

# OLD LINE STATE SUMMIT, JULY 24, 2019, FREDERICK, MD

City of Baltimore Commission for Historical and Architectural Preservation



# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines



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OLD LINE STATE SUMMIT 2019, FREDERICK, MD



Meadow Mill - Photo Credit: Ted Henn, City Paper





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## Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines

- Develop and implement a hazard mitigation planning strategy for the city's historic resources. Integrate a variety of tools, (such as engineering surveys), to determine neighborhood-specific adaptation strategies.
- Prioritize all historic resources vulnerable to climate change and climate hazards base on their significance and level of threat, and develop a schedule to complete investigations of all priority sites that have had little or no previous investigation.
- Develop a Historic Property Resiliency Toolkit for property owners.



# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines



## CITY OF BALTIMORE - CHAP

Commission for Historical & Architectural Preservation

### Fells Point Flood Mitigation Guidelines



#### PURPOSE

Many of Baltimore's historic neighborhoods are vulnerable to flooding, particularly those close to waterfronts like Fells Point. Whether on the roads, sidewalks, or directly impacting buildings, flooding is becoming a more common problem across the City of Baltimore. The historic, attached rowhouse buildings of Fells Point are particularly vulnerable and pose a real challenge for owners seeking to minimize flood damage.

The information presented in this guide is intended to provide information to property owners and tenants on evaluating options to minimize the impact of flooding to their historic rowhouse properties in Fells Point. It should be considered a supplement to consultation with architects and engineers, the Baltimore Floodplain Regulations, the *Baltimore Historic Preservation Design Guidelines*, and the CHAP review process.

The Department of Planning is available to meet with applicants to review permits required for proposed projects. All applicants proposing exterior flood mitigation measures in Baltimore City Historic Districts and on Baltimore City Landmarks must obtain an Authorization to Proceed from the Commission for Historical and Architectural Preservation (CHAP) permit. Both exterior and interior work may require a Floodplain Permit, in addition to all other necessary City permits prior to proceeding with any work. The Department of Planning's Floodplain Managers is available to provide guidance regarding floodplain regulations.

Reviewing and becoming familiar with these *Guidelines* during the early stages of a project can move a project quickly

#### SECTION INDEX

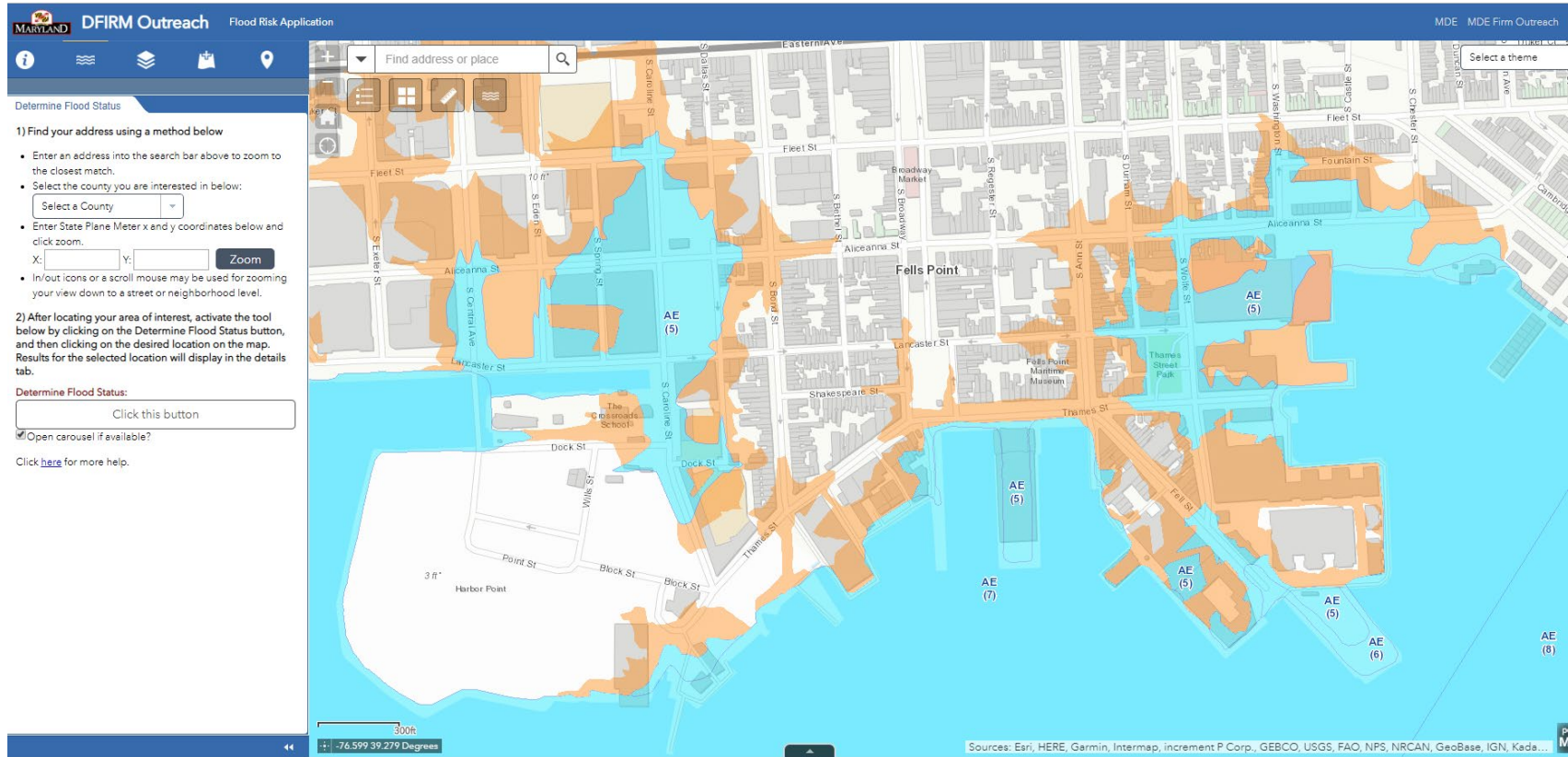
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through the permit approval process, saving both time and money. Staff review of all exterior work is required to ensure proposed work is appropriate to each specific property.

The information presented in this guide is intended to serve as a supplement to the *Baltimore City Historic Preservation Design Guidelines*. (The *Historic Preservation Design Guidelines* are available on CHAP's website.) For more information, to clarify whether a proposed project requires CHAP review, or to obtain a permit application, visit CHAP's website at [chap.baltimorecity.gov](http://chap.baltimorecity.gov). Contact CHAP at (410) 396-4866 to schedule a meeting with a CHAP representative. (Refer to *Applicability of Floodplain Management Regulations*, page 5.)



# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines



Maryland's Digital Flood Insurance Rate Map (DFIRM) - <https://mdfloodmaps.net/>



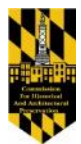


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# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines

## DEFINING TERMS

**1% Annual Chance Floodplain (100-year Floodplain):** An area that has a 1% chance of flooding in any given year. Properties can experience a “100-year flood” in two consecutive years, just as it is possible for properties to flood even if they are located outside of the floodplain, particularly in a severe weather event such as a hurricane.

**0.2% Annual Chance Floodplain:** An area that has a 0.2% chance of flooding in any given year.

**Adaptation:** The process of adjusting conditions in order to reduce risk.

**ASCE 24:** ASCE/SEI 24, American Institute of Steel Construction, Inc., “Flood Resistant Design and Construction.”

**Base Flood Elevation (BFE):** The elevation to which flood water is predicted to reach or exceed during the flood event as indicated on FEMA Flood Insurance Rate Maps (FIRMs). Flood insurance rates are based on the relationship between the base flood elevation and the lowest floor of a structure.

**Basement:** Any area of a structure (below ground level) on all sides.

**Design Flood Elevation (DFE):** The minimum elevation requirement of ASCE 24, plus freeboard. This is essentially the base flood elevation plus 2-feet. The elevation of the lowest floor of a building must be at or above the design flood elevation. In Baltimore, the DFE is referred to as the Flood Protection Elevation (FPE).

**Digital Flood Insurance Rate Maps (DFIRMs):** Digitally

**Floodproofing Certificate:** A certification, in the form and containing the information required by FEMA, that a structure has been designed and constructed to be dry floodproofed to the flood protection elevation. A floodproofing certificate may only be prepared and certified by a licensed professional engineer or professional architect. (Refer to *Design Professionals*, page 8.)

## FLOOD AND PRESERVATION ACRONYMS

- **ASCE:** American Society of Civil Engineers
- **BFE:** Base Flood Elevation
- **CHAP:** Commission for Historical & Architectural Preservation
- **CRS:** Community Rating System (refer to page 4)
- **DFE:** Design Flood Elevation
- **DFIRM:** Digital Flood Insurance Rate Map
- **FEMA:** Federal Emergency Management Agency
- **FIRM:** Flood Insurance Rate Map
- **FPE:** Flood Protection Elevation
- **MHT:** Maryland Historical Trust
- **NFIP:** National Flood Insurance Program
- **SFHA:** Special Flood Hazard Area

The floodproofing method that, as used to render a structure’s envelope impermeable to the entrance of floodwaters.

The floodproofing method that relies on resistant materials and construction to prevent flood damage to areas below the flood protection elevation of a structure. (Refer to page 10.)

**Flood Protection Elevation (FPE):** In Baltimore City, the elevation, also known as the design flood elevation, is the minimum elevation requirement of ASCE 24, plus freeboard. This is essentially the base flood elevation plus 2-feet. The FPE standard is applied in the City of Baltimore, which are both regulated in the City of Baltimore.

The increment of elevation added to the minimum elevation specifications of ASCE 24 to be in compliance with the City of Baltimore’s floodplain management regulations.

**Historic Structure:** A structure that is:

1. Individually listed in the National Register of Historic Places



# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines





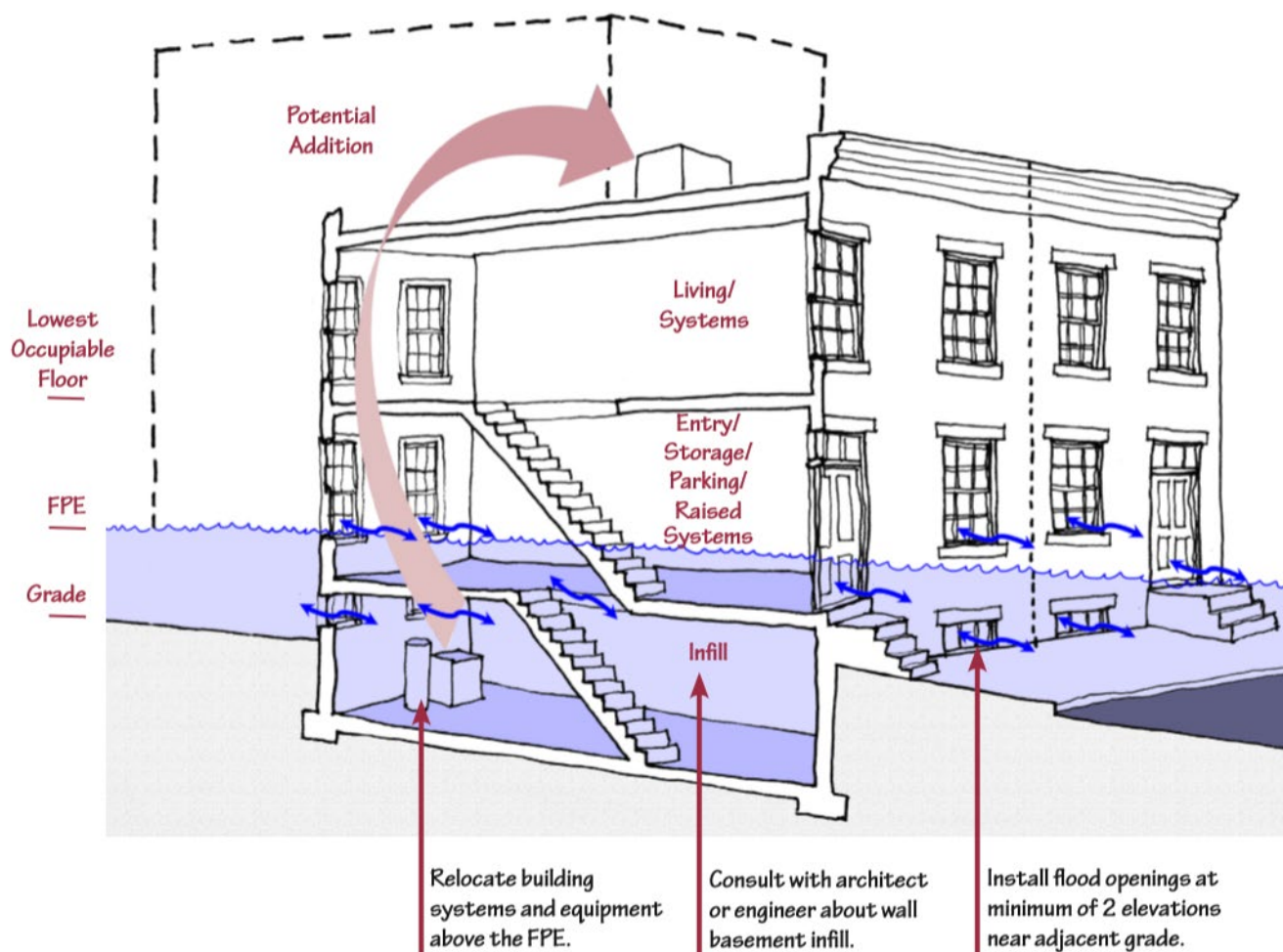
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# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines



Credit: Dominique M. Hawkins, AIA, LEED AP, NCARB



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# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines



Meadow Mill - 2017





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## In Summary/Final Thoughts



# Climate Change Adaptation Options: Fells Point Flood Mitigation Guidelines

<https://chap.baltimorecity.gov/>

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# *The Past at Risk in Calvert County, Maryland*



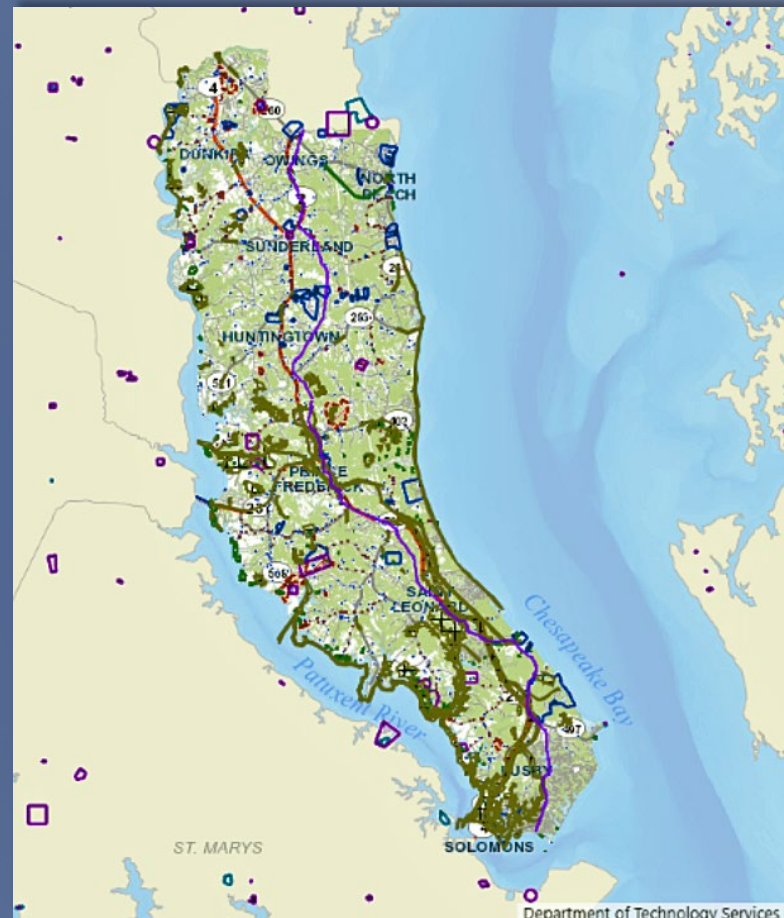
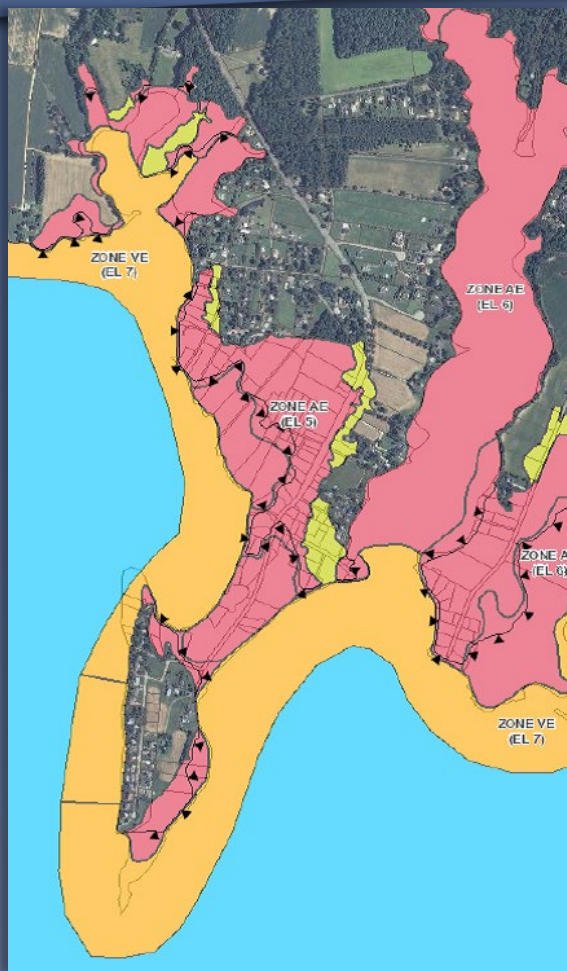
Old Line State Summit  
Frederick, Maryland  
24 July 2019

Kirsti Uunila, RPA  
Calvert County Planning & Zoning





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Lore Oyster House  
1936 Photo Courtesy Calvert Marine Museum





Cove Point Lighthouse and Lighthouse Keeper's House  
2003 Photo Courtesy Calvert Marine Museum







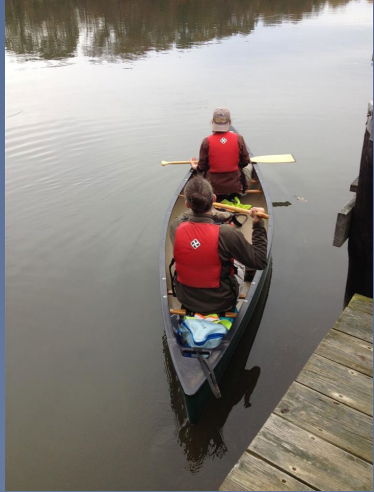
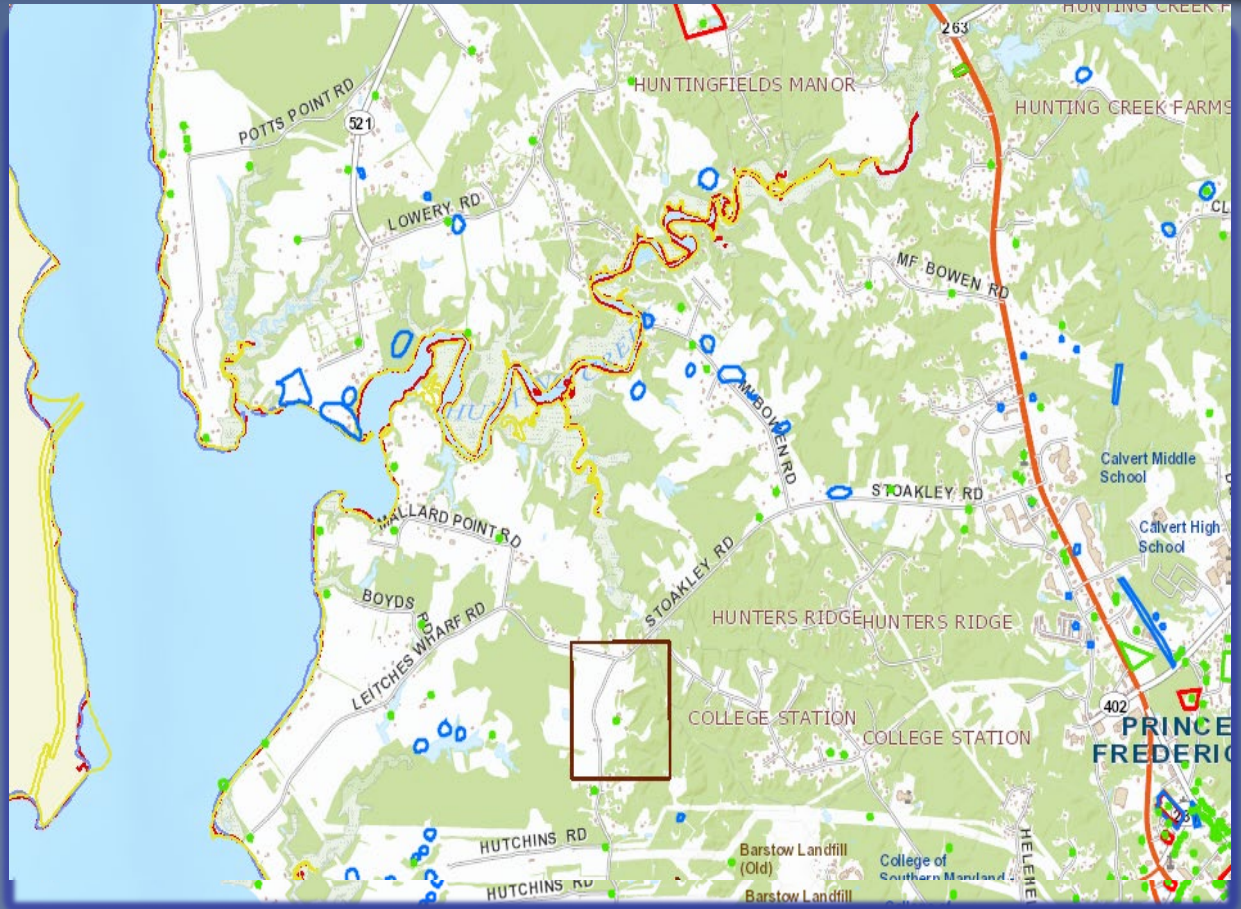
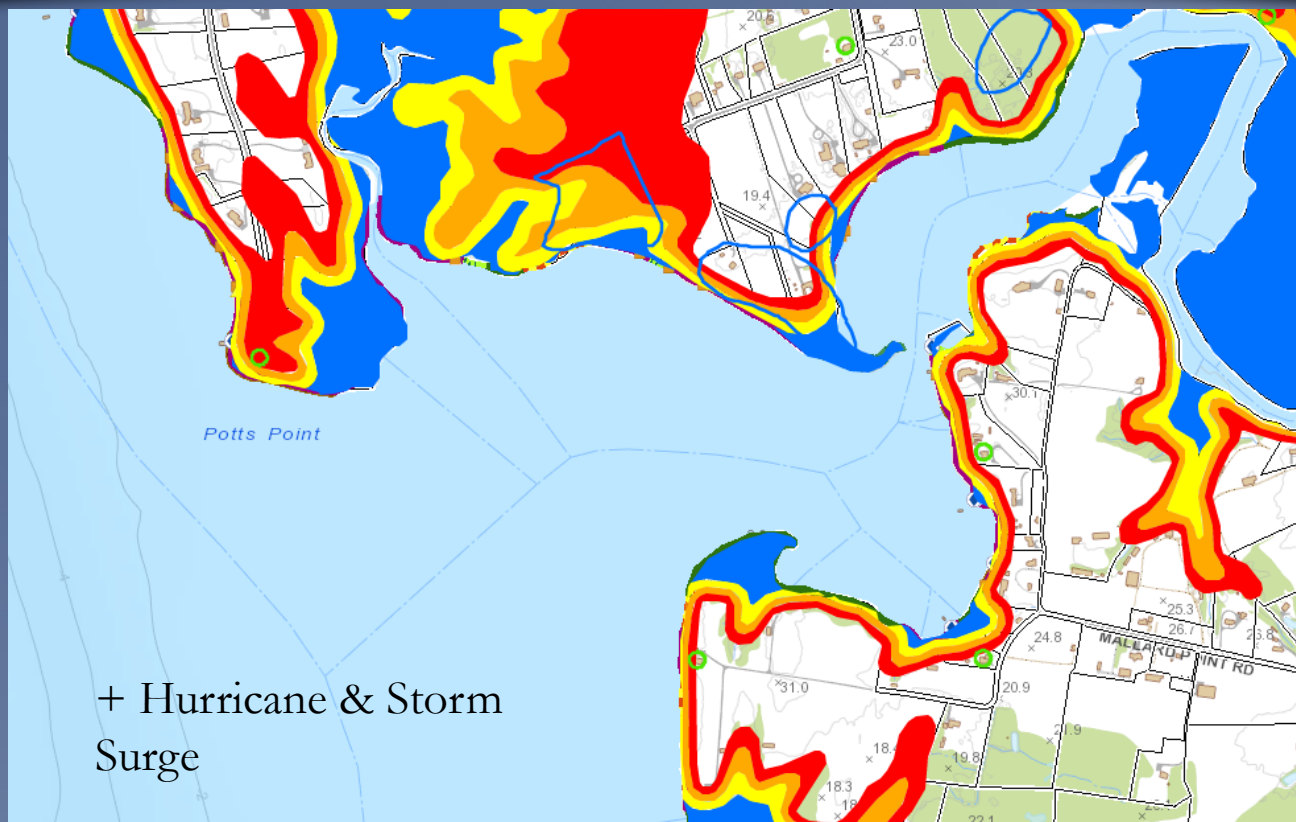
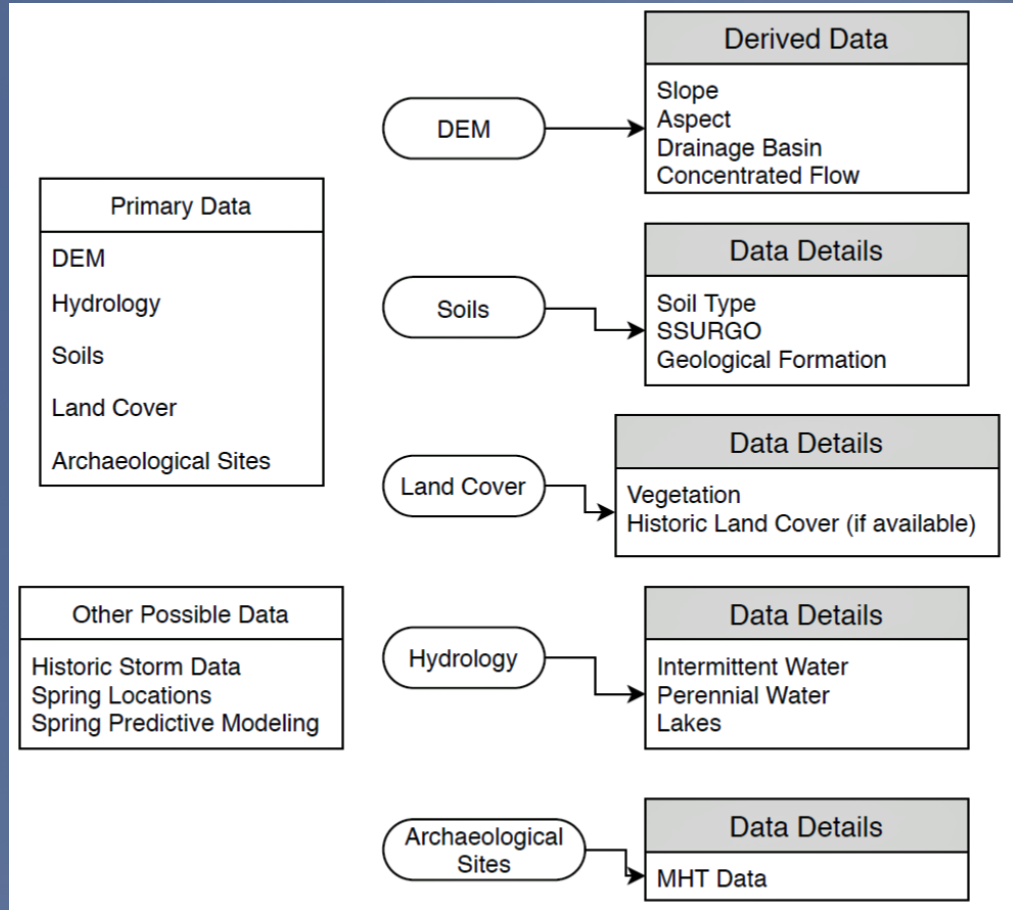


Photo courtesy Jeanne A. Ward

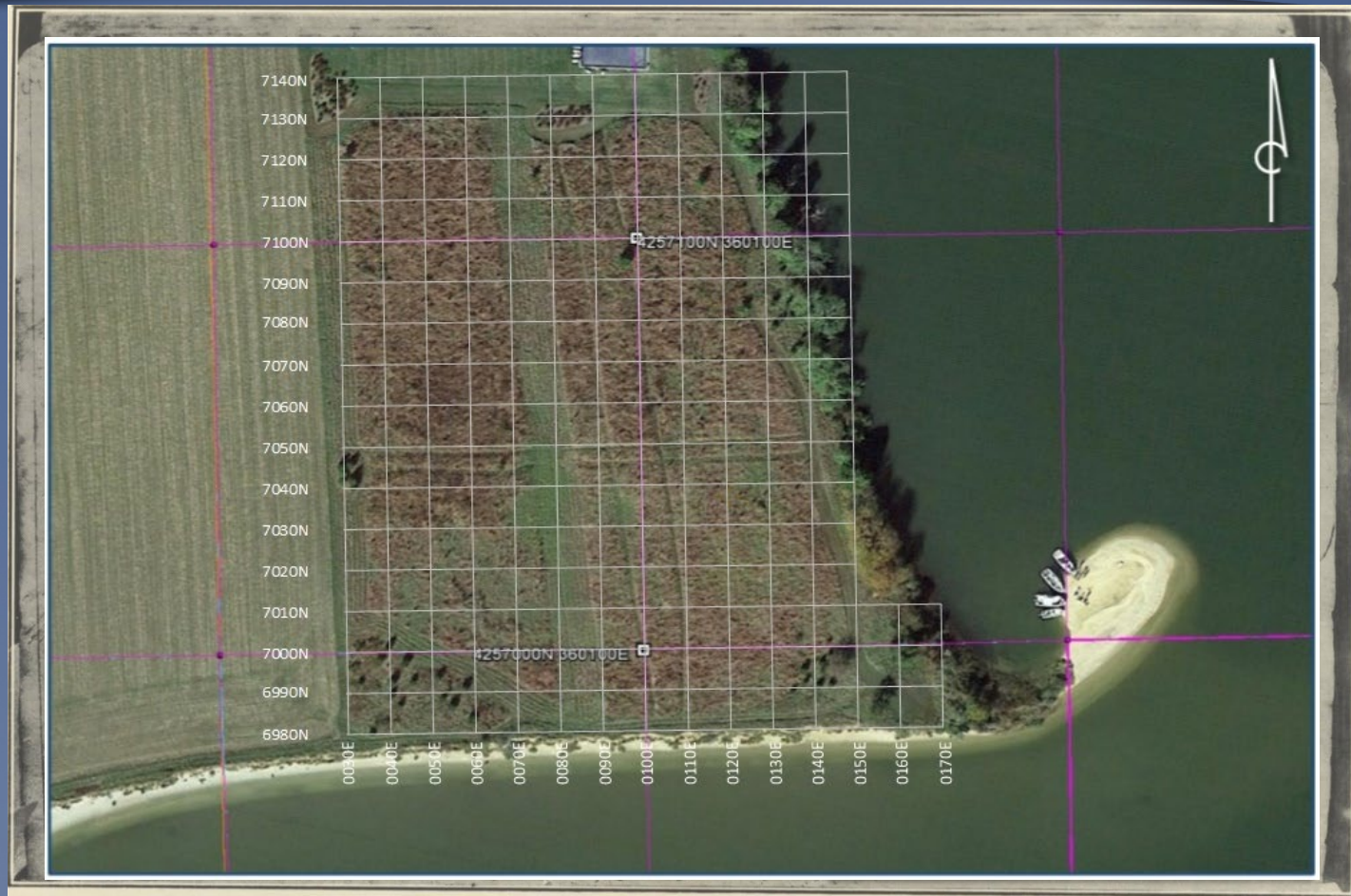




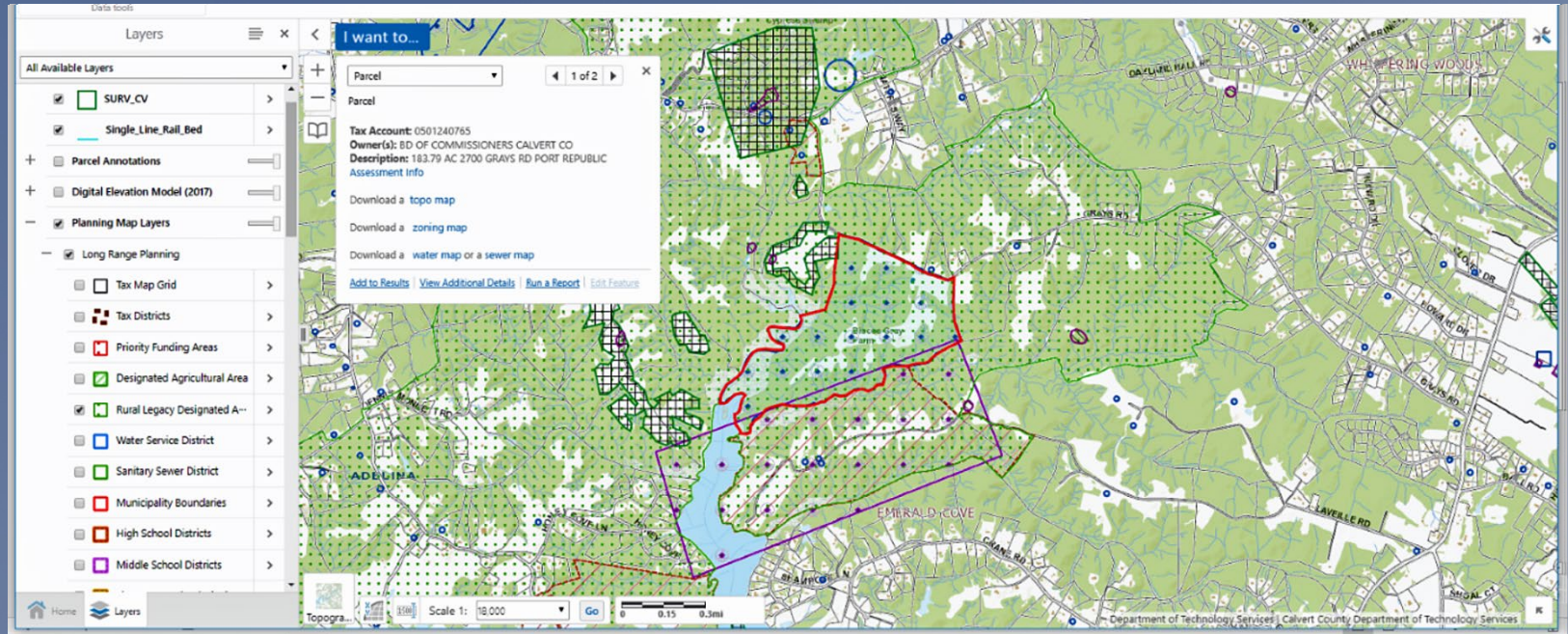
# Archaeological Site Predictive Model Workflow – *in draft*







# Protected properties on upper Battle Creek



Rural Legacy • Nature Conservancy or County Ownership • MHT  
Easement • Local Historic District Designation • NR Listing



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*“WEATHER IT” WITH MHT: PLANNING FOR NATURAL  
HAZARDS AND CULTURAL HERITAGE IN MARYLAND*

*OLD LINE STATE SUMMIT – JULY 24, 2019*



# “Weather It Together” Statewide

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<https://mht.maryland.gov/weatherit.shtml>

Offers training and information on hazard mitigation planning, disaster response and recovery, and climate adaptation

City of Annapolis pilot project



## Quick Links

- [Maryland Resiliency Partnership](#)
- [Maryland Emergency Management Agency](#)
- [Maryland Commission on Climate Change](#)
- [FEMA Hazard Mitigation Assistance](#)
- [FEMA Response and Recovery](#)

## Resources

- [Flood Mitigation Guide: Maryland's Historic Buildings](#)
  - Introduction
  - Chapter 1: Flooding and Floodplain Management
  - Chapter 2: Historic Preservation and Emergency Management
  - Chapter 3: Selecting Preservation-Sensitive Mitigation Options
  - Appendix A: Case Studies: Maryland's Historic Communities
  - Appendix B: Annotated Bibliography
- [Workshop, Weather It Together: Protecting Maryland's Historic Buildings from Floods, May 25, 2017](#)

## Weather It Together: Protecting Maryland's Historic Places from Natural Hazards

To help protect historic places, archeological sites, and cultural landscapes from the effects of natural hazards, the Maryland Historical Trust offers a *Weather It Together* program, providing technical assistance to aid local governments in three key areas: hazard mitigation planning, disaster response and recovery, and climate change adaptation.



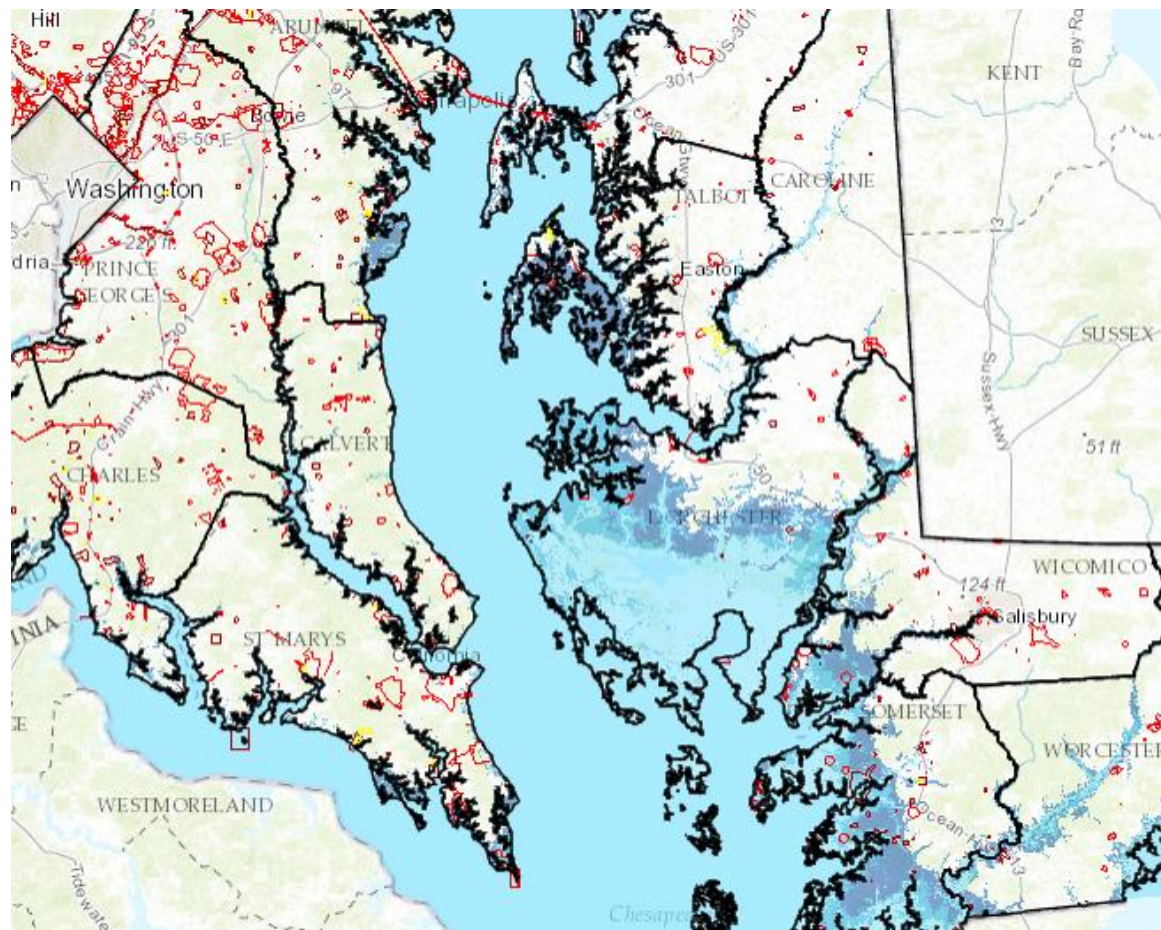
Because of their proximity to water, Maryland's historic places are particularly vulnerable to the effects of flooding, coastal storms, and shoreline erosion. The impact of events like Hurricane Isabel, Hurricane Sandy and the flash flooding in Ellicott City highlighted the need to strengthen protections for the many landmarks, districts and sites that contribute so much to our economy and quality of life. Being prepared for the effects of natural hazards (e.g., flooding and wind), disaster events (e.g., hurricanes or tornadoes), and climate change (e.g., extreme storms, heavy precipitation and sea level rise) enables a community to be more resilient: better able to resist, respond, and recover from a disaster. To assist, MHT has produced a [Flood Mitigation Guide: Maryland's Historic Buildings](#), which you can download in full or peruse by section, according to each of the topics below.

When embarking on a plan to protect the historic capital from natural hazards, including sea level rise, the City of Annapolis branded its project "[Weather It Together](#)" because becoming more resilient is an ongoing effort that should be undertaken not only by the public sector, but also in conjunction with residents, business owners and other stakeholders in the community. The City has graciously made the logo concept and slogan available to MHT and to all jurisdictions who are undertaking similar work to protect their historic places.

Click on the buttons below for tools and information on how to incorporate cultural resources into hazard mitigation planning, disaster response and recovery, and climate change adaptation.

[Hazard Mitigation Planning](#)
[Disaster Response & Recovery](#)
[Climate Change Planning](#)

# Focus on Flooding (So Far)



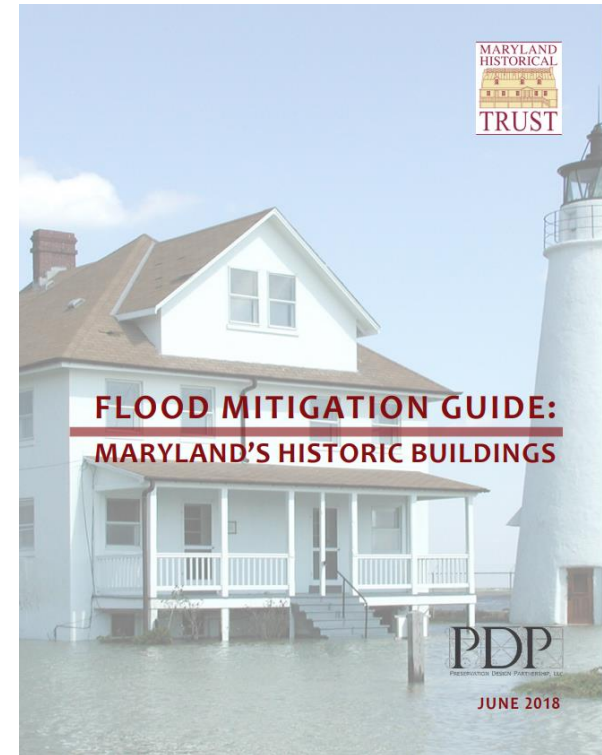


# Focus on Flooding (So Far)

Builds on FEMA's 2005 "Integrating Historic and Cultural Resource Considerations into Hazard Mitigation Planning"

Also covers disaster response and recovery, mitigation options for historic communities, and climate adaptation

Maryland-specific resources, threats, policy framework and tools, case studies



# Hazard Mitigation

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On MHT's "Weather It Together" page:

- Training modules
- Combined architectural/flood vulnerability assessment form
- Links to hazard mitigation planning resources

Recommend including climate projections, 30-year timeframe





# Disaster Response & Recovery

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Collection of MHT and other tips for disaster recovery

MHT financial incentives that may help properties in the recovery stage

Resources from other agencies and institutions

MHT also plays a role in State response and assessments



# Climate Adaptation

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Field is still emerging and evolving

Heritage has an important role to play

- Histories of adaptation
- Historically marginalized communities are most at risk for future

MHT integrated into State's overall efforts





# Climate Adaptation: Some Key Questions

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There will be loss and change – how does this intersect with historic preservation practice?

How do we prioritize buildings and archeological sites?

How will ecosystem changes affect buildings, landscapes, sites and cultures?

How will climate change impact traditions and intangible heritage?

# Maryland Commission on Climate Change

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## Four Working Groups:

- Scientific and Technical
- Mitigation
- Adaptation and Resiliency
- Education, Communication and Outreach

MHT technical adviser to Adaptation and Resiliency Working Group



# Maryland Climate Leadership Academy

*Administered by:*



*Powered by:*



# Next Steps

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Most communities at research, survey and assessment phase – if they are moving at all

State resources

- Modelling precipitation
- Archeology guidance (MHT)
- Local government training and guidance

National Park Service brief and guidelines forthcoming

Flooding is just the beginning

# Questions?

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