ELLICOTT CITY FLOOD PROOFING STUDY

Community Meeting, Howard County Building

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PRESENTATION AGENDA

1. Background
2. Study purpose
3. Study tasks
4. Flood proofing techniques webinar

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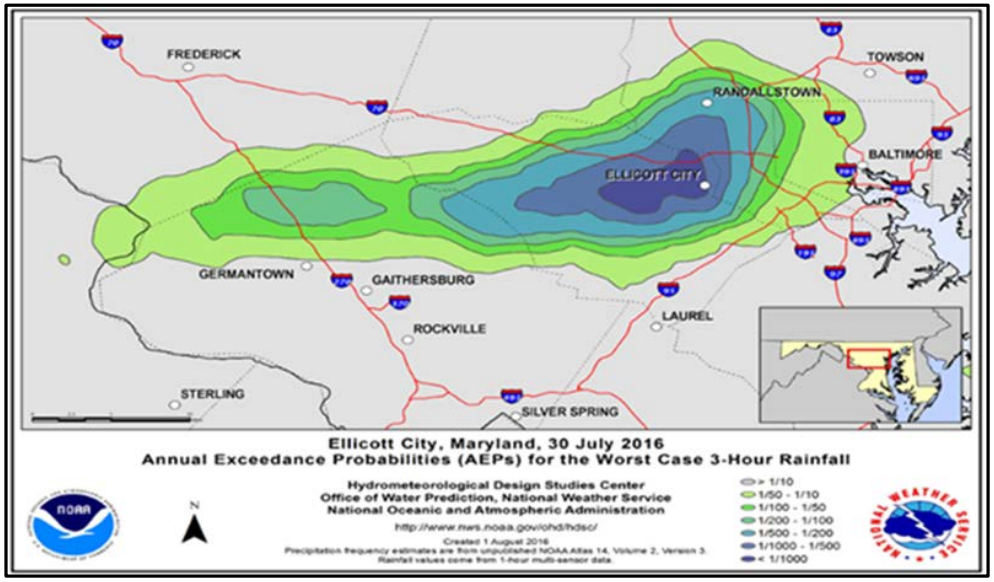
BACKGROUND

Recent Flooding

- 2011 Tropical Storm Lee
- 30 July 2016



Floodplain Management Services Program (FPMS)

- Allows the Corps to provide technical assistance to communities
  - All federal funding or in combination with voluntary contributions from non-federal sponsor

Letter of Agreement (LOA) for flood proofing study signed September 2016

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STUDY PURPOSE

Identify flood proofing strategies to help reduce flood risk in Ellicott City

Blue:
1% annual chance flood (100 year)

Orange:
0.2% annual chance flood (500 year)

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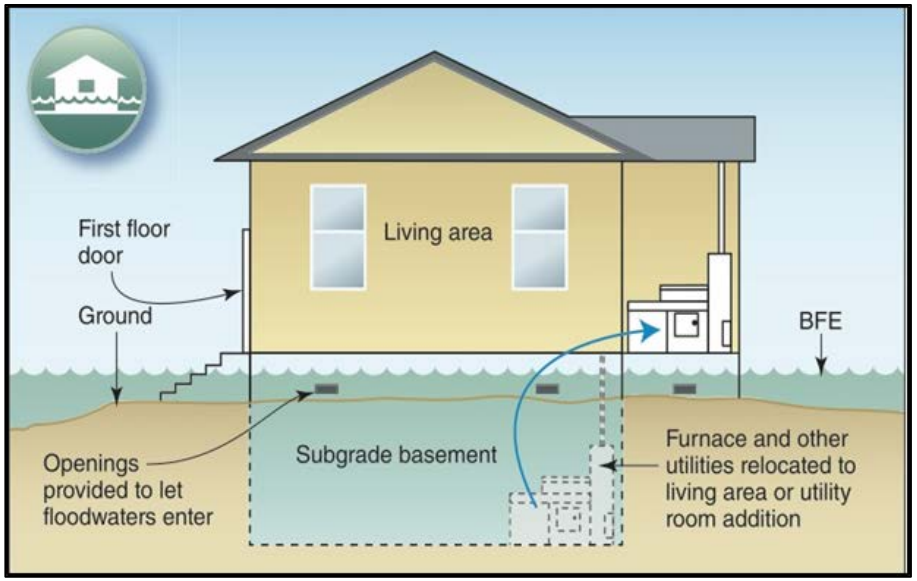
WHAT IS FLOOD PROOFING?

Flood proofing measures are **permanent or contingent** measures applied to a structure and/or its contents that **prevent or provide resistance** to damage from flooding.

~ National Nonstructural Flood Proofing Committee (NFPC)



Examples of nonstructural flood proofing measures include:

- Moving valuables to higher levels
- Raising structure and/or utilities
- Waterproofing buildings
- Door and window closures

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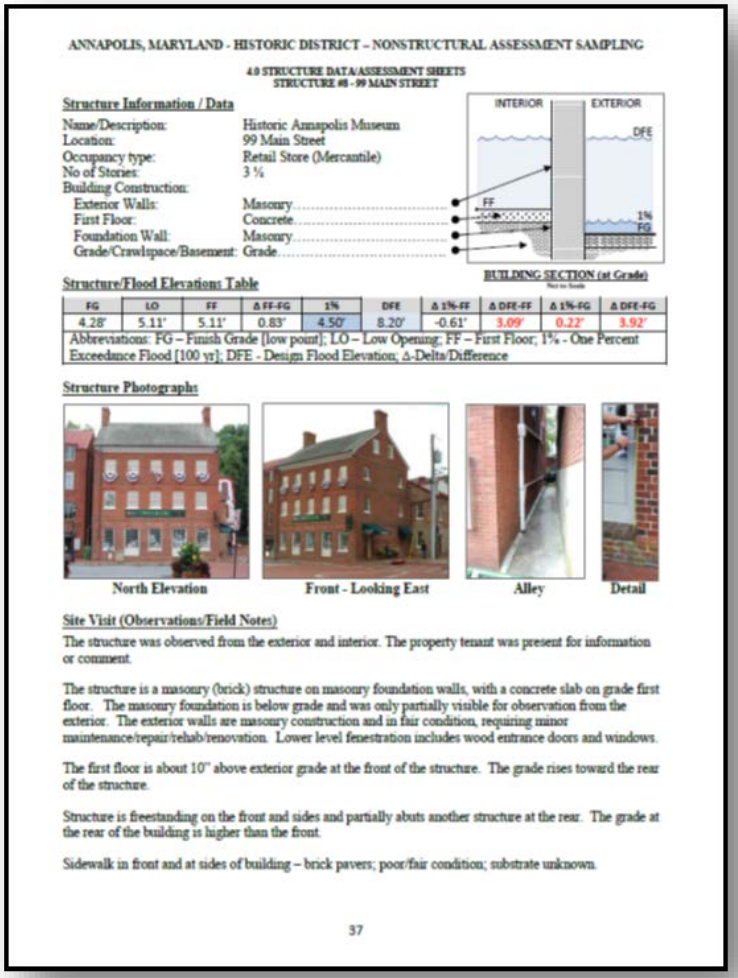
SIMILAR STUDIES

- City of Annapolis
- Washington Navy Yard
- Baltimore City
- Watts Branch, DC



ANNAPOLIS, MARYLAND - HISTORIC DISTRICT – NONSTRUCTURAL ASSESSMENT SAMPLING

4.0 STRUCTURE DATA/ASSESSMENT SHEETS
STRUCTURE #8 - 99 MAIN STREET

Structure Information / Data

Name/Description:	Historic Annapolis Museum
Location:	99 Main Street
Occupancy type:	Retail Store (Mercantile)
No of Stories:	3 ½
Building Construction:	
Exterior Walls:	Masonry
First Floor:	Concrete
Foundation Wall:	Masonry
Grade/Crawlspace/Basement:	Grade

BUILDING SECTION (at Grade)

Structure/Flood Elevations Table

FG	LO	FF	Δ FF-FG	1%	DFE	Δ 1%-FF	Δ DFE-FF	Δ 1%-FG	Δ DFE-FG
4.28'	5.11'	5.11'	0.83'	4.50'	8.20'	-0.61'	3.09'	0.22'	3.92'

Abbreviations: FG – Finish Grade [low point]; LO – Low Opening; FF – First Floor; 1% - One Percent Exceedance Flood [100 yr]; DFE - Design Flood Elevation; Δ-Delta/Difference

Structure Photographs

North Elevation

Front - Looking East

Alley

Detail

Site Visit (Observations/Field Notes)

The structure was observed from the exterior and interior. The property tenant was present for information or comment.

The structure is a masonry (brick) structure on masonry foundation walls, with a concrete slab on grade first floor. The masonry foundation is below grade and was only partially visible for observation from the exterior. The exterior walls are masonry construction and in fair condition, requiring minor maintenance/repair/rehab/renovation. Lower level fenestration includes wood entrance doors and windows.

The first floor is about 10" above exterior grade at the front of the structure. The grade rises toward the rear of the structure.

Structure is freestanding on the front and sides and partially abuts another structure at the rear. The grade at the rear of the building is higher than the front.

Sidewalk in front and at sides of building – brick pavers; poor/fair condition; substrate unknown.

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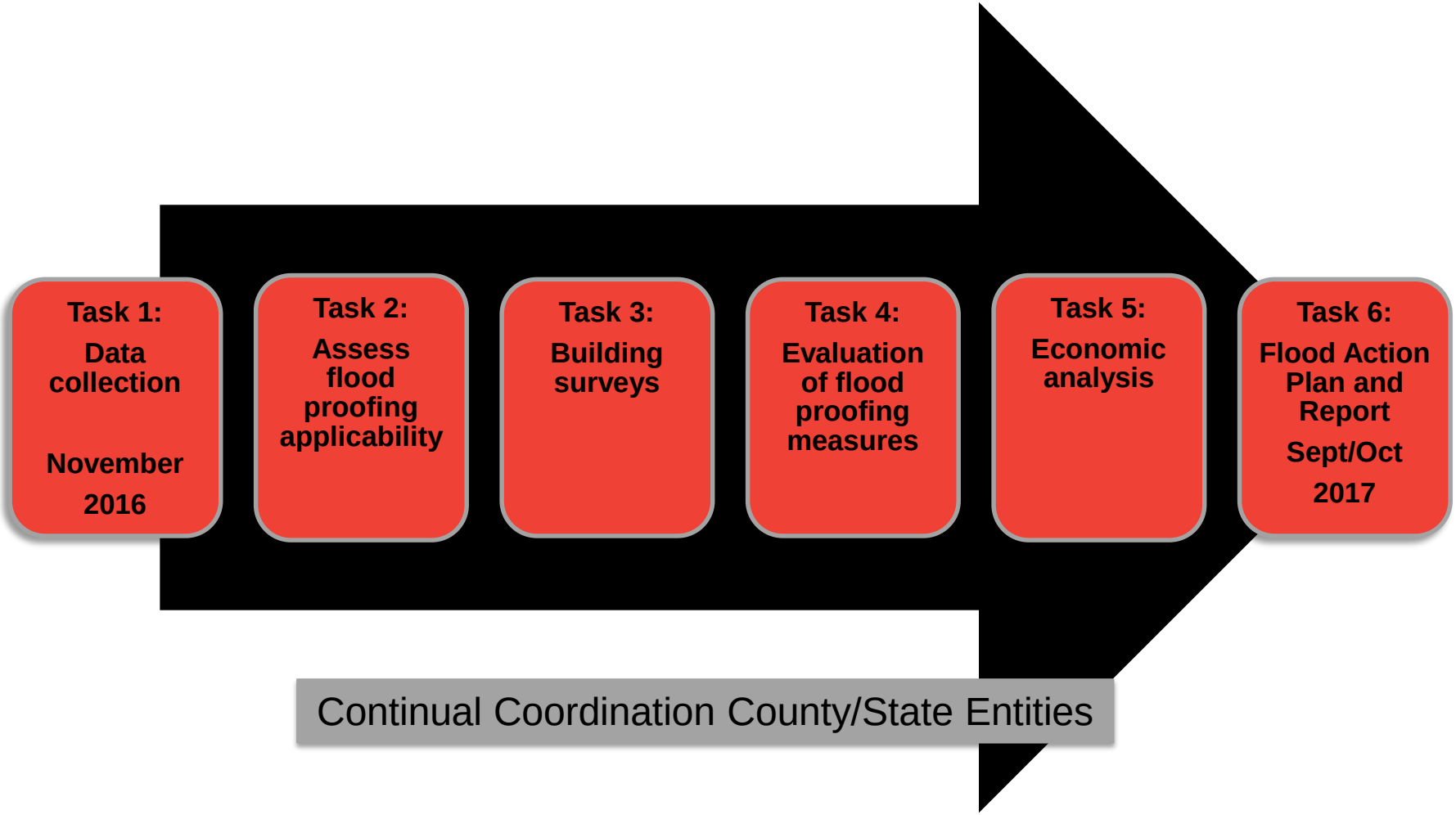
STUDY TASKS



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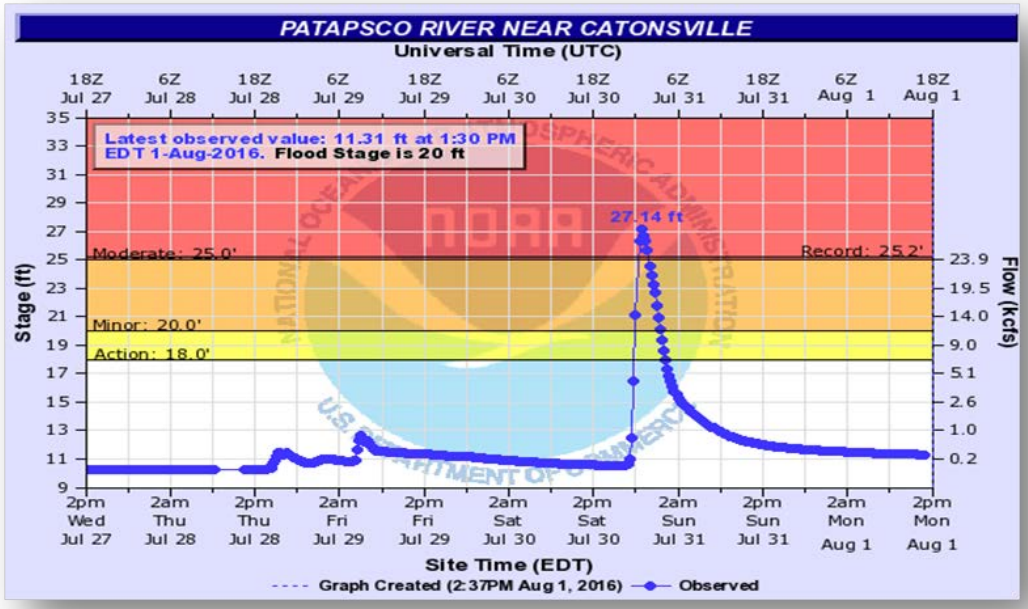
TASK 1: DATA COLLECTION

- Hydraulic and hydrologic modeling data
- Rainfall/precipitation data
- High-water mark information
- Peak discharge information
- Historic building information



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TASK 2: ASSESS FLOOD PROOFING APPLICABILITY

- Design flood elevation
- Flood depths
- Flood velocities
- Warning times for implementing measures
- Viability/initial screening of flood proofing measures

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TASK 3: BUILDING SURVEYS

Elevations

- Low opening
- First Floor
- Lowest adjacent grade (LAG)

*Approximately 100 buildings

LAG

First floor

Low-opening window well

Structure data

- Photos
- Condition
- Value
- Building materials

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TASK 4: EVALUATION OF FLOOD PROOFING MEASURES

15-20 sample buildings

- Main Street corridor between Patapsco River and US 29
- Considerations include:
  - Flood risk
  - Historic status
  - Commercial vs. residential
  - Architectural features

General flood proofing concept plans and preliminary cost estimates to be developed for each building

**Volunteer sign up after presentation!*

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TASK 5: ECONOMIC ANALYSIS

Estimated cost of implementing the recommended flood proofing measures vs. the potential reduction in future flood damages (Benefit to Cost Ratio)

- Damages to structures
- Damages to contents
- Various future flood scenarios

Benefit vs.

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TASK 6: FLOOD ACTION PLAN AND REPORT

Consideration of pre-flood actions associated with recommended flood proofing measures

- Coordination regarding flood-warning times and flood proofing measures
  - Ellicott City
  - Howard County
  - National Weather Service
  - U.S. Geological Survey

Summary of results

- Brief technical report
- Concept plan sheets
- Maps

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NEXT STEPS

- Ongoing data collection
- Building surveys: Late January – February
- Identify sample buildings

Study scheduled for completion in fall 2017 (September/October)

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QUESTIONS?

Points of Contact

- Mark Richmond, Howard County Storm Water Management Division, Chief | 410-313-6413 | msrichmond@howardcountymd.gov

- Marco Ciarla, USACE Project Manager| 410-962-4519 | marco.n.ciarla@usace.army.mil

THANK YOU!

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