, CRC Roundtable, and accompanying social media efforts serve to provide platforms for targeted, inclusive, and informed conversations that match scientific advances and management needs, as well as provide topical areas around which networks of scientists can form. Both are necessary elements to move us collectively forward toward decision-making for effective and sustainable management of the Chesapeake Bay, its watershed, and its living resources.



Member Support

The seven member institutions of the CRC collectively represent an astounding portfolio of research and educational resources, across a large geographic area. The CRC aims to bring this collective expertise to bear on the restoration effort through the facilitation of collaborative and multi-institutional efforts of both higher education and interdisciplinary research. The three roles above (convening, filling the pipeline, building the big stage) all interweave to serve this purpose, as well as additional tools such as the Chesapeake Bay Expertise Database and the participation in multi-institutional research proposals.



Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC)

Prepared by Meg Cole

The Scientific and Technical Advisory Committee (STAC) supports 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. Our members from

24 institutions across the Bay watershed contributed **5,000+** hours valued at **\$500,000+**

STAC Staff and leadership coordinated 4 quarterly meetings, two of which were held in-person and two virtually. At the June quarterly meeting, STAC members visited a two Lancaster farms that operated using no-till and cover crop principles. The remote meeting utilized online platforms to increase remote participation, input, and collaboration. STAC hosted 5 technical workshops in 2022, totaling over \$50,000 of funding dedicated to understanding gaps in research, developing programmatic and actionable next-steps, and increasing interagency partnerships. With the release of 3 workshop reports, STAC has provided over 35 recommendations and findings to the partnership in 2022.

Internally, STAC members have continued drafting the Comprehensive Evaluation of System Response (CESR) report, scheduled for release by the end of 2022. CESR aims to identify gaps between expected and realized responses to management actions and characterize critical uncertainties in system response to management actions. The report will recommend research strategies to improve understanding of system response and aid in decision-making under uncertainty for attainment of water quality standards. The last three STAC quarterly meetings focused on addressing topics critical to the Chesapeake Bay, facilitating conversations on environmental flows, strategies to support the CBP Wetlands Target, and soil health, respectively. Members engaged in panel and group-wide discussions to identify and evaluate opportunities to inform management decisions relevant to meeting themes.

In 2023 and beyond, STAC aims to continue providing vital research findings, actionable programmatic recommendations, and increased collaboration to the Chesapeake Bay Program partnership. We will focus on improving communication of recommendations and findings and providing scientific guidance to assist the partnership into 2025 and after. Currently, 5 technical workshops and 1 technical review are planned to convene in 2023.

Since its creation in December 1984, the Chesapeake Bay Program's (CBP) Scientific and Technical Advisory Committee (STAC) has worked to enhance scientific communication and outreach throughout the Chesapeake Bay watershed and beyond. STAC provides independent scientific and technical advice through all activities. STAC serves as a liaison between the region's scientific community and the CBP. Through professional and academic contacts and organizational networks of its members, STAC ensures close cooperation among and between the various research institutions and management agencies represented in the Bay watershed.

Funding for the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) is provided through a cooperative agreement with the US EPA.



Environmental Management Career Development Program (EMCDP)

Prepared by Melissa Fagan

In 2022, CRC received the incredible news that our work implementing the Environmental Management Career Development Program at the Chesapeake Bay Program will continue for five more years! While funding renewals are certainly stressful, they provide an opportunity for growth and reinvention. What worked well that we want to continue? Where do we see room for improvement? What new energy can we infuse into the program during this new program cycle? Here are a few of the important changes from this round of visioning:

- We made sure that our Environmental Management Staffer salary was keeping pace with the marketplace, that Staffers had access to the full suite of existing CRC benefits, and even created a new benefit with the establishment of our 401(k)-matching program.
- We continued prioritizing Staffer Professional Development by maintaining our dedicated resources for Staffer growth and exploration.
- We earmarked funding for a full programmatic review focusing on diversity, equity, and inclusion. Good progress has been made, but we know we can do more.

In 2022, there were:



1

In-person group learning session on career building where we heard lessons learned from two environmental professionals with 70+ years of combined experience working on Chesapeake restoration efforts. We look forward to more in-person learning sessions in 2023!



39

Individual professional development opportunities that Staffers participated in online and in-person within watershed and across the country.



72

Members of CRC's Career Development Alumni network. CRC alums were featured in our 50th Anniversary video and were the invited panelists during April's Roundtable webinar. Our LinkedIn group has been a central point to share information and opportunities between alumni and between the alums and current Staffers.

With the return of in-person experiences, we look forward to planning more group learning sessions and field trips for the Staffers. We have missed these opportunities to explore this incredible watershed and connect with our teammates while we worked virtually. In 2023, we will also plan to create guidance around Staffer utilization within the Chesapeake Bay Program. We will take our decades of experience managing the Staffer team and help the partners put them to work in the most efficient and effective ways. There is a lot of work to be done, and we want to offer value at every point in the program.

CRC's Environmental Management Career Development Program (EMCDP) gives early career environmental managers and scientists an entry point into the Chesapeake Bay's restoration community in a way that not only provides critical professional experience but that also advances individual growth so that future leaders are prepared to continue the restoration and management of the Chesapeake Bay and its watershed.

Funding for CRC's Environmental Management Career Development Program is generously provided through a cooperative agreement with the US EPA Chesapeake Bay Program.



Chesapeake-Student Recruitment, Early Advisement, and Mentoring (C-StREAM)

Prepared by Randy Kenyatta Rowel

Despite the challenges presented by the continued presence of the pandemic, we successfully supported another class of C-StREAM fellows during the Summer of 2022. This summer was the first time in two years we offered our summer internship Orientation and our end-of-summer Symposium in person! This was a much-missed interaction that is crucial in our internship cohort's development. The fellowships represent substantive and detailed projects that are directly linked to partnership science needs. The eight C-StREAM fellows were joined by an additional three with NOAA (supervised by Bart Merrick, CBPO), and fellowships this year were successfully delivered in person with some remote work accessibility. We even had an intern come all the way from Puerto Rico University, and we also added a new host site partner with the Maryland Hall of Archives based out of Annapolis, Maryland. Their projects ranged across disciplinary fields (see infographic) and addressed technical, communication, equity, and education challenges.

Our C-StREAM Program Coordinator, Randy K. Rowel, and Bart Merrick (NOAA CBPO) jointly managed orientation, professional development, and a final symposium, all in a hybrid format. We are now seeing the impact of having the energy of a full-time Program Coordinator. The C-StREAM program was able to build in programmatic and developmental opportunities and experiences during the summer of 2022 and saw us able to:

- Analyze and implement an Evaluation Plan for the program and its participants
- Organize an Advisory Committee of expert professionals to assist with the development and evolution of the program. Amanda Knobloch from Morgan State University (PEARL) is the Chair of the C-StREAM Advisory Committee, and we are grateful to have such a seasoned expert with direct experience working with underserved students
- Provide numerous workshops that involved guest speakers from the NOAA Human Resources Office, and underrepresented communities such as Vince Leggett from Blacks of the Chesapeake
- Further engage with our NOAA partner, Bart Merrick, to collaborate and leverage capabilities to bump up the internship experience, also a member of the Advisory Committee
- Provide an opportunity to showcase and highlight C-StREAM interns by engaging a range of new media outlets
- Implemented listening sessions with previous mentors and fellows to obtain direct feedback on what did, and did not, work in the development of both fellows and mentors. Soliciting input from our major stakeholders is a key aspect of our continuing drive for the highest level of program effectiveness.

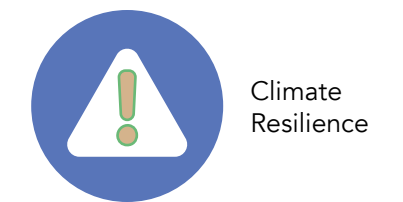
The Chesapeake-Student Recruitment, Early Advisement, and Mentoring (C-StREAM) is a program focused on recruiting, advising, and mentoring college students from populations who have been historically excluded from the environmental field and are therefore currently underrepresented in environmental research and management professions. The original program, began in 2018, consisted of eight funded internship positions, with the CRC initially providing matching of students to internships and delivering professional development support.

Funding for the C-StREAM program is generously provided by the US EPA, NOAA, NSF, and CRC's member institutions.

C-StREAM 2022 by the numbers:



Research topics:



In preparation for the coming summer of 2023, we have devised several events that will be held in person and will enhance our program even more. Two tracks for the program include one consisting of the nine funded internship positions, as well as an opportunity to engage students from underserved populations but funded by other sources for work relevant to the Bay restoration. For the first track, we solicited competitive proposals for the nine funded internships, and received several high-quality applications from a diverse range of new partners in addition to the previous academic and agency locations (e.g., the Maryland Hall of Archives). Projects for internships cover a wide range of topics spanning the physical and social sciences, from geospatial analysis and research to the digitization, research, and collection development of African American stories throughout the Chesapeake Bay region.

Our creation of a formal C-StREAM Advisory Committee furthered our objectives by providing a wider communication net for the recruitment of both students and mentors and assisted us in the development of a strategic plan that includes sustaining funding and leadership. The addition of a Program Coordinator has allowed the vision to become clearer and resources to be optimized for the goal of providing a thriving and positive learning community of interns, mentors, and member institutions. We look forward to a future where our C-StREAM program of student recruitment, mentor and student support, and evaluation and improvement creates a large pool of talented young professionals that stand out as superior investments for decision-makers looking to find talent or expertise.



The Chesapeake Community Modeling Program (CCMP)

Prepared by Dave Jasinski



The first half of 2022 was spent preparing for and then hosting Chesapeake Community Research Symposium 2022. The event was held June 6-8th at the Crown Plaza Annapolis Hotel. The theme for the symposium was *Chesapeake Bay Restoration, Resilience, and Reflection: Progress and Future Challenges*. The plenary speakers were Karl Blankenship (Chesapeake Bay Journal), Dr. Jeremy Testa (University of Maryland Center of Environmental Science's Chesapeake Biological Laboratory), and Sara Love (Maryland House State Delegate). In addition, two panel discussions examined the Comprehensive Evaluation of System Response (CESR) Report and diversity in Chesapeake Bay restoration efforts.

2022 Symposium by the numbers:

180
in-person attendees

90
virtual attendees

15
presentation sessions

128
individual presentations

This fall, CCMP welcomed its first Student Representative. Shuyu Chang is a Ph.D. student (Department of Geography at Penn State University) who is trained as a physical geographer, hydrologist, data scientist, and researcher.

The Chesapeake Community Modeling Program (CCMP) is a long-term collaborative effort between CRC, the University of Maryland Center for Environmental Science – Horn Point Laboratory (UMCES-HPL), and the NOAA Chesapeake Bay Office, that is dedicated to advancing the cause of accessible, open-source environmental models in support of research and management efforts.

Funding for CCMP is provided by NOAA's Chesapeake Bay Office.



Communications

Prepared by Lauren Huey

Funding for CRC's communication partnership with Green Fin Studio is provided by US EPA, NOAA, and CRC's member institutions.



CRC Streamline



In 2022, CRC sent a monthly newsletter, the [CRC Streamline](#). Each Streamline was centered on the theme of the previous month's Roundtable webinar and included the link to the recorded discussion as well as additional resources related to that month's theme.

2022 CRC Streamline by the numbers:



Learning from Disaster: The Environmental Impacts and Lessons of Hurricane Agnes



Behavior and the Bay: The Human Dimension of Chesapeake Bay Restoration



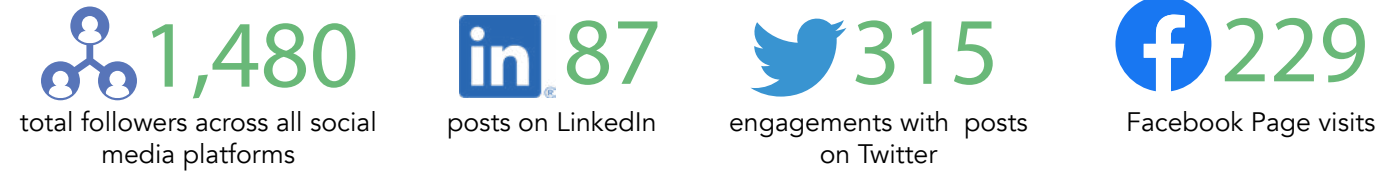
Two of the 2022 Roundtable webinars that CRC Streamline issues were based on.



CRC Social Media

CRC uses Facebook, Twitter, and LinkedIn to support our mission and vision. From job announcements to posts about upcoming events, social media is an important and growing part of CRC's virtual presence.

2022 CRC social media by the numbers:



2022 marked the 50th anniversary of CRC. We used social media to celebrate the milestone and showcase new content, like our anniversary logo and [50th anniversary video](#).

CRC's social media presence is curated by Green Fin Studio.



CRC Roundtable



[CRC Roundtable](#) is a monthly virtual seminar series that hosts targeted, inclusive, and informed conversations matching scientific advances and management needs related to the Chesapeake partnership. The seminars aim to build connectivity across organizations and identify ways to increase our collective decision-making competency. Each webinar hosts a few lightning-type talks by a diverse range of researchers, managers, and other professionals to set the stage, followed by facilitated discussion with attendees. We've built a gathering space for the community to ask awkward questions and hold an open dialogue. Additionally, the webinars are recorded and uploaded to the [CRC YouTube channel](#) as a resource for all.

2022 by the numbers:



The CRC Roundtable attracted a diverse audience in 2022:



The CRC Roundtable is facilitated and supported by Green Fin Studio. These seminars could not happen without our generous speakers sharing their time and expertise with our audience. Thank you!

JAN	Behavior and the Bay: The Human Dimension of Chesapeake Bay Restoration	Lara Fowler, Penn State Daniel Read & Lisa Wainger, University of Maryland
FEB	Aligning Behavior for the Bay	Amanda Guthrie, Virginia Institute of Marine Science Joanna Ogburn, Envision the Choptank/JBO Conservation
MAR	Bringing the Bay Home: The Role of Photography and Writing in the Restoration Effort	Dave Harp, Chesapeake Bay Photographer Tom Horton, Chesapeake Bay Writer/Salisbury University
APR	CRC's 50-Year-Long Role in Developing Environmental Leaders	Kevin Schabow, NOAA Julie Hester, The Campbell Foundation Kara Skipper, MD Department of Natural Resources
MAY	Learning from Disaster: The Environmental Impacts and Lessons of Hurricane Agnes	Drew Dehoff, Susquehanna River Basin Commission Elizabeth Andrews, William & Mary Law School
JUN	Community Science: Live from the Chesapeake Community Research Symposium	Alison Cawood, Smithsonian Environmental Research Center Julie Vastine, Dickinson College
JUL	Beating the Heat: Heat Islands and the Importance of Trees	Jeremy Hoffman, Science Museum of Virginia Peggy Van Yahres, Charlottesville Tree Commission
AUG	A Framework for Growth in Internships	Anna He, Duke University Joseph Rivera Lopez, University of Puerto Rico
SEP	Listening and Learning: Achieving Environmental Wins Through Convening	Michele Drostin, Delmarva Land and Litter Collaborative Allyson Gibson, Lancaster Clean Water Partners
OCT	Targeting Resources to Accelerate Chesapeake Bay Restoration	John Wolf & Scott Phillips, United States Geological Survey
NOV	C-StREAM Alumni Highlight Video	Joseph Rivera Lopez, University of Puerto Rico
DEC	Growing Positive Action: An Introduction to Chesapeake Behavior Change	Amy Handen, EPA Chesapeake Bay Program Steve Raabe, OpinionWorks





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CRC Streamline



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