CHESAPEAKE MONITORING COOPERATIVE:

COMMUNITY DRIVEN CASE STUDIES

February 23, 2023

Photo by Chesapeake Bay Program

CHESAPEAKE MONITORING COOPERATIVE

The CMC connects water quality monitoring initiatives across the region in order to amplify voices and enhance our understanding of the Chesapeake Bay Watershed. The CMC envisions a Chesapeake community where all data of known quality are used to inform watershed management decisions and restoration efforts.

CMC development team partners & service providers:

ALLIANCE for the Chesapeake Bay

Chesapeake Bay Program
Science. Restoration. Partnership.

Izaak Walton League of America
1922 2022
A Century of Conservation Leadership

Alliance for Aquatic Resource Monitoring
ALLARM
est. 1986

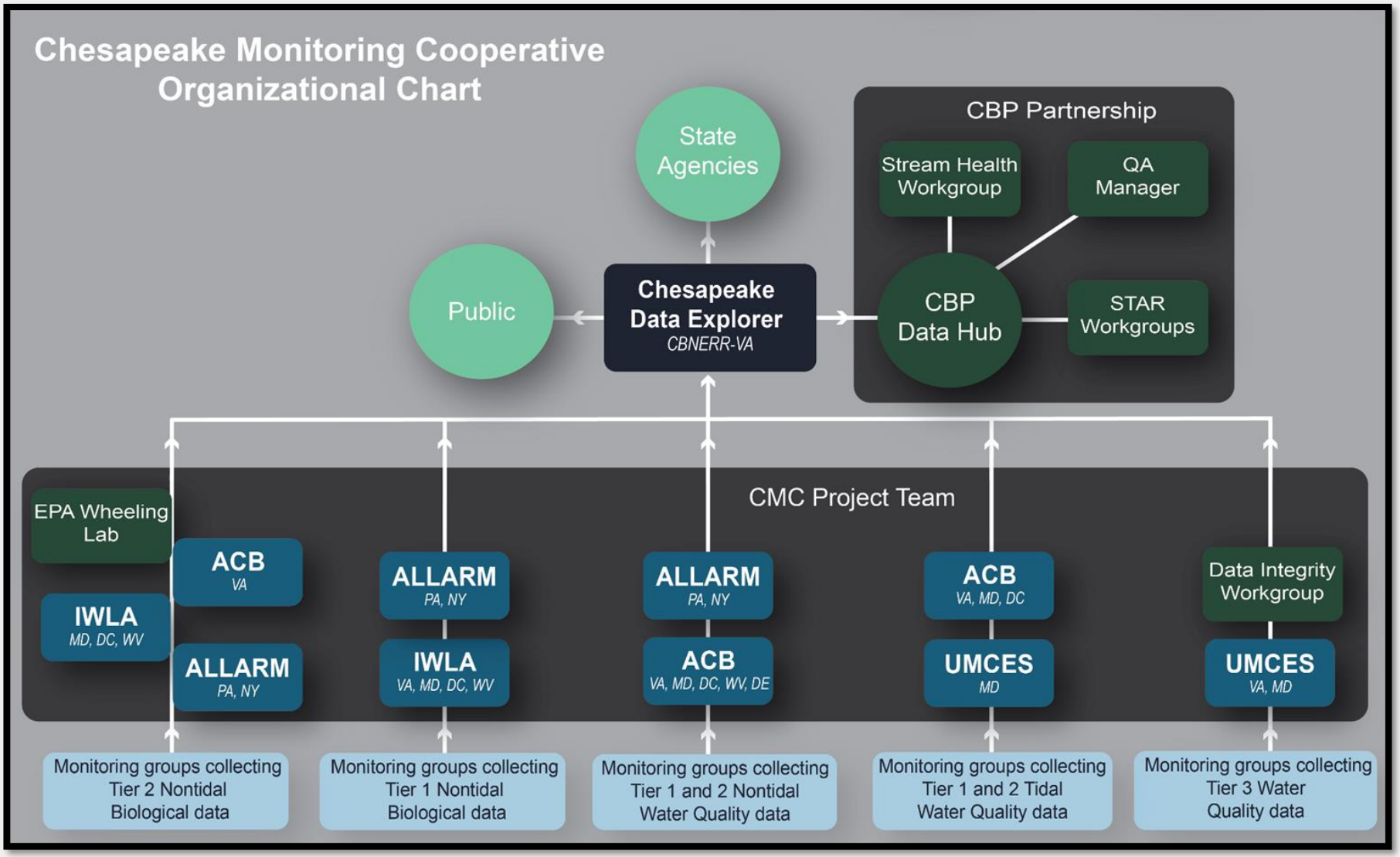
Dickinson

VIMS
Virginia Institute of Marine Science

Chesapeake Bay National Estuarine Research Reserve in Virginia

University of Maryland
Center for Environmental Science

ORGANIZATIONAL STRUCTURE



The evolution of the Chesapeake Monitoring Cooperative (CMC)

2015

The Chesapeake Bay Program (CBP) expanded their monitoring program to improve data density by using non-traditional data sources. The additional data are needed to better assess watershed health.

2016

The CMC team fostered relationships to establish a cohesive Bay-wide monitoring program. Database development began using tiered data classes based on collection method.

2017

The CMC hit its stride in 2017 as we shifted from foundational program development to on-boarding monitoring groups. Water quality and benthic monitoring trainings and data interpretation workshops were held throughout the year. The CMC began integrating data into the Chesapeake Data Explorer, the database developed for the CMC.

2018

In addition to continued efforts to onboard monitoring groups, the CMC team successfully built support within the Chesapeake Bay Program partnership for an unprecedented Memorandum of Understanding (MOU). This MOU marked an important milestone in forging a deeper understanding of, and commitment to, the use of citizen-based monitoring data in monitoring health and tracking restoration progress of the Chesapeake Bay and its watershed.

2019

The CMC continued to build momentum—new monitoring groups were formed in areas of the watershed previously lacking monitoring data and established monitoring groups were integrated into the CMC framework. The Chesapeake Data Explorer continued to grow, reaching 100,000 data points.

The CMC team had a strong presence at both the Citizen Science Association conference and the National Water Monitoring conference. This set the stage for national recognition of our successful model, while gaining new knowledge to bring back to the CMC community.

2020

Due to the COVID-19 pandemic, we had to quickly adjust our volunteer engagement strategies and monitoring support techniques to ensure the safety of all participants. Efforts focused on supporting established monitoring groups by creating virtual training videos and certification programs, and implementing new safety protocols for monitors in the field. The CMC partnered with Booz Allen Hamilton to host Hack the Bay, a hackathon to analyze data in the Chesapeake Data Explorer. By August 2020, there were over 250,000 data points available for use by hackathon teams.

Additionally, the CMC became a successful global case study and worked with organizations in the United Kingdom looking to better incorporate citizen science efforts in assessing waterway health.

Cooperative Agreement signed by partner organizations—the Chesapeake Monitoring Cooperative was formed!

Database contractor selected to begin work on the Chesapeake Data Explorer.

Collaborative stakeholder engagement via a prioritization process developed CMC priorities and building blocks.

Photo: CMC

CMC created umbrella Quality Assurance Project Plans to support existing and new data collection.

Monitoring training and onboarding groups began.

First data entered into the Chesapeake Data Explorer.

First Tier 3 tidal data (from Nanticoke Watershed Alliance) approved by CBP. https://www.chesapeakemonitoringcoop.org/tiered-framework/

Memorandum of Understanding signed in spring.

100,000 data points in the Chesapeake Data Explorer.

Launched Stream Team, a collaborative water quality monitoring program in Pennsylvania, that supports county watershed implementation plans and promotes monitoring where additional data are needed.

Virtual training videos and certification programs developed and implemented.

Booz Allen Hamilton's Hack the Bay—dozens of teams from around the world worked on four challenges using CMC data.

chesapeakemonitoringcoop.org

BUILDING PARTNERSHIPS

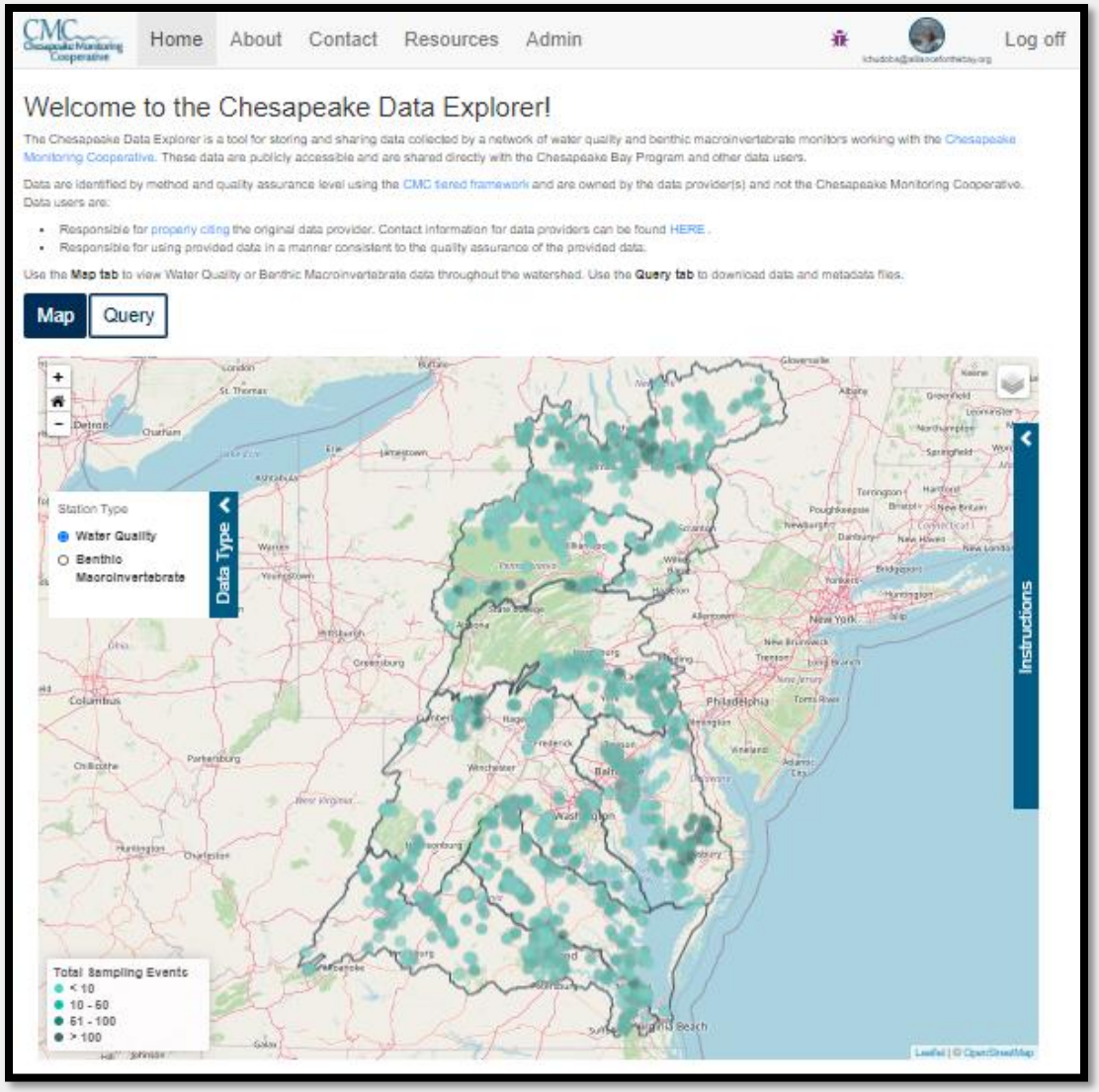
In 2020, the CMC team partnered with Booz Allen Hamilton and their Women in Data Science and 501 Green Team to host Hack the Bay, a six-week virtual hackathon aimed at answering questions about the health of the Chesapeake Bay watershed.

We had over 400 participants from around the world sign up for the event, resulting in 10 completed submissions and 10 creative, partially scoped solutions across four challenges:

- Challenge 1: Develop a Restoration Case Study,
- Challenge 2: Identify Data Gaps,
- Challenge 3: Modeling Water Pollution, and,
- Challenge 4: Design a Water Quality Report Card.

The CMC team is incredibly grateful to everyone who participated and for all the hard work that went into completing each submission! By exploring the Chesapeake watershed's water quality and benthic observations and their intersection with other geospatial, temporal, environmental, and demographic data, we hope to further empower decision-making and inspire action for watershed restoration.

CHESAPEAKE DATA EXPLORER



683,000 Data points

2,800 stations

7 Bay jurisdictions

117 Organizations

https://www.cmc.vims.edu

COMMUNITY DRIVEN CASE STUDIES

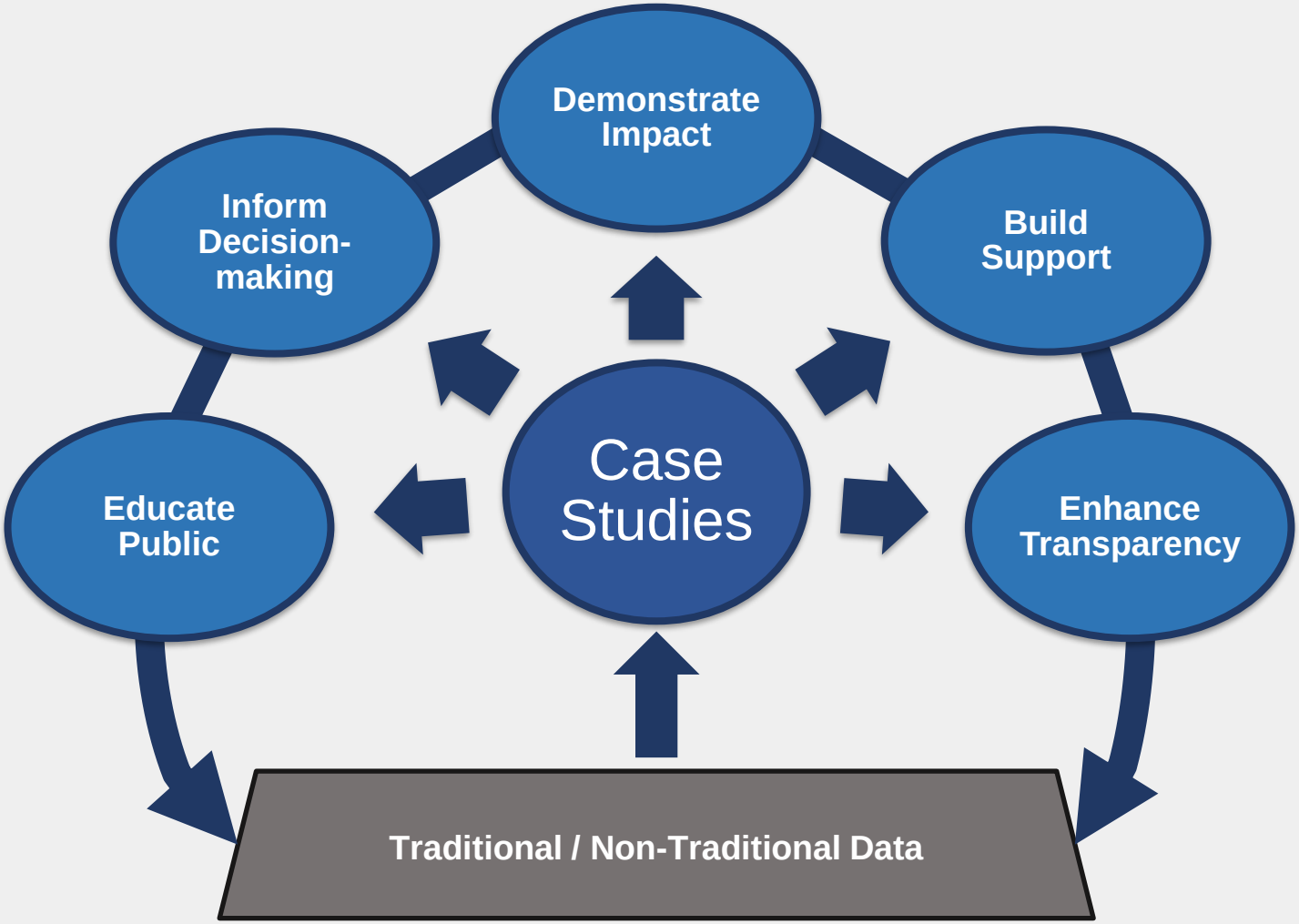
WHY CASE STUDIES?

CMC Prioritization Process

Volunteer & Organization Requested

Important & Effective Tools

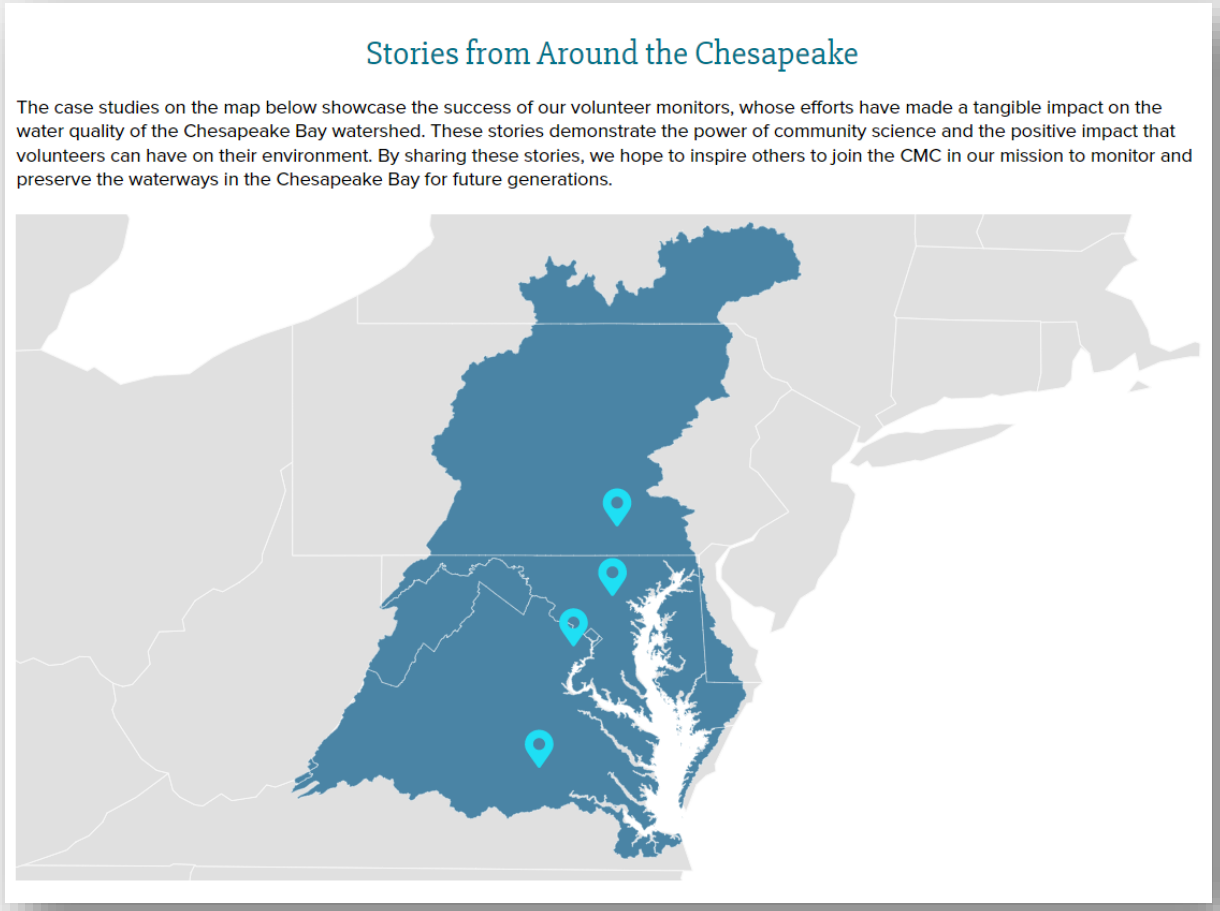
CASE STUDY IMPORTANCE



EFFECTIVE CASE STUDIES

https://www.chesapeakemonitoringcoop.org/resources/cmc-case-studies/

- Interactivity
- Geographical connection
- Scalability

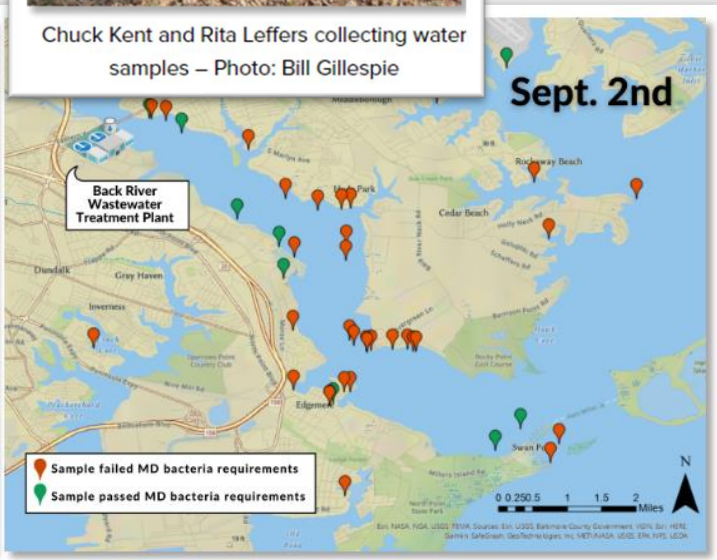


EFFECTIVE CASE STUDIES

- Visualizations
  - Data, Graphs, Maps, Pictures
- Message
  - Objectives
  - Background
  - Results
  - Implications

Chuck Kent and Rita Leffers collecting water samples – Photo: Bill Gillespie

Water sample collection for nitrate and heavy metals testing. – Photo: Daniella Heminghaus



EXAMPLE – JORDAN'S BRANCH

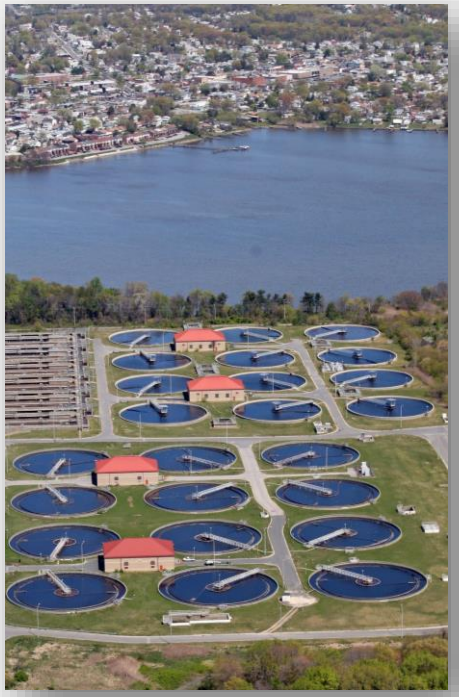
Business Corrects Practices in Response to Monitoring Results

- Nearby dog daycare business, Impawsible Pups, caused E. coli contamination
- Illicit discharges from turfed dog runs
- Formal letter sent to Impawsible Pups to cease discharging contaminated water
- HAWQS volunteer monitoring program, continues to monitor the area
- E. coli levels increased again - traced back to Impawsible Pups
- Henrico County reaches out to business to address issue

EXAMPLE – BLUE WATER BALTIMORE

Monitoring Discovery Leads to Improved Wastewater Management

- Blue Water Baltimore (BWB) monitors at 49 stations near Patapsco
- High bacteria counts found at outflow of effluent pipe from Patapsco River Wastewater Treatment Plant - Investigation uncovered operational and maintenance deficiencies
- BWB filed a federal Clean Water Act lawsuit against Baltimore City
- MDE filed a lawsuit requesting a state enforcement action for violations of water pollution statutes
- Continuous testing by BWB shows bacteria and pollution levels are improving near both wastewater treatment plants
- Judge ordered Baltimore City to submit monthly status updates demonstrating progress towards lower bacteria levels and decreased pollution



CONCLUSION

- CMC to continue to refine processes to capture stories
- Diversify case study parameters and locations across watershed
- Use as resource to engage volunteer networks on these successes

THANK YOU!

Alexandra Fries
Program Manager
University of Maryland Center for Environmental Science
afries@umces.edu

Matthew Kierce
Chesapeake Monitoring Outreach Coordinator
Izaak Walton League of America
mkierce@iwla.org