



**STAC June Quarterly Meeting
September 13-14, 2022**



Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
Quarterly Meeting – September 13-14, 2022
Vandiver Inn, Havre de Grace MD
[Register for Zoom Meeting](#)

STAC Call to Order, Updates, and Recaps

10:00 Call to Order — *Kathy Boomer (STAC Chair – FFAR)*

- Meeting Overview & Roll Call
- Recap of STAC June 2022 Quarterly Meeting
- STAC EB Updates
 - Update to WQGIT BMP Review Protocol Revisions
 - EC Letter
 - CBP Fertilizer Data challenge

STAC September 2022 Quarterly Meeting Agenda

Day 1

- 10:00 Call to Order, STAC Updates and Recaps
- 10:30 Introductions: Dr. Kandis Boyd, CBP Director
- 10:50 CESR update— *Denice Wardrop*
- 12:15 *Lunch*
- 1:00 STAC Workshop Updates — *Mike Runge (USGS), Kirk Havens (VIMS)*
- 1:40 Strategic Science and Research — *Alex Gunnerson (STAR, CRC), Breck Sullivan (USGS)*
- 2:35 Conowingo Update
- 3:15 STAC/CBP Business & Table Discussions
- CAST Fertilizer Discussion
 - Advancing Adaptive Management
 - Soil Health Initiatives
 - CESR
- 5:00 Recess

Day 2

- 9:15 Introduction to STAC Quarterly Meeting Theme: Advancing the CBP wetlands target — *Kathy Boomer (FFAR)*
- 9:30 The History of Science-based Wetlands Management in the Bay Watershed — *Panel Discussion*
- 11:00 Wetlands Action Plan Update - Summary of Outcomes from the August 2-3 CBP Meeting - *Panel Discussion*
- 12:00 Group Discussion - Recommendations for CBP Wetlands Action Plan and comments to CBP MB
- 1:00 Adjourn and Lunch

2021-2023 STAC Meeting Themes:

Quarterly Meeting	Proposed Topic (based on stakeholder feedback)	Potential STAC Talents to Recruit*
Dec 7-8	Transition: Tying up Loose Ends, Starting a New Journey	EB team STAR, LGAC, CAC, Comm Team
Mar 8-9	Envisioning STAC 2021-2023: Exploring opportunities to advance CBP adaptive management	EB team, Dave Martin, Jeni Keisman
June 14-15	Soil Health Management—Implications to watershed health and climate resiliency	Lara, Leon, Chris, Tess, and Jason; Ag workgroup
Sept 13-14	CBP Wetlands Action Plan	Denise, Kirk, Ellen, Ben, Greg, Celso Healthy Watersheds, Vital Habitats GITs
Dec 6-7	Environmental Flows: terrestrial water storage, aquatic habitat, and flood/drought risk management	Weixing, Adel, Eric, Jason, Tony, Andy LCAC, Vital Habitats GIT
Mar 2023	HAB's and urban landscape management	Mark, Hamid, Chancee, Lee, Shirley, Ellen K., Erin; WQ, Vital Habitats GITs
June 2023	Advancing the T-Zone Concept: Connecting living resources to estuarine dynamics	Bill, Kenny, Larry, Deidre, Jeremy, Scott K.; Fisheries, Habitat GITs
Sept 2023	STAC Reflections and Next Steps	Kathy, Larry, Mike, Lara, Tom J. STAR, LGAC, CAC, Comm Team, all GITs

*STAC EB and CRC will support all meeting plans;

Recruitment idea intended to provide all STAC members with opportunity to shape agenda.



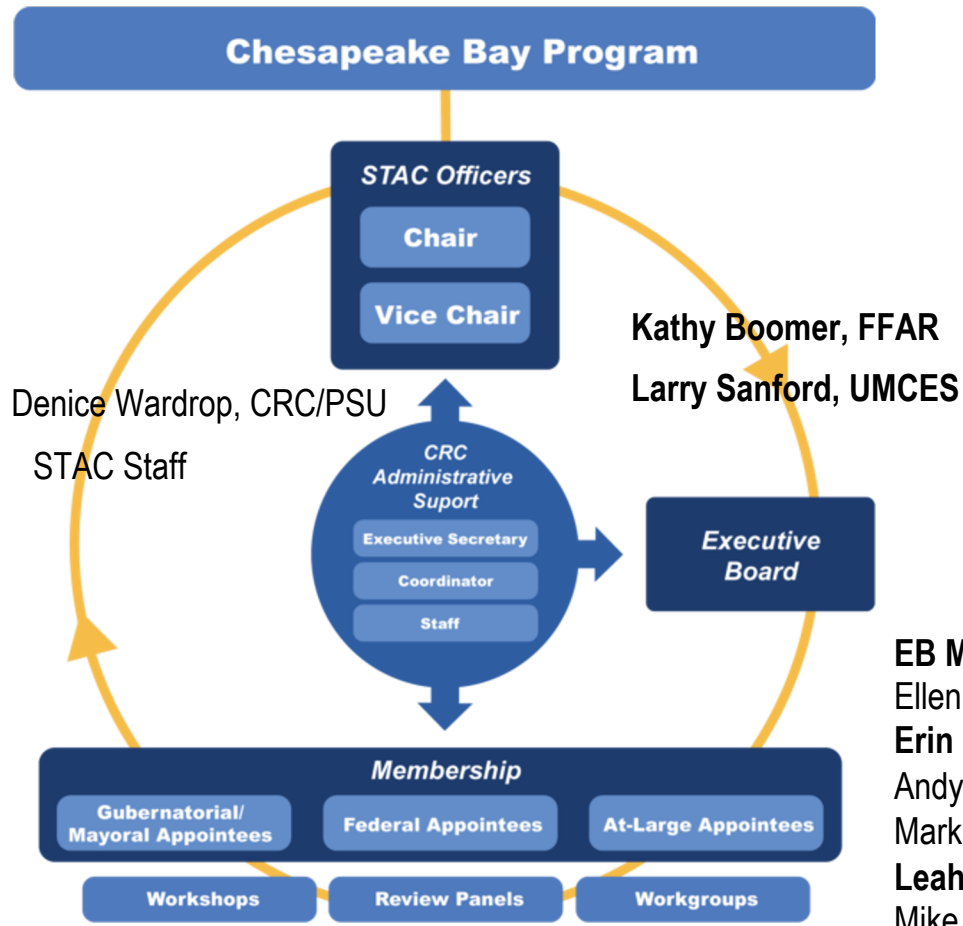
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STAC September 2022 Quarterly Meeting

TARGETED OUTCOMES:

- **Approvals:**
 - STAC Workshop Report Approval Process
 - Workshop Approval Request:
 - “Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap”
 - EC Letter
 - STAC and STAC EB Minutes, Consent Agenda
- **Draft CBP MB Wetlands Action Plan Suggestions**

Who We Are



Gubernatorial/Mayoral Appointees::

Weixing Zhu, SUNY (NY)
 Shirley Clark, PSU (PA)
 Benjamin Hayes, Bucknell (PA)
 Erin Letavic, HRG (PA)
 Craig Beyrouy, UMD (MD)
 Bill Dennison, UMCES (MD)
 Kirk Havens, VIMS (VA)
 Ellen Gilinsky, Ellen Gilinsky, LLC (VA)
 Jason Hubbart, WVU (WV)
 Chris Brosch, DDA (DE)
 Hamid Karimi, DDOE (DC)
 Chancee Lundy, Nspiregreen, LLC (DC)

At-Large Appointees:

Lee Blaney, UMBC
 Kathy Boomer, FFAR
 Zachary Easton, VT
 Celso Ferreira, George Mason
 Lara Fowler, PSU
 Deidre Gibson, Hampton Univ
 Jeni Keisman, USGS
 Catherine Kling, Cornell
 Scott Knoche, Morgan State
 Ellen Kohl, St. Mary's College
 Dave Martin, Nature Conservancy
 Andy Miller, UMBC
 Efeturi Oghenekaro, DOEE
 Leah Palm-Forster, UD
 Kenneth Rose, UMCES
 Larry Sanford, UMCES
 Leonard Shabman, Resources for the Future
 Eric Smith, VT
 Jay Stauffer, PSU
 Jeremy Testa, UMCES-CBL
 Tess Thompson, VT

EB Members:

Ellen Gilinsky, Ellen Gilinsky, LLC
Erin Letavic, HRG
 Andy Miller, UMBC
 Mark Monaco, NOAA
Leah Palm-Forster, UD
 Mike Runge, USGS
 Larry Sanford, UMCES

Federal Appointees:

Anthony Buda, USDA-ARS
 Tom Johnson, EPA
 Brandon Jones, NSF
 Greg Noe, USGS
 Michael Runge, USGS
 Leon Tillman, USDA-NRCS

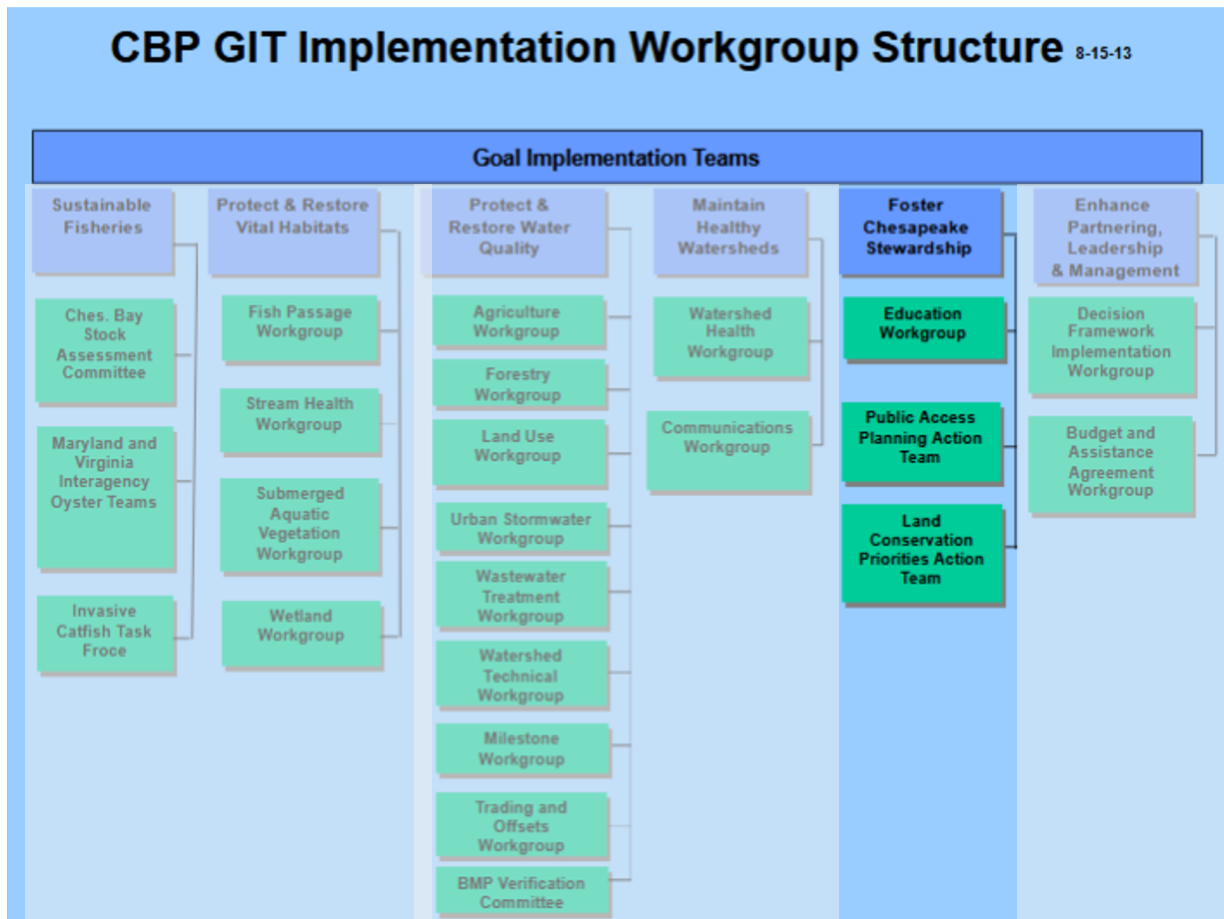
Thank you!



Chesapeake Bay Program's (CBP)
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Quarterly Meeting – June 14-15, 2022
Hybrid Meeting: Lancaster, PA: Cork Factory
[Zoom Registration](#)

12:30 pm Science Needs of the Chesapeake Bay Program: Stewardship Outcome

—*Breck Sullivan (USGS) and Briana Yancy (USEPA)*



Chesapeake Bay Program
Science. Restoration. Partnership.

[Discover the Chesapeake](#)

[Learn the Issues](#)

[State of the Chesapeake](#)

[Take Action](#)

[WHAT WE DO](#) > [WHAT GUIDES US](#) > [CHESAPEAKE BAY WATERSHED AGREEMENT](#) > [GOALS](#)

Stewardship



Goal

Increase the number and diversity of local citizen stewards and local governments that actively support and carry out the conservation and restoration activities that achieve healthy local streams, rivers and a vibrant Chesapeake Bay.

CBP Stewardship Science Needs

- **Diversity indicator target** (determine what dataset is most accurate)
- Develop a better understanding of effects from external factors such as climate change, public health, and economic inequity
- **Integrate diversity, equity, inclusion, and justice (DEIJ) considerations across all science-based decisions in the CBP**
- **Identify measures of success toward outcome** beyond our internal diversity indicator to help track stakeholder engagement
- CBP Diversity Survey Analysis
- Analyze new data collected with the 2022 stewardship survey, compare 2022 data to 2017 data to 2022 data, determine how to display that comparison on the website



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10:30 am Quarterly Meeting Overview

10:00 STAC Business

10:45 CBP x STAC partnership updates

2:00 [Soil Health](#) Theme

- **PA in the Balance: Focus on Lancaster**— *Allyson Gibson (Lancaster Clean Water Partners)*
- **Optional Field trip**



STAC June Quarterly Meeting
June 14 -15, 2022





Climate Change Mitigation Practice Categories

Conservation Practice Standard

Soil Health	327	Conservation Cover (ac)
	328	Conservation Crop Rotation (ac)
	329	Residue and Tillage Management, No Till (ac)
	329A	Strip Till (ac)
	329B	Mulch Till (ac)
	330	Contour Farming (ac)
	332	Contour Buffer Strips (ac)
	340	Cover Crop (ac)
	345	Residue and Tillage Management, Reduced Till (ac)
	386	Field Border (ac)
	393	Filter Strips (ac)
	412	Grassed Waterways (ac)
	585	Stripcropping (ac)
	601	Vegetative Barriers (ft)
	603	Herbaceous Wind Barriers (ft)
Nitrogen Management	590	Nutrient Management (ac)
Livestock Partnership	366	Anaerobic Digester (no.)
Grazing and Pasture	512	Forage and Biomass Planting (ac)
	528	Prescribed Grazing (ac)
	528A	Prescribed Grazing (ac)
	550	Range Planting (ac)
Agroforestry, Forestry and Upland Wildlife Habitat	380	Windbreaks and Shelterbelts (ft)
	381	Silvopasture Establishment (ac)
	390	Riparian Herbaceous Buffer (ac)
	391	Riparian Forest Buffer (ac)
	612	Tree and Shrub Establishment (ac)
	645	Upland Wildlife Habitat (ac)
	650	Windbreak Renovation (ft)

CHAPTER FOUR

Soil health in agricultural ecosystems: Current status and future perspectives

Gurpal S. Toor^{a,*}, Yun-Ya Yang^a, Srabani Das^a, Suzanne Dorsey^b, and Gary Felton^c
^aDepartment of Environmental Science and Technology, University of Maryland, College Park, MD, United States
^bMaryland Department of the Environment, Baltimore, MD, United States
^cCorresponding author: e-mail address: gtoor@umd.edu



CHESAPEAKE BAY COMMISSION · MAY 2021
A Proposal for a USDA Chesapeake Resilient Farms Initiative (CRFI)

A New \$737M Investment in Clean Water and Climate Resiliency

-2014 Chesapeake Bay Watershed Agreement-

Abundant Life:

- **Sustainable Fisheries Goal:** Protect, restore and enhance aquatic living resources.
- Vital Habitats Goal: Enhance a network of habitats to support fish and wildlife and to afford public benefits.

Clean Water:

- Water Quality Goal: Reduce pollutants to support living resources and protect human health.
- Toxic Contaminants Goal: Ensure that the Bay and its rivers are free of effects of toxic contaminants.

Climate Change:

- Climate Resiliency Goal: Increase the resiliency of the Bay system to withstand changing conditions.

Conserved Lands:

- Healthy Watersheds Goal: Sustain state-identified waters and watersheds recognized for their high quality and/or high ecological value.
- Land Conservation Goal: Conserve landscapes to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value.

Engaged Communities:

- Stewardship Goal: Increase the diversity of citizen stewards that carry out conservation activities.
- Public Access Goal: Expand public access to the Bay and its tributaries
- Environmental Literacy Goal: Enable students to graduate with the knowledge to act responsibly.



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Why Soil Health?

- Key grower concern, for a constituency expected to provided as much as 80% of targeted nutrient and sediment reductions.
- Essential to environmental sustainability (including water quality) and food supply concerns under changing climate conditions
- Large overlap with practices prescribed for the TMDL and uncertainties challenging progress
- Aligns with global and federal infrastructure and climate resiliency priorities

-2014 Chesapeake Bay Watershed Agreement-

Abundant Life:

- Sustainable Fisheries Goal: Protect, restore and enhance aquatic living resources.
- Vital Habitats Goal: Enhance a network of habitats to support fish and wildlife and to afford public benefits.

Clean Water:

- Water Quality Goal: Reduce pollutants to support living resources and protect human health.
- Toxic Contaminants Goal: Ensure that the Bay and its rivers are free of effects of toxic contaminants.

Climate Change:

- **Climate Resiliency Goal**: Increase the resiliency of the Bay system to withstand changing conditions.

Conserved Lands:

- **Healthy Watersheds Goal**: Sustain state-identified waters and watersheds recognized for their high quality and/or high ecological value.
- Land Conservation Goal: Conserve landscapes to maintain water quality and habitat; sustain working forests, farms and maritime communities; and conserve lands of cultural, indigenous and community value.

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CHESAPEAKE BAY PROGRAM

**Protocols for the Development, Review, and
Approval of Loading and Effectiveness Estimates
for Nutrient and Sediment Controls in the
Chesapeake Bay Watershed Model**

8/23/2022

Fatal Flaw Review Due June 17th: BMP Protocol Revisions

The primary approach to decision-making for the Expert Panels should be full consensus. A consensus decision-making process is a group decision-making process (e.g., all parties can live with the decision) that not only seeks the agreement of most participants, but also the mitigation of minority objections.

When objections or dissenting opinions are raised in the context of Expert Panel discussions and in the development of Expert Panel reports, consensus should be the primary approach taken to resolve such dissent. If consensus is not achieved, each dissenter presents his or her concerns on the proposal, potentially starting another round of discussion to address or clarify the concern. The dissenting party/parties will supply an alternative proposal or a process for generating one, so any unique or shared concerns with proceeding with the agreement can be addressed. To allow time for resolution of the concern, a consensus decision will be sought at the next meeting of the Expert Panel. If after substantial negotiations consensus cannot be reached, and only as a last resort, ~~In the event that consensus cannot be reached,~~ all dissenting opinions must be documented and described in the Expert Panel's report.

|

BMP Protocol Revisions, as of August 24th

Expert panels chairs are encouraged to use principles and practices central to expert elicitation and facilitation⁸. Relevant skills include ensuring the panel members understand and stay focused on panel's challenge and objectives; eliciting expert judgments based on the best available information; and addressing facilitation challenges. More formal, structured elicitation protocols, such as the IDEA (“Investigate,” “Discuss,” “Estimate” and “Aggregate”) protocol can improve the accuracy and reproducibility of expert judgements⁹.

The primary approach to decision-making for the Expert Panels should be full consensus. A consensus decision-making process is a group decision-making process that not only seeks the agreement of most participants, but also the mitigation of minority objections. When objections or dissenting opinions are raised in the context of Expert Panel discussions and in the development of Expert Panel reports, consensus should be the primary approach taken to resolve such dissent. Before an Expert Panel report can enter the independent panel review (Section IV) or CBP partnership review (Section V),⁵ each member of the Expert Panel must agree that the Expert Panel report adequately acknowledges and mitigates minority objections ~~is ready~~. An Expert Panel member's sign-off indicates that he or she believes the report reflects the consensus views of the panel—not necessarily that it is the exact report he or she would have written individually.

Fatal Flaw Review Due June 17th: BMP Protocol Revisions

III. Independent Review Process for Scientific Findings

Once the Expert Panel finalizes the Expert Panel report, an independent review panel will be convened ~~to review the scientific findings that emulates the National Academies study review process¹⁴. The scientific findings,~~ including any use of Best Professional Judgment ~~(although the participants on the independent review panel can be selected and convened prior to the finalization of the Expert Panel report), will be subject to the independent review panel.~~ It is recommended that participants on the independent review panel be selected by the CBP partnership's Scientific and Technical Advisory Committee (STAC).

~~The independent review panel will review the Expert Panel report and document any questions, comments, or proposed revisions and submit that documentation to the Expert Panel for their consideration. The independent review process will occur prior to the CBP partnership review (see section IV). STAC will serve as the independent editor between the Expert Panel and the independent review panel to transmit the relevant documentation between the two groups and to facilitate discussions, as needed, to address any issues of concerns or clarifying questions that may arise as the independent review panel conducts its review of the Expert Panel report. Per the National Academies study process, the Expert Panel report "may not be released to sponsors or the public, nor may its findings be disclosed, until the review process has been satisfactorily completed and all [Expert Panel members] have approved the revised draft. Further, once this process is complete, no changes (other than minor editorial corrections) may be made."~~ ~~The independent review process will occur prior to the CBP partnership review (see section IV).~~ It is at the discretion of the Expert Panel on whether to modify the Expert Panel report based on the findings of the independent review panel. However, the Expert Panel will be expected to respond to the findings of the independent review panel and append that documentation, including the original findings of the independent review panel, to the Expert Panel report. In its role as independent editor, STAC will determine whether the feedback from the independent review panel has been adequately and thoroughly addressed by the Expert Panel, including any revisions to the Expert Panel report based on that independent review.

BMP Protocol Revisions, as of August 24th

IV. Independent Review Process for the Expert Panel Report

Once the Expert Panel finalizes the Expert Panel report, an independent review panel ensure the export panel has adhered to the protocol outlined herein and review the scientific findings. The CBP STAC will coordinate the review process as follows:

1. STAC will establish an associate editorial board of three and delegate power to them to conduct the review process. One of the three AE's shall be designated as chair, and will have the responsibility of signing off on the review process once the AE panel agrees that the report is complete and has adequately addressed reviewer concerns). The STAC AE board will coordinate an external peer review process of the panel report with at least three independent experts. The proposed expert peer reviewers shall have approval from the WQGIT and BMP Verification Ad-hoc Action Team and also agree to sign a no conflict-of-interest waiver. External reviewers should confirm that they can complete a review within four weeks of accepting the assignment.
2. Upon receiving the external reviews, the STAC AE board will evaluate reviewer comments to ensure appropriateness and highlight urgent concerns. The STAC board chair will work with the Expert Panel Chair and WQGIT Coordinator to communicate the outcomes of the independent reviews.
3. The STAC AE Board will evaluate the Expert Panel's responses/revisions and determine if the report revisions reasonably satisfy the reviewers' concerns. If concerns remain, the STAC AE Board will collaborate with the Expert Panel Chair and the WQGIT Coordinator, iteratively as needed, until the report satisfactorily addresses concerns and the STAC AE board Chair agrees to finalize the document.

Once approved by the STAC AE board, the report is elevated to the CBP partnership for review (see section V). The independent review likely will require at least two to three months, to ensure that the STAC AE board and external reviewers have adequate time to provide a substantive and fair review.

Chesapeake Executive Council Meeting: Oct 11, 2022



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/>

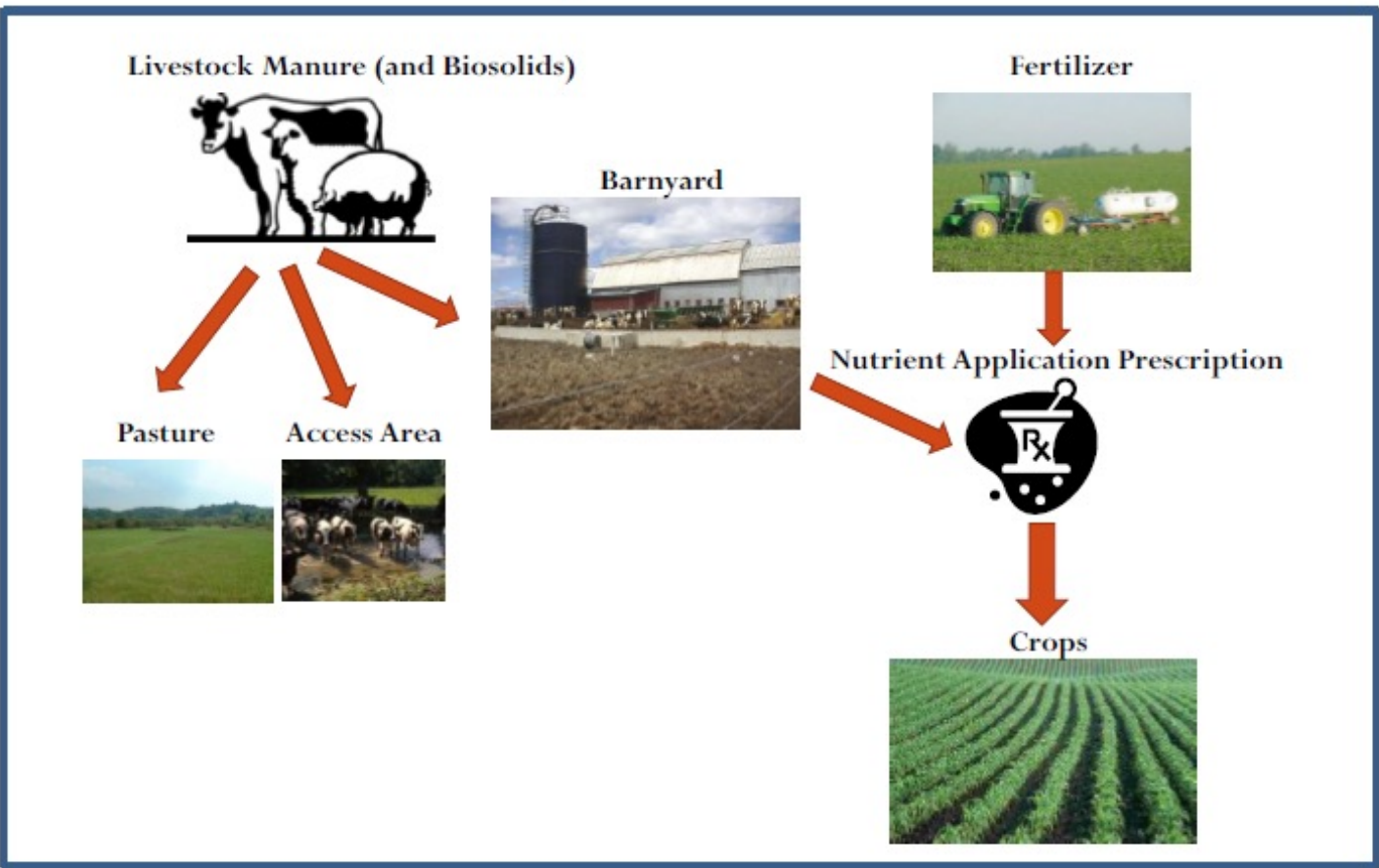
[insert DATE]

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

- i. 2021-2022 Theme Highlights**
- ii. CESR Report Highlights**
- iii. Advancing CBP Adaptive Management of Bay Resources**
- iv. Workshop Highlights**
- v. Recommendations:**

- **Support the CBP Action Plan** to restore riparian buffer and wetland functions critical to advancing our water quality, habitat, and climate resiliency goals by advocating for an outcomes-based planning
- **Strengthen commitment to recruiting diverse perspectives** among stakeholders and communities essential to advancing Bay goals
- **Recognize the value and importance of soil health** to our agricultural and urban stakeholders and the relevance of soil health to advancing current Bay program goals, including water quality, habitat, healthy watersheds, and climate resiliency.
- **Continue to refine CBP priorities with national priorities** to maximize natural infrastructure investments to enhance climate resiliency and other co-benefits through climate-smart agriculture and development in the Bay watershed.
- Next steps for beyond 2025 (based on CESR reports).

CBP Fertilizer Data challenge





Welcome, Dr. Boyd!



Director Of Chesapeake Bay Program

Comprehensive Evaluation of System Response

- Identify gaps and uncertainties in system response —physical, chemical, biological, and socioeconomic— that impact efforts designed to attain WQS.
- Identify recent scientific developments that can shed light on the gaps and uncertainties in system response to advance efforts to attain WQS, and
- Recommend research strategies that improve understanding of system response to support informed decision making to attain WQS.
- Recommend strategies for integrating scientific and technical analysis with active adaptive management in order to aid decision-making under uncertainty (to achieve WQS).



**STAC 2022 September
Quarterly Meeting
-Lunch Break-
Returning at 1:00 pm**



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1:00 – 1:15 pm STAC Workshop Report Approval Process — *Mike Runge (USGS)*



STAC Workshops Page

STAC workshops provide a format for formulating recommendations from the scientific and technical community on information needs, opportunities for collaborations, and further management actions. Follow the links below to find more information on current fiscal year STAC workshops. *(photo credit:*



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1:15 – 1:40 pm Briefing on FY21 STAC workshop, “Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap” — *Kirk Havens (VIMS)*

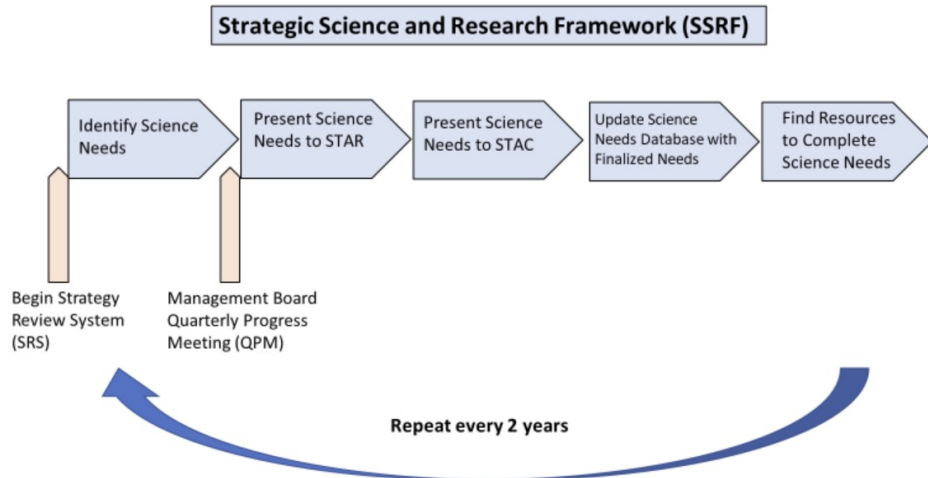


Virtual Workshop:
September 15th 2021, 9 am to 5 pm EST



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1:40 – 2:00 pm Building Capacity in the Strategic Science and Research Framework through the Environmental Management Career Development Program — *Alex Gunnerson (STAR, CRC)*

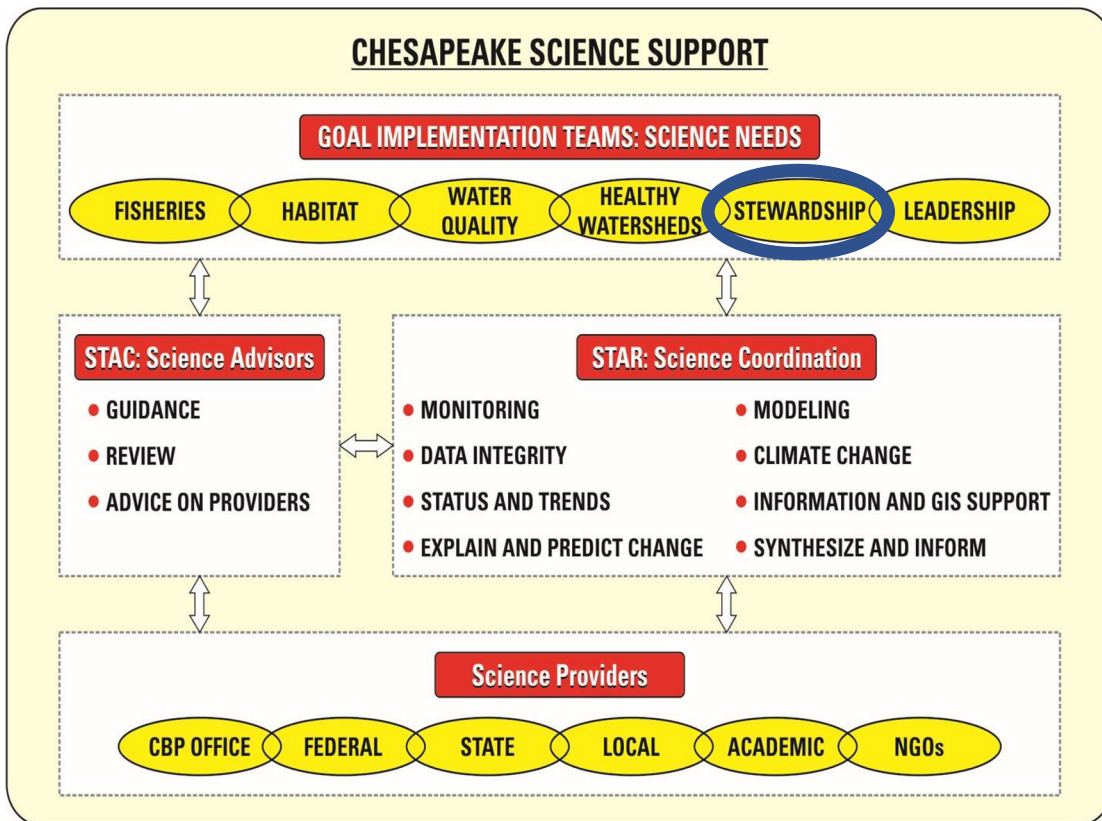


Home About **Career Development & Internships** Providing Science to the Partnership Convening Publications & Newsletter





2:00 – 2:20 pm Science Needs of the Chesapeake Bay Program: Next Generation Stewards — *Breck Sullivan (USGS), Outcome Leads*



Next-Generation Stewards Cohort



- Chesapeake Watershed Agreement Goal: Environmental Literacy
- Outcomes in this cohort:
 - Environmental Literacy Planning
 - Student
 - Sustainable Schools



**STAC 2022 September
Quarterly Meeting
- Break -
Returning at 2:35 pm**



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2:00 – 2:20 pm Conowingo Update — *Kathy Boomer (FFAR), Larry Sanford (UMCES), Andy Miller (UMBC), Karl Blankenship (Bay Journal), Jeremy Testa (UMCES)*

 **BAY JOURNAL**
MENU

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New plan in place for pollution problems at Conowingo Dam

Bay partners come to agreement, but strategy lacks full
funding

Karl Blankenship

Sep 6, 2022



1

 NEXT

PREV 



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3:15 – 3:35 pm STAC Business, Announcements — *Kathy Boomer (FFAR)*

- Approval Requests:
 - **Review and Approval of the Consent Agenda**
 - New Executive Board members: Leah Palm-Forster, Erin Letavic
 - BMP Expert Panel Update
 - 2023 Quarterly Meeting Dates:
 - March 7-8
 - June 6-7
 - September 12-13
 - December 5-6
 - **June 2022 Quarterly Meeting Minutes**
 - **July – September Executive Board Meeting Minutes**
- CBP Management Board Announcements
- Member Announcements and Updates

June STAC Meeting:

Motion to approve minutes from
March 8-9, 2022, with amendments



STAC Member Announcements

CAST-21 Review & Release

[Feb 14 Water Quality GIT](#)

Error identified by the Bay Program Office

- The **missing agricultural fertilizer data** for 2013 and 2014 was corrected.
 - ✓ Data was missing in CAST-19 (current version) and put in for the CAST-21 version that is out for review.

Missing data

- **Broilers and turkeys** from the 2020 NASS Survey
- **Crop yields** from NASS Surveys for post calibration period
 - ✓ Data are not yet in the CAST-21 version available for review



What is CAST and how is it used?

- CAST is used by states, local governments, watershed groups, scientists and researchers.
- It helps these audiences to understand which BMPs can provide the greatest pollution reduction at the least cost.
- It also helps audiences to understand the extent to which these BMPs could be implemented based on available resources.
- Chesapeake Bay Program partners use it to assess progress toward meeting restoration goals under the Chesapeake Bay Total Maximum Daily Load (Bay TMDL).

Phase 6 Model Structure

Average Load + Δ Inputs * Sensitivity

*

Land Use Acres

*

BMPs

*

Land to Water

*

Stream Delivery

*

River Delivery

Direct Loads

Phase 6

Partnership Feedback on Modeling

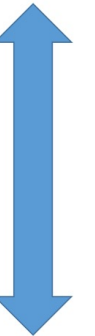
• Water Quality Goal Implementation Team

- Need more **transparent and easier** to understand decision-support tools to enable successful engagement of local partners

• Scientific and Technical Advisory Committee

- Multiple Models
- Phosphorus
- Complex Reservoir Dynamics
- Fine-scale processes

Keep it Simple!!



Include Everything!!!

4

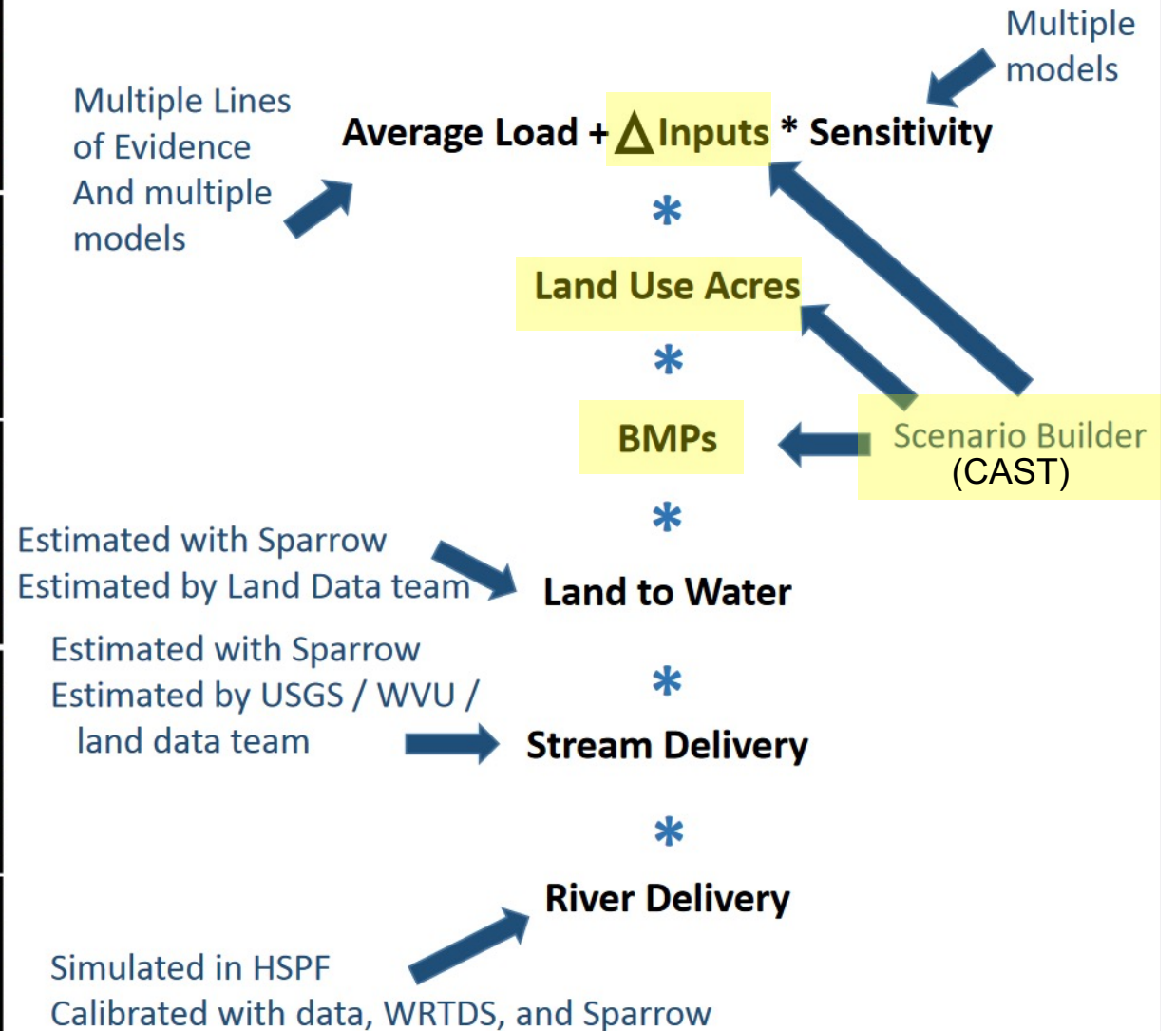


Chesapeake Bay Program
Phase 6 Watershed Model

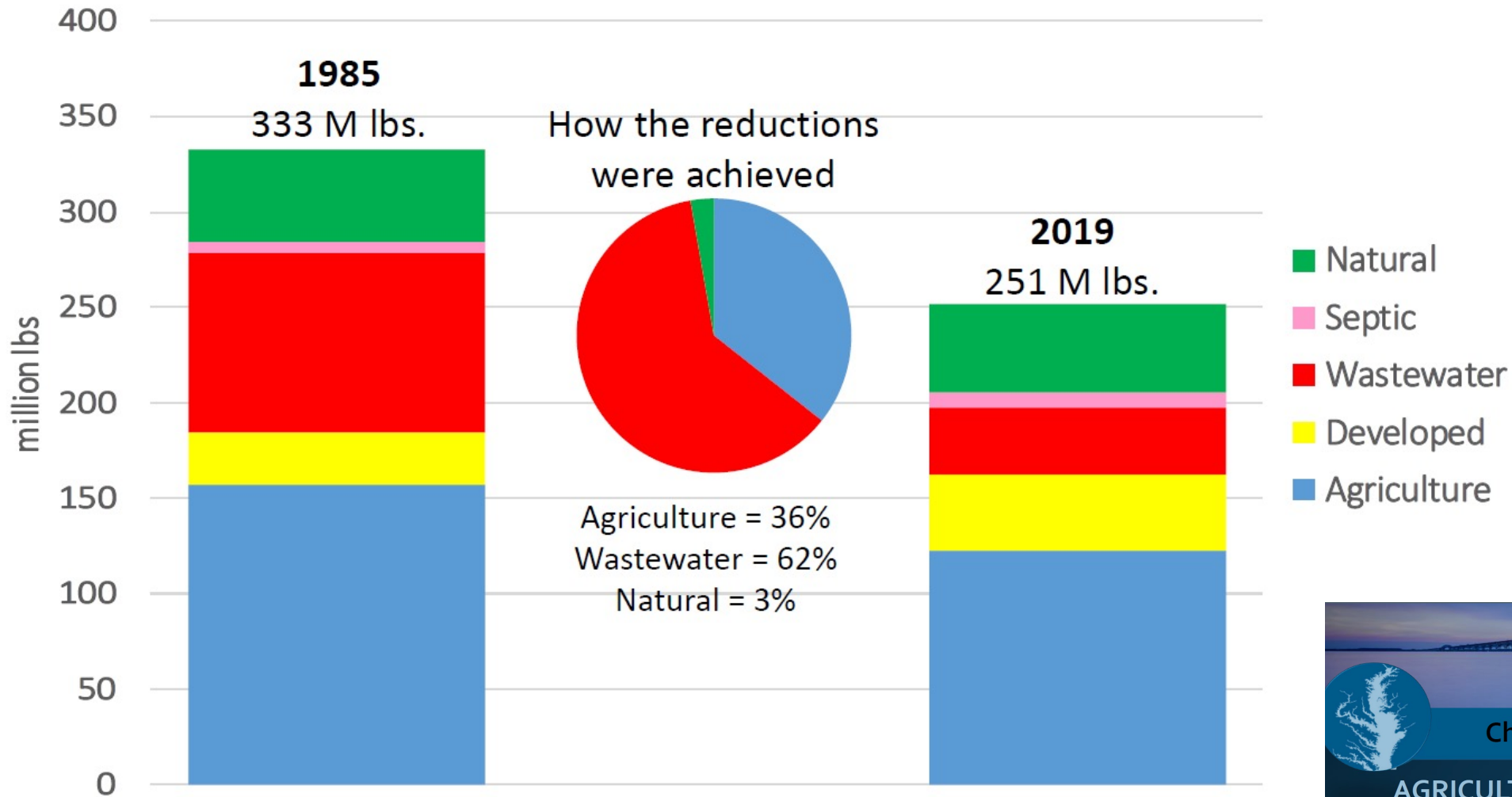
Chesapeake Bay Program Phase 6 Watershed Model

Gary Shenk – USGS - Chesapeake Bay Program
7/20/16

Phase 6 Dynamic Watershed Model and CAST-17 documentation: **CAST is the same as the time-averaged Phase 6 Dynamic Watershed Model. Creating and running scenarios in CAST is simply using an on-line interface to the time-averaged Model.**



Chesapeake Bay Watershed Nitrogen Loads: 1985 – 2019

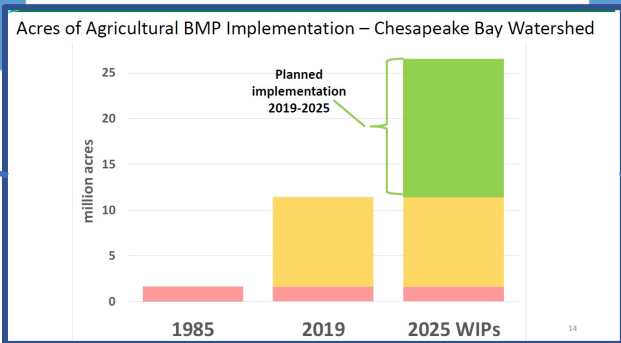
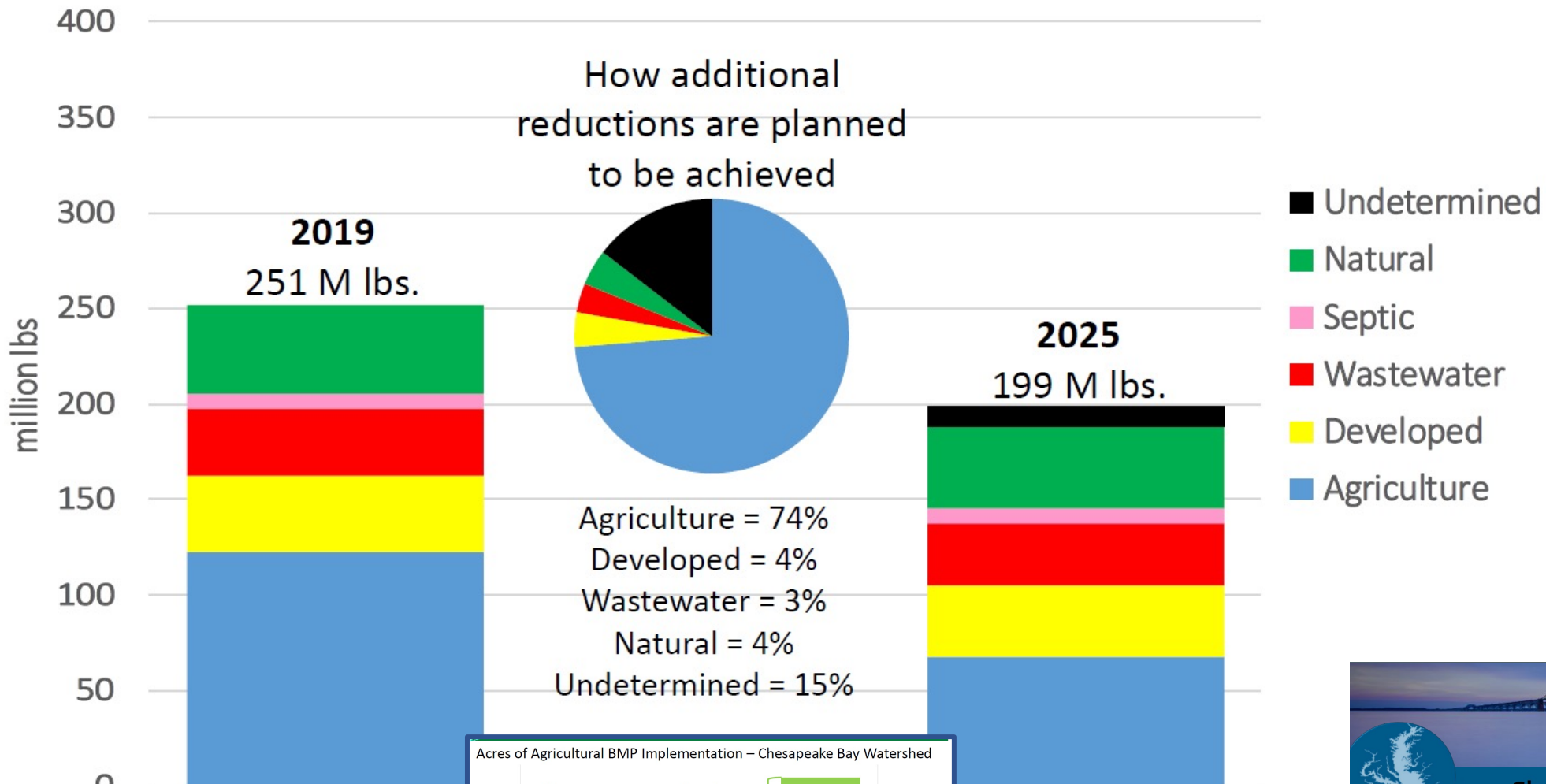


Chesapeake Bay Restoration

AGRICULTURE TAKES CENTER STAGE

Jeff Sweeney
EPA, Chesapeake Bay Program Office
Chesapeake Bay Commission Meeting
September 10, 2020

Chesapeake Bay Watershed Nitrogen Loads: 2019 – 2025

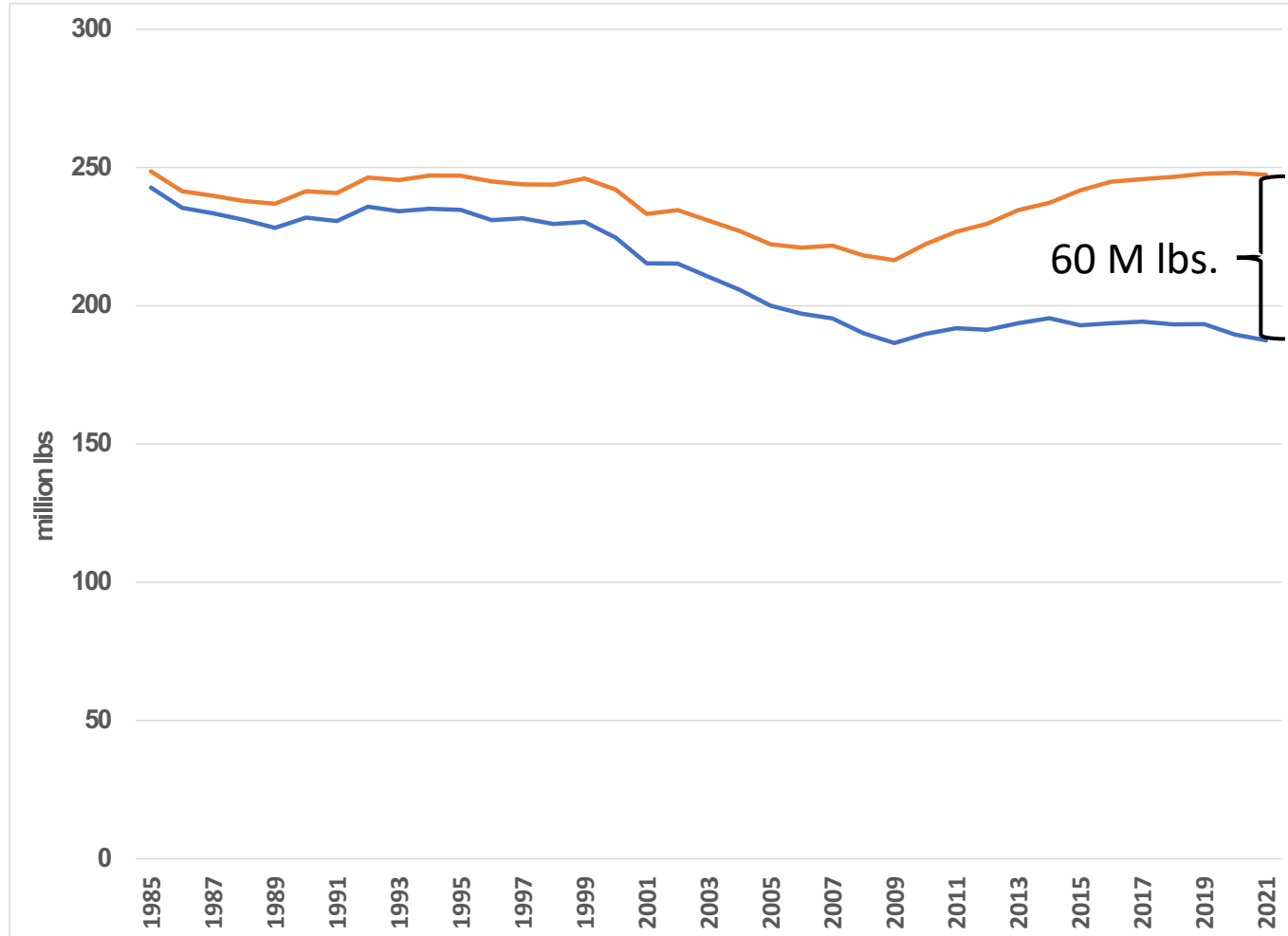


Chesapeake Bay Restoration

AGRICULTURE TAKES CENTER STAGE

Jeff Sweeney
 EPA, Chesapeake Bay Program Office
 Chesapeake Bay Commission Meeting
 September 10, 2020

For decades, conservation efforts by the agriculture sector in the Chesapeake Bay watershed have had significant positive effects on loads to local waters and the Bay



Agricultural nitrogen loads if there were no conservation efforts

Agricultural nitrogen loads to local rivers and streams (1985–2021)

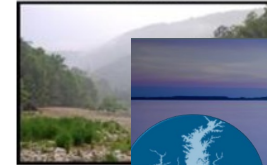
CAST partnership approved data and methods (1985-2021)



Our History and Our Future Plans

How much has/will agriculture contribute to nitrogen load reductions?

- Over the past 34 years, 62% of the nitrogen load reductions to the Chesapeake Bay have come from wastewater controls while 36% came from the agriculture sector.
- According to the jurisdictions' Phase III WIPs, over the next 6 years, about 4% of the nitrogen load reductions are planned to come from additional wastewater controls while about 74% is planned to come from the agriculture sector.



Chesapeake Bay Restoration

AGRICULTURE TAKES CENTER STAGE

Jeff Sweeney
EPA, Chesapeake Bay Program Office
Chesapeake Bay Commission Meeting
September 10, 2020



What's new in CAST-21?

The incorporation of missing agriculture fertilizer data from 2013 and 2014.

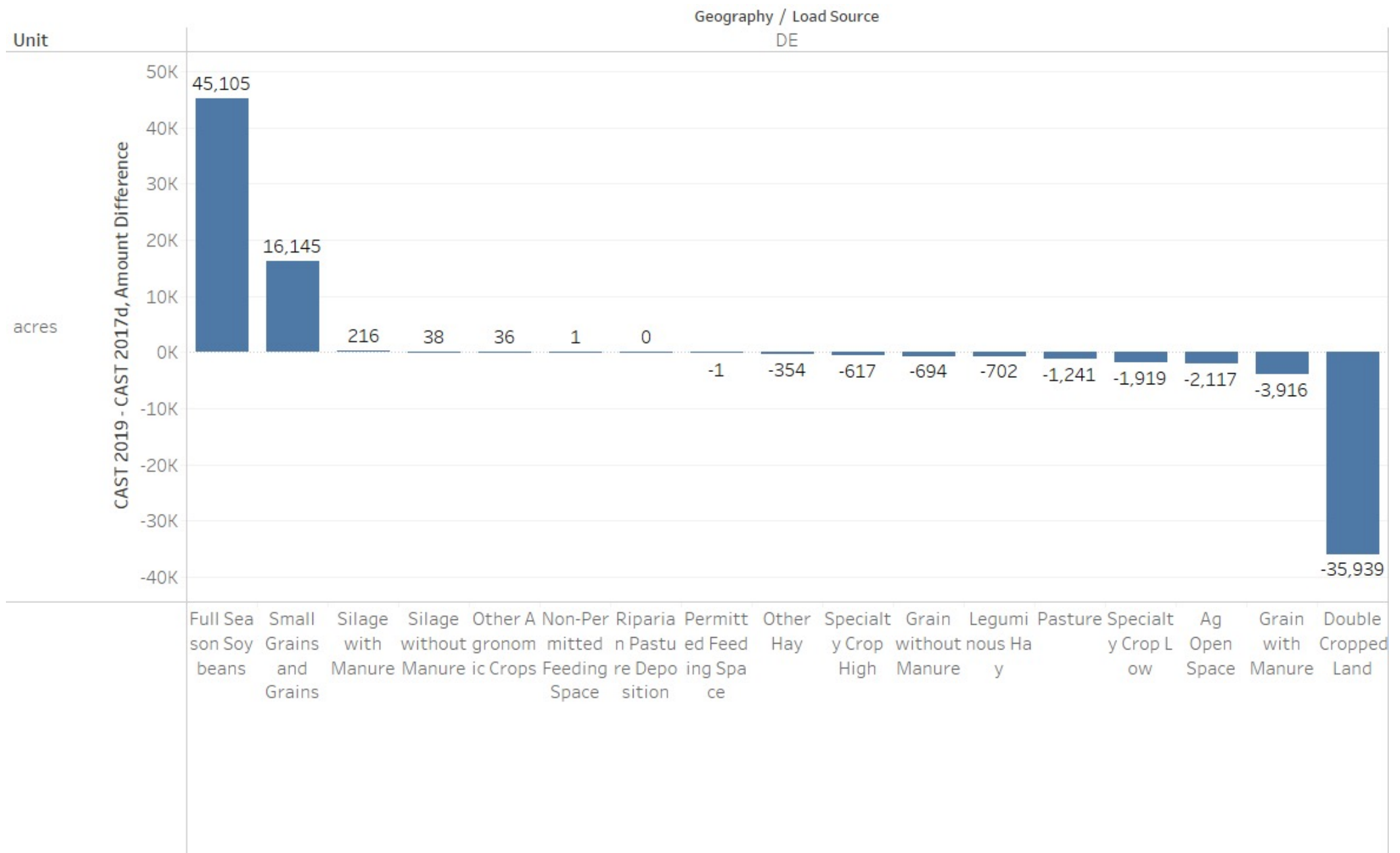
2020 National Agricultural Statistical Service (NASS) survey data on animal numbers.

NASS survey data on crop yields from 2013—present.

BMP history updated by the jurisdictions as far back as 1985 to 2021.

2013 to 2025 land use acres, septic systems and sewer service areas updated using the latest high-resolution land cover data.

Total agricultural land use acres.



DE: 2018 Agricultural Acres in CAST-2017d and CAST-2019 ⁴³

Change in Nutrient Loads to the Chesapeake Bay

Differences between CAST versions by source; 2021 Progress scenario

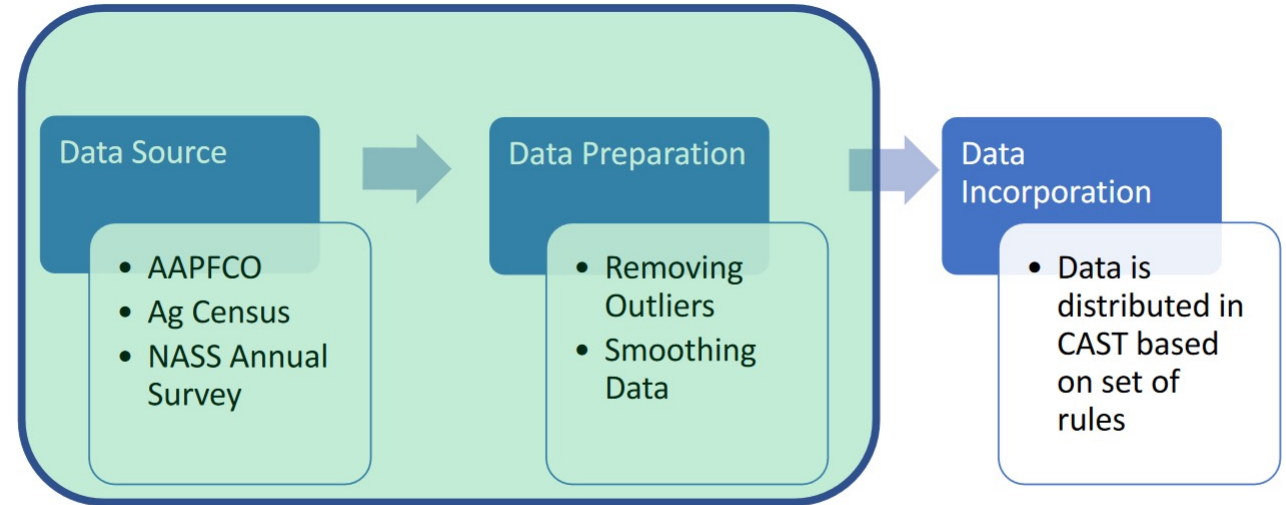
		Nitrogen Loads						
		CAST19	CAST19 to CAST21	CAST19 to CAST21	CAST19	CAST19	CAST21	
		Change w/ Corrected Fertilizer Data (M lbs)	Change From Other Data and Method Updates (M lbs)	Total Change From Updates (M lbs)	Current Percent Goal Achieved (>=80% is on track)	Corrected Fertilizer Percent Goal Achieved (>=80% is on track)	All updates Percent Goal Achieved (>=80% is on track)	
CB Watershed	Agriculture	4.721	0.853	5.573	5%	1%	0%	
CB Watershed	Developed	0	0.091	0.091	0%	0%	0%	
CB Watershed	Wastewater	0	0	0.000	100%	100%	100%	
CB Watershed	Septic	0	-0.053	-0.053	0%	0%	0%	
CB Watershed	Natural	0.247	0.036	0.283	2%	1%	21%	
CB Watershed	AllSources	4.967	0.927	5.894	42%	35%	33%	
		Phosphorus Loads						
		CAST19	CAST19 to CAST21	CAST19 to CAST21	CAST19	CAST19	CAST21	
		Change w/ Corrected Fertilizer Data (M lbs)	Change From Other Data and Method Updates (M lbs)	Total Change From Updates (M lbs)	Current Percent Goal Achieved (>=80% is on track)	Corrected Fertilizer Percent Goal Achieved (>=80% is on track)	All updates Percent Goal Achieved (>=80% is on track)	
CB Watershed	Agriculture	0.113	-0.149	-0.035	9%	6%	20%	
CB Watershed	Developed	0	-0.467	-0.467	0%	0%	100%	
CB Watershed	Wastewater	0	0	0.000	94%	94%	94%	
CB Watershed	Septic	0	0	0.000	0%	0%	0%	
CB Watershed	Natural	0.034	-0.195	-0.161	5%	5%	55%	
CB Watershed	AllSources	0.147	-0.810	-0.663	64%	60%	80%	

Where does CAST fertilizer data come from?

Sourcing and Preparing Ag Fertilizer Data: Phase 6 Watershed Model

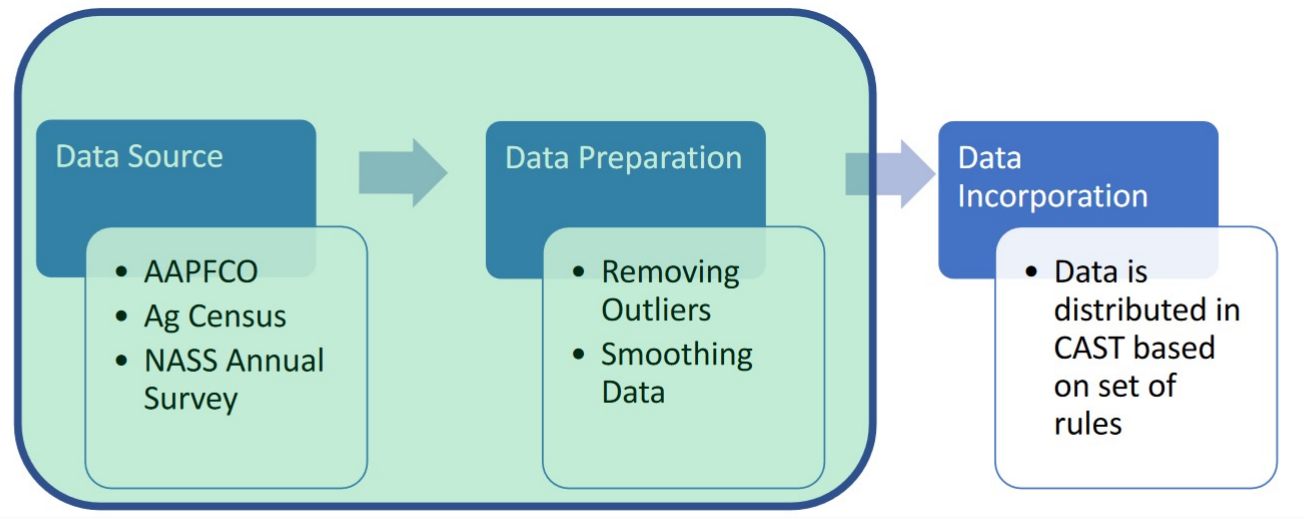
Agriculture Workgroup
March 17, 2022

- **AAPFCO**: Association of American Plant Food Control Officials
- **Provides the following fertilizer sales information per year:**
 - county of sale
 - tons of fertilizer sold
 - designated use: farm, non-farm or unknown
 - conc. of nutrients in fertilizer sold (translated into mass of total N & total P phosphorus)
 - **(sales = tons of total N or total P sold)**



Sourcing and Preparing Ag Fertilizer Data: Phase 6 Watershed Model

Agriculture Workgroup
March 17, 2022



How does the CBPO prepare AAPFCO data for use in CAST?

Ag Fertilizer Data is summed to CBW then redistributed at county-level

AAPFCO data cannot be directly used to estimate fertilizer use in a county

- Fertilizer sales area does not necessarily equal fertilizer use area
 - Fertilizers may cross state or county lines after sale
- Reliability of sales data varies year-to-year
 - Data may be missing
 - Designation may be missing (farm, non-farm, unknown)



The Path Forward on CAST-21

SPECIAL DISCUSSION FOR PRINCIPALS' STAFF COMMITTEE

AUGUST 29, 2022





JURISDICTIONAL RESPONSES & COMMON THEMES

Communications

- Need public recognition of all that the farmers/jurisdictions have accomplished to date.
- Public acknowledgement that we're not going to meet the 2025 Bay TMDL goals.
- Clarify publicly that all additional loading will be dealt with post-2025.

Model

- Generally, support the model and the intent of our current protocols.
- Trust issues—model not building trust with the ag community and other stakeholders.

Data

- The fertilizer data is not trustworthy, especially the AAPFCO data. Some data is not current enough/erratic.
- Not getting credit for some BMPs.
- Data doesn't reflect what's happening on the ground/in streams or fertilizer sales.
- Should consider using USDA-NASS data.

Timing

- Concern that we're trying to course correct too quickly/need to wait until after 2025 to make changes.
- Maybe we need to delay/pause before updating; partners need time to address additional loads.



PSC CONSENSUS:

- 1. Address New Loads Post-2025:** Over the next year, as a partnership, we will figure out how the additional loads are addressed post-2025 and on what timeframe as we work to “recalibrate” the goal line.
- 2. Address Fertilizer Issues Now:** Convene a committee to develop short-term, interim resolutions to address some of the data concerns now so that we can move CAST 2021 forward.
- 3. Develop Process for Dealing with Data Abnormalities:** Update the process to include additional safeguards to prevent data analysis errors and to assess the reasonability of modeling results after CBP protocols are applied.

Accountability: rolling changes to models to states w/o cross-checking assumptions and output



STAC 2022 September
Quarterly Meeting
- Break -
Returning at 4:05 pm

Chesapeake Executive Council Meeting: Oct 11, 2022



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/>

[insert DATE]

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

- i. 2021-2022 Theme Highlights (e.g., Soil Health)**
- ii. CESR Report Highlights**
- iii. Advancing CBP Adaptive Management of Bay Resources**
- iv. Workshop Highlights**
- v. Recommendations:**

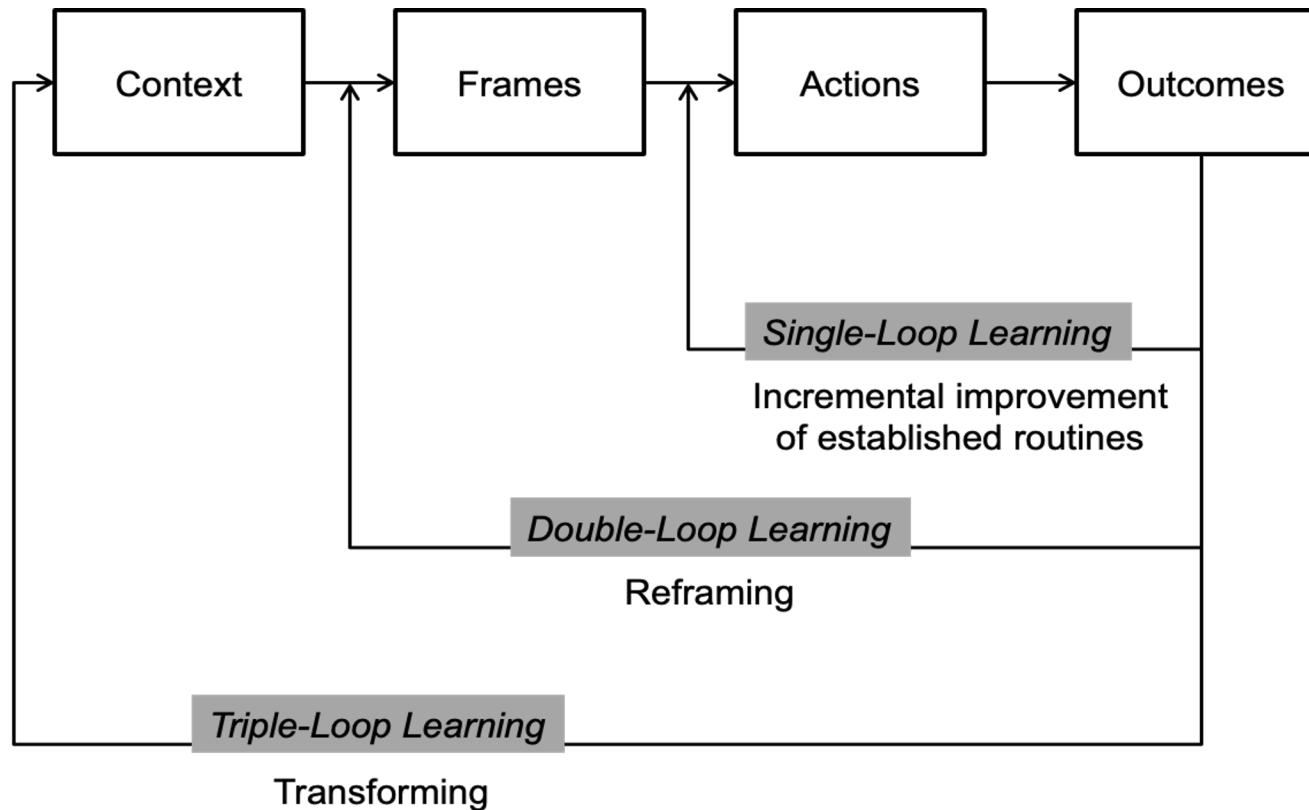
- **Support the CBP Action Plan** to restore riparian buffer and wetland functions critical to advancing our water quality, habitat, and climate resiliency goals by advocating for an outcomes-based planning
- **Strengthen commitment to recruiting diverse perspectives** among stakeholders and communities essential to advancing Bay goals
- **Recognize the value and importance of soil health** to our agricultural and urban stakeholders and the relevance of soil health to advancing current Bay program goals, including water quality, habitat, healthy watersheds, and climate resiliency.
- **Continue to refine CBP priorities with national priorities** to maximize natural infrastructure investments to enhance climate resiliency and other co-benefits through climate-smart agriculture and development in the Bay watershed.
- Next steps for beyond 2025 (based on CESR reports).



**STAC 2022 September
Quarterly Meeting
- Recess -
Returning Wednesday, 9:15 am**

March 2022 Meeting: Recap and Minutes Approval Request

Introduction to Triple-Loop Learning: The varieties of adaptive management and what they might mean for the CBP (*Mike Runge*)



from Pahl-Wostl C. 2009. A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Global Environmental Change* 19:354-365.