



# Stream Health Outcome

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*Through the Chesapeake Bay Watershed Agreement, the Chesapeake Bay Program has committed to...*



## *Goal: Stream Health*

### *Outcome:*

*Continually improve stream health and function through the watershed. Improve health and function of ten percent of stream miles above the 2008 baseline for the watershed*



## Management Board Request

We ask the Management Board to support the **investment of resources to achieve a more holistic approach to improving ecological integrity of streams based on sound science, coupled with land management, planning, and protection to improve and sustain stream health.**



# What is our Outlook and Recent Progress?



OUTLOOK  
**ON COURSE**



RECENT PROGRESS  
**INCREASE**

## Chessie BIBI Ratings for the Watershed

Pre-Baseline (2000-2005)

Baseline (2006-2011)

First interval (2012-2017)

Pre-Baseline (2000-2005)

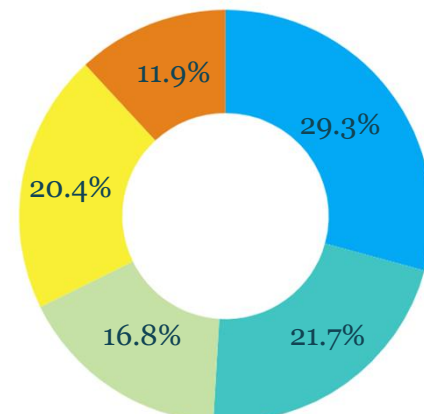
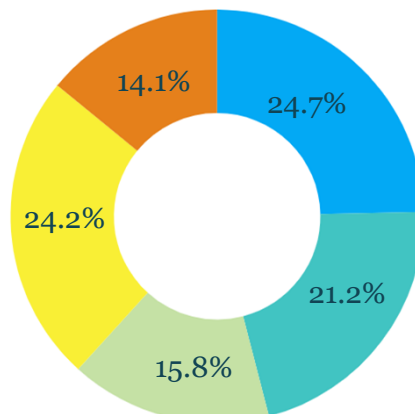
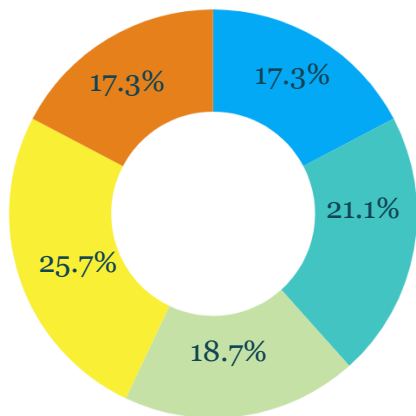
Baseline (2006-2011)

First interval (2012-2017)

Pre-Baseline (2000-2005)

Baseline (2006-2011)

First interval (2012-2017)



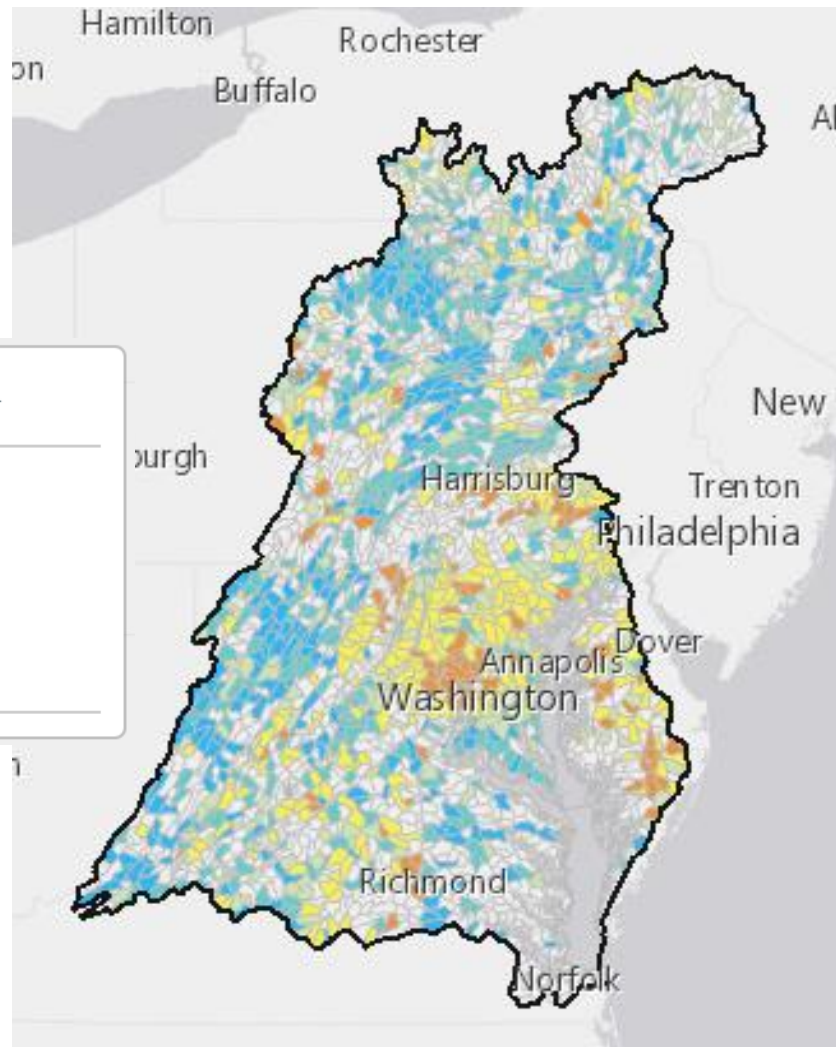
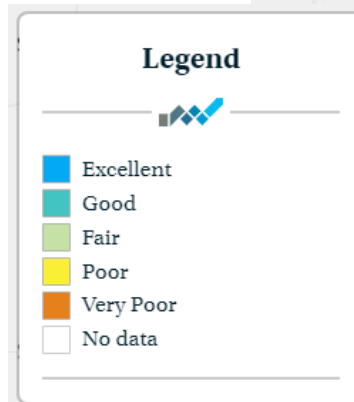
Chesapeake Basin-wide Index of Biotic Integrity for stream macroinvertebrates



## What is our Outlook and Recent Progress?

### Gaps in data coverage

41.5% of overall stream miles did not have enough data for BIBI rating in the first interval





## What is our Outlook and Recent Progress?

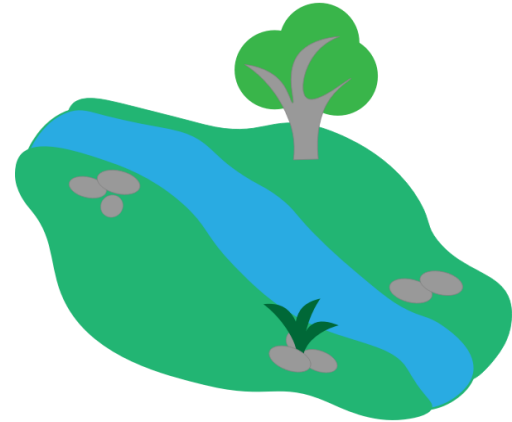


### Chessie BIBI has limitations

- 5-year data collection cycle makes it difficult to establish trends
- Large areas without data
- Limited direct links of watershed BMPs to improvements in biotic communities



## What is our Outlook and Recent Progress?



### Additional indicators are needed

- Biological uplift (increased BIBI score) may not be achieved immediately following management actions, but these actions can have a positive impact that may set the stage for future uplift
- Additional indicators will provide more immediate feedback regarding management actions in the interim between 5 year BIBI data sets



## What is our Outlook and Recent Progress?



Currently on course to achieve outcome, but...

- **Not certain if we can sustain a 10% improvement goal**
  - Have only completed one interval from baseline, we cannot be sure that the 10% change is related to management actions as opposed to natural fluctuations
  - Weather influences data
  - Population growth and climate change negatively affect trends





## Completed Actions

### ▪ **Indicator Analysis completed for first interval**

- ~6% improvement in Chessie BIBI indicator between the baseline (2006 - 2011) and first interval (2012 – 2017) continues an earlier improving trend

### ▪ **2023 STAC workshop** - State of the Science of Stream Restoration

- Report is in review and will be released soon

### ▪ **Stream Restoration Permit Survey**

- follow-up on previous work

### ▪ **FY22 GIT Funding** - Literature Review: Building Climate Resilience in Stream Restoration Practices

- work is currently underway



## Ongoing Work

### **3-phase management action**

- Included in 2020-2021 and 2022-2023 Logic and Action Plans
- **PURPOSE:** Better understand the drivers and stressors affecting stream health throughout the Chesapeake Bay watershed

**Phase 1 (completed by USGS):** identified most significant stressors impacting stream health in the Bay

**Phase 2 (Completed with FY20 GIT Funding):** quantified effects of select management actions on those stressors

**Phase 3 (ongoing):** to identify a suite of non-biological metrics (flow, sedimentation, water quality, etc.) that may complement Chessie BIBI



## Ongoing Work

**Phase 3 (ongoing):** Identify a suite of non-biological metrics (flow, sedimentation/erosion, water quality, etc.) that may complement Chessie BIBI

**3A (completed with FY21 GIT Funding):**

Data Review and Development of Multi-Metric Stream Health Indicators

Reviewed and analyzed stream geometry and water flow metrics

Recommended development of specific geomorphic indicators

Recommended developing a desktop Hydromorphology Assessment Tool

**3B (proposed 2024 GIT project):**

Expand 3A analysis to include water quality metrics.

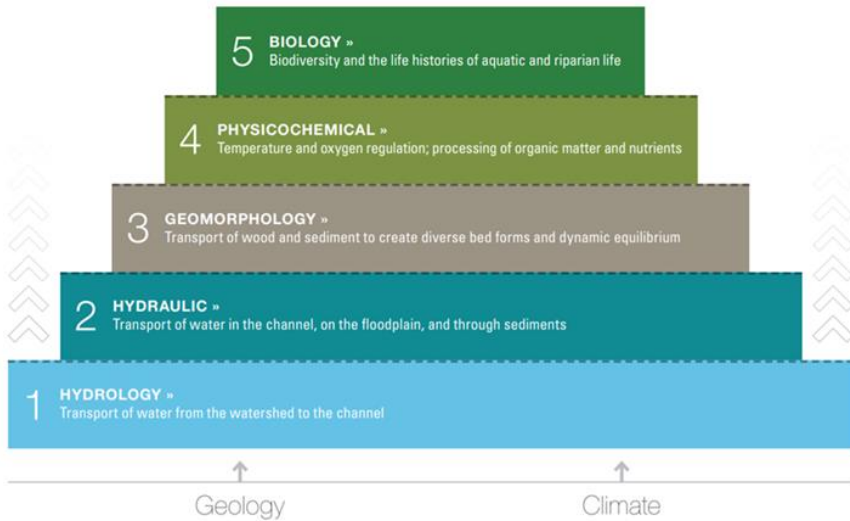
**3C (future work):**

More in-depth analysis of select metrics, additional recommendations and creation of communication materials

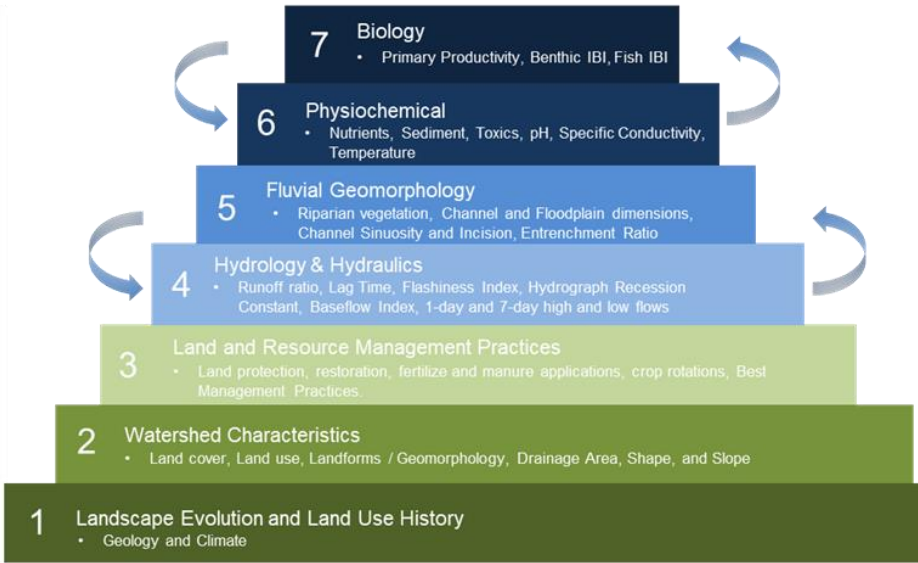


# Ongoing Work

## Stream Functional Pyramid



## Watershed-Stream Functional Pyramid





## Ongoing Work

### **Support the investment of resources to improve ecological integrity of streams based on sound science**

- USGS Chesapeake Science Strategy  
Increasing efforts to provide integrated science and are engaging stakeholders to inform the multi-faceted restoration and conservation decisions
- CBT's Pooled Monitoring Initiative Restoration Research Award Program  
Answer several key restoration questions that are a barrier to watershed restoration project implementation
- Investigate opportunities to expand monitoring network  
Assess gaps and deficiencies from a sampling design perspective and a stream health characterization perspective and identify solutions



**In the future, we plan to ...**

## **Future policy priorities: Beyond 2025**

- **Incorporate Lessons Learned from STAC workshop**
  - Ecological uplift is only achieved if it is planned for
  - Greater consideration to ecological tradeoffs
- **Incorporate CESR report findings**
  - Difficult to determine large scale effectiveness of BMPs at improving water quality
  - TMDL improvements do not necessarily create expected response in water quality



## Filling the Gap

- Stream Health indicator shows trends to achieve outcome.
- We need to give greater consideration to ecological uplift in watershed practices.
- Working to establish additional indicators of stream health to supplement Chessie BIBI
  - Be more responsive to management actions than Chessie BIBI
  - Allow for better interim status tracking and course corrections with watershed management
- SHWG has completed a significant portion of that effort.
- We still have work to do to finish recommendations for additional indicators



## Filling the Gap

**The SHWG and its members continue to identify and obtain various sources of funding and other resources to advance scientific and technical needs to improve management practices related to the SHWG outcome.**

Examples include: using CBP's GIT and STAC workshop funds previously described in this summary; SHWG partners rely on implementation grants such as the Small Watershed Grants and Innovative Nutrient and Sediment Reduction Grants to complete projects throughout the Chesapeake Bay.

**Formal endorsement by the Management Board to support the investment of resources towards the outcome will strengthen these opportunities.**





## Management Board Request

We ask the Management Board to support the **investment of resources to achieve a more holistic approach to improving ecological integrity of streams based on sound science, coupled with land management, planning, and protection to improve and sustain stream health.**

**QUARTERLY PROGRESS MEETING – June 2024**  
*Chesapeake Bay Program*  
**Stream Health Outcome**



We ask the Management Board to support the **investment of resources to achieve a more holistic approach to improving ecological integrity of streams based on sound science, coupled with land management, planning, and protection to improve and sustain stream health.**

# Discussion