

**Date:** March 2, 2022  
**From:** David Wood and Tom Schueler  
Chesapeake Stormwater Network  
**To:** Urban Stormwater Work Group  
**Re:** Suggested Resource Plan for Climate Resilience Priorities

### **Feedback Requested**

- The USWG will be asked to affirm these priorities. If there is agreement, David will present the “Recommendations” memo (reviewed in January) to the WQGIT at their March meeting.
- The USWG will be asked to provide any comments or feedback on this proposed resource plan by March 31<sup>st</sup>.

### **Background**

Over the past two years, the Urban Stormwater Workgroup (USWG), in coordination with the Climate Resiliency Workgroup (CRWG) and other partners, have developed a series of reports and tools that help characterize the risks that climate change poses to stormwater infrastructure. Through this work, several needs and specific initiatives have emerged as next steps to help local watershed managers affectively address their restoration and public safety functions under future climate conditions.

In January 2022, the USWG reviewed the memo “Recommendations on Next Steps to Advance Efforts to Maintain Resilience of Stormwater BMPs”. While there was overall agreement on the four proposed priorities, the workgroup asked for more details on the resource needs and proposed timelines associated with each priority before sending the recommendations to the Water Quality Goal Implementation Team. This memo outlines a proposed resource plan for each of the priority initiatives.

### **Priority 1: Develop Vulnerability Assessment Tools for Local Communities**

Option 1	
Products	<p>Technical memo outlining the most cost-effective methods to analyze subwatershed factors that elevate future flooding risks for individual neighborhoods. The memo would aim to:</p> <ul style="list-style-type: none"><li>• Examine case studies of vulnerability assessments conducted by cities and municipalities both in and outside of the Chesapeake Bay Watershed to identify methods that can be borrowed for this analysis.</li><li>• Recommend approaches for defining and prioritizing risk factors to meet local needs.</li></ul>

	<ul style="list-style-type: none"> <li>• Recommend detailed modeling and mapping protocols to identify the most vulnerable neighborhoods to mitigate risks.</li> <li>• Recommend desktop methods for identifying which specific municipal properties, operations, assets and utilities most vulnerable to future flooding damages.</li> <li>• Outline more specific site investigations to mitigate risk for the most vulnerable municipal assets and utilities</li> </ul> <p>A second product would be a local resiliency “checkup” tool to guides local planners/engineers on how they can promote flood resilience in their local development and utility codes. This would be similar in scope to a “Codes and Ordinances Worksheet (COW)” to promote better site design in their communities. The checkup tool would be supported by a series of webcasts for small and large communities in the Bay watershed</p>
CBP Lead	CSN/USWG in consultation with LGAC/LLWG
Key Partners	State floodplain management agencies, local flood managers, state and local resilience leads, Large and small MS4s, GIS professionals (CBPO or other)
Process to Develop	Convene panel with expertise in flood mapping, GIS, environmental justice, and local resilience planning to come up with consensus methods for use by small and large communities.
Scope of Effort	<p>Vulnerability Assessment Memos: 125K staff + 75K for contractors</p> <p>Resiliency Checkup: 100K staff + 40K for contractors</p> <p>Both tasks completed w/in 18-24 months</p>
New/Existing Funds?	Approx. 50k of existing funds can be devoted by CSN/USWG towards initial scope and workplan.
Tentative Timeline	<p>Scope Development and Panel formation: April-June 2022</p> <p>CVA Memos: July 2022-March 2023</p> <p>Resiliency Checkup: April 2023-September 2023.</p>

## Priority 2: Develop Decision Support Tool for Local Resilience

Option 2	
Product	Develop a memo that improves local capability to select the most-cost effective risk thresholds to protect each class of their infrastructure, using the most recent Chesapeake Bay

	<p>extreme rainfall predictions developed in 2021. The memo would aim to:</p> <ul style="list-style-type: none"> <li>• Assess current risk assessment and design thresholds being used by stormwater and floodplain managers across the Bay watershed.</li> <li>• Provide options for using the precipitation projections to update resilience thresholds for each critical asset, that align with local objectives.</li> <li>• Describe the benefits and trade-offs associated with each management option.</li> </ul> <p>Depending on available funds, a complimentary product could potentially be integrated into the existing IDF curve web tool.</p>
CBP Lead	USWG, CRWG, LGAC
Key Partners	Municipal stakeholders and technical contractor
Process to Develop	Convene an expert scoping workshop followed by individual interviews with state and local decision makers. Develop report on findings, and potentially integrate into existing web tool.
Scope of Effort	Decision Tool: 30k staff time for coordination; 90K contractor support to convene workshop, develop, and test the decision support tool.
New/Existing Funds?	CSN can devote approx. 20k in existing funds to coordination, but bulk of the work would require new funds – may be a fit for GIT funding
Tentative Timeline	If pursuing GIT funding, proposal development occurs in approx. August 2022. Work would begin in Spring 2023 and run through Spring 2024.

### **Priority 3: Establish Resilient Design Adaptations for Stormwater Infrastructure and Restoration Practices**

Option 3	
Product	<p>This report would use several of the most commonly implemented Bay restoration practices as the basis for a menu of design adaptations that could be integrated into future state and local design specifications to improve the long term resilience of their BMPs. Practices may include bioretention, swales, ponds/wetlands, and stream restoration.</p> <p>The report would look at the following categories of adaptations:</p>

	<ul style="list-style-type: none"> <li>• Improved “plumbing” techniques</li> <li>• Enhancing runoff reduction</li> <li>• Better construction and maintenance indicators</li> <li>• Sizing and reference conditions</li> </ul> <p>For sizing and reference conditions, the menu would rely upon the findings of the decision support tool referenced in Priority 2.</p>
CBP Lead	CSN/USWG
Key Partners	State stormwater agencies, local stormwater managers, CBLP, BMP research community
Process to Develop	Expert workshop to define spec issues, CSN to craft draft menu of design adaptations and solicit external review
Scope of Effort	250 to 300K 24 to 36 months
New/Existing Funds?	Additional funding required. CSN can provide 30k total towards scoping and initial coordination.
Tentative Timeline	Work could begin following completion of the vulnerability assessment tools, in Fall 2023 or Winter 2023/24. Work would run through the end of 2025 or into early 2026.

#### **Priority 4: Modeling to estimate the impact of future hydrology on simulated urban BMPs**

Option 4	
Product	A technical report detailing the methods and results of the modeling analysis, along with detailed uncertainty analysis. Updates to CAST to allow users to simulate impacts of future hydrology on management scenarios for planning purposes. Communications product to help users better understand the results of the analysis.
CBP Lead	MWG?
Process	<p>CSN and the USWG will work closely with the Modeling Workgroup to scope out this priority in more detail. The USWG can provide guidance on specific scenarios to simulate, as well as considerations for simulating finer scale urban hydrology.</p> <p>Other possible partners may include STAC, communications team, and a potential contractor with expertise in stormwater modeling.</p>