

Potomac River Waterfront
Flood Mitigation Study

Public Meeting
March 16, 2010

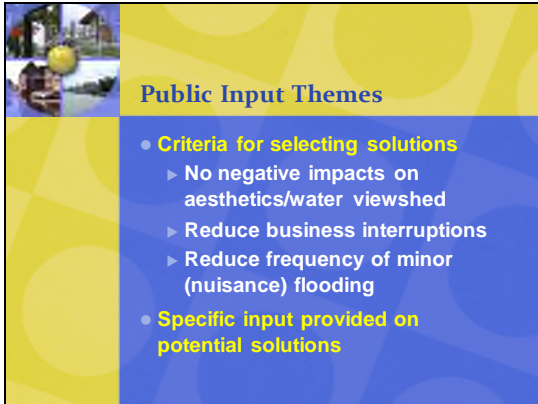
Department of Transportation and
Environmental Services

Purpose

Purpose of the Study:
Identify, evaluate and recommend flood mitigation solutions along the Potomac River Waterfront

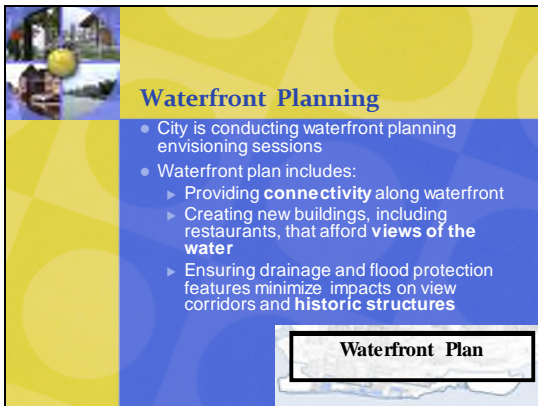
Purpose of this Meeting:
To provide an overview of recommended flood mitigation measures and provide information on measures to be implemented by private property owners

Study Area



Public Input Themes

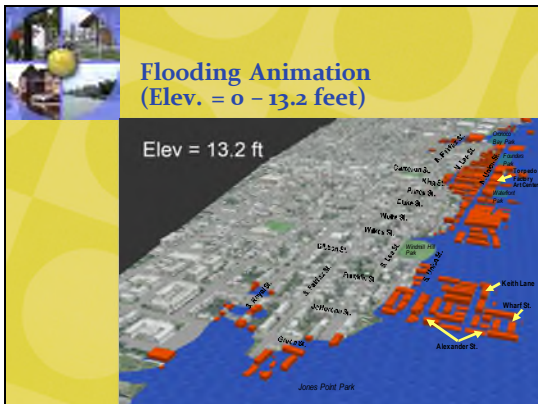
- **Criteria for selecting solutions**
 - ▶ No negative impacts on aesthetics/water viewshed
 - ▶ Reduce business interruptions
 - ▶ Reduce frequency of minor (nuisance) flooding
- **Specific input provided on potential solutions**



Waterfront Planning


- City is conducting waterfront planning envisioning sessions
- Waterfront plan includes:
 - ▶ Providing **connectivity** along waterfront
 - ▶ Creating new buildings, including restaurants, that afford **views of the water**
 - ▶ Ensuring drainage and flood protection features minimize impacts on view corridors and **historic structures**

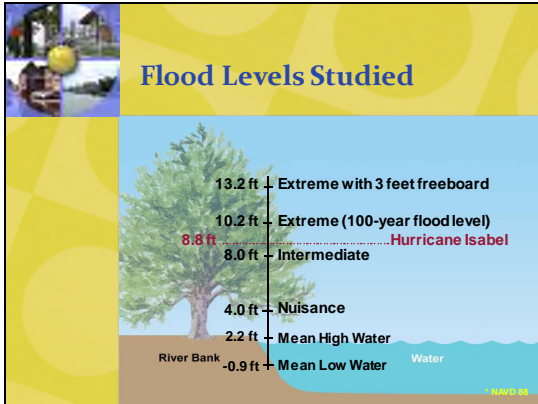
Waterfront Plan



Flooding Animation
(Elev. = 0 - 13.2 feet)

Elev = 13.2 ft







-
- Study Process**
- Brainstorming sessions with public to identify wide range of potential solutions
 - Solutions were evaluated based multiple criteria:
 - Floodplain management
 - Aesthetic and cultural resources
 - Economic and environmental impacts
 - Cost and feasibility
 - Narrowed field to 9 potential solutions



Study Process

- Evaluated potential solutions using benefit-cost ratio
- **Benefits: avoidance of costs**
 - Property damage (structure and content)
 - Lost revenues
 - Displacement costs
- **Costs: implementation and operation**
 - Design and permitting
 - Construction
 - Property acquisition
 - Operation and maintenance



Study Process

- **BCR = Benefits ÷ Costs**
 - At least 1 for a project to be considered feasible
 - A useful tool, but must be applied with judgment
- **Other factors considered include potential impacts to**
 - Aesthetics
 - Business operations
 - Natural resources
 - Historic and archeological




Recommended Flood Mitigation Solutions

- Dry floodproofing
- Internal relocation of supplies
- Elevated pedestrian walkway (floodwall)
- Increase road and inlet elevations
- Improve floodplain ordinance
- Enhance sandbag program




**Flood Mitigation Solutions
Not Recommended**

- Property acquisition
- Elevation of structures
- Floodwalls, including Jones Point berm
- Alternate temporary flood barriers (in lieu of sandbags)




**Recommended Solutions
Dry Floodproofing**

- Physical barrier to prevent floodwaters from entering building
- Protects contents and structure
- Can be passive or active
- Limited to water depths of 3 feet or less
- Not applicable for basements
- Impacts of natural resources are limited
- Possible impact on historical resources

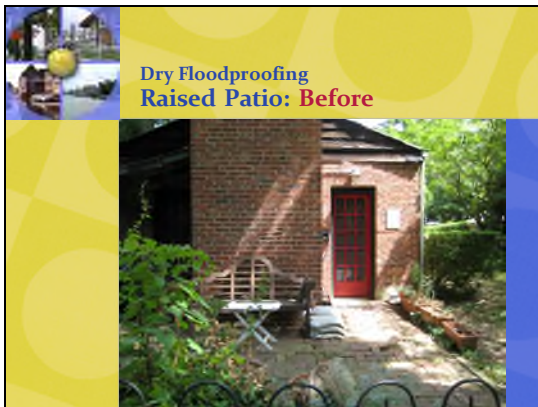


**Dry Floodproofing
Floodgate**

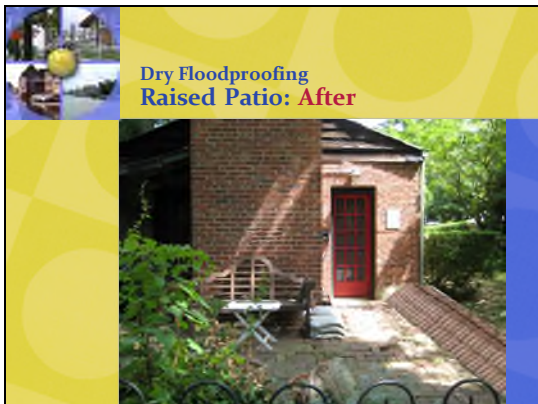




Dry Floodproofing
Elevation of First Floor



Dry Floodproofing
Raised Patio: **Before**




Dry Floodproofing
Raised Patio: **After**



Internal Relocation of Supplies



- Relocate internal supplies, products/ goods, and utilities above flooding depths
- Reduces damage to contents
- Does not reduce structure damage



Internal Relocation Recommendations

- Internal elevation of goods and supplies recommended for large commercial buildings
- Recommend public outreach activities to inform business owners of potential activities they can implement



Elevated Pedestrian Walkway (Floodwall)



Walkway in Sault Sainte Marie, Ontario, Canada


- Build a pedestrian boardwalk that will act as an engineered floodwall
- Would be integrated with the waterfront plan




Elevated Pedestrian Walkway




- Potential alignment based on 10-year flooding protection
- Extends from Duke Street to King Street
- Additional section extends from Queen Street to Thompsons Alley




Elevated Pedestrian Walkway Before





Elevated Pedestrian Walkway After











Elevated Pedestrian Walkway
After



Elevated Pedestrian Walkway


Inundation at The Strand with Flood Elevation of 6 feet

Inundation at The Strand with protection to elevation 6 feet




Elevated Pedestrian Walkway
Design Opportunities

- Critical feature is protection to elevation 6.0 feet NAVD88 (10-year event)
- Between nuisance and intermediate flood levels
- Optimal elevation for BCR and constructability
- Incorporate this elevation into landscape and building design
- Incorporate into Waterfront Plan



Elevated Pedestrian Walkway Potential Impacts

- Possible obstruction of view of Potomac River
- Impact on boating access
- Access considerations for several commercial buildings
- Potential impact of existing walkway near Thompson's Alley




Elevated Pedestrian Walkway Recommendations

- Recommended as the primary flood mitigation measure for the King Street and Waterfront Commercial Focus Areas
- BCR = 2.4
- Provides protection for approximately
 - ▶ 43 commercial structures
 - ▶ 23 residential structures
- Limitation – does not protect against large storms




Increase Inlet and Road Elevations King Street and The Strand

- Constrained by existing building entrances
- Similar to successful project at Prince Street and The Strand intersection



Increase Inlet and Road Elevations - Recommendations

- Recommended as an interim flood mitigation measure for King Street area
- **Impacts and limitations:**
 - ▶ Minor impacts during construction
 - ▶ Adjacent curbs and building entrances limit elevation
 - ▶ Protects buildings to less than nuisance flood



Improve Floodplain and Zoning Ordinance Recommendations

- **Goal: Reduce future flooding impacts**
- Based on improving the City's Community Rating System (CRS) rating
- Six potential ordinance changes recommended




Temporary Flood Measure Program Improvements





Temporary Flood Measures Sandbag Program

- **Recommend maintaining program**
- **Implement following enhancements:**
 - ▶ Expand sandbag service areas to include all floodprone areas
 - ▶ Document guidelines for determining when to initiate sandbag distribution
 - ▶ Post information for sandbag policy on city website



Summary of Recommendations

- **Floodproofing – for all applicable structures**
- **Relocate internal supplies – for many commercial structures**
- **Elevated pedestrian walkway (floodwall)**
- **Zoning ordinance modifications**
- **Sandbag program enhancements**



Next Steps

- **Study available at:**
Alexandriava.gov/Waterfront
- **Send comments to:**
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