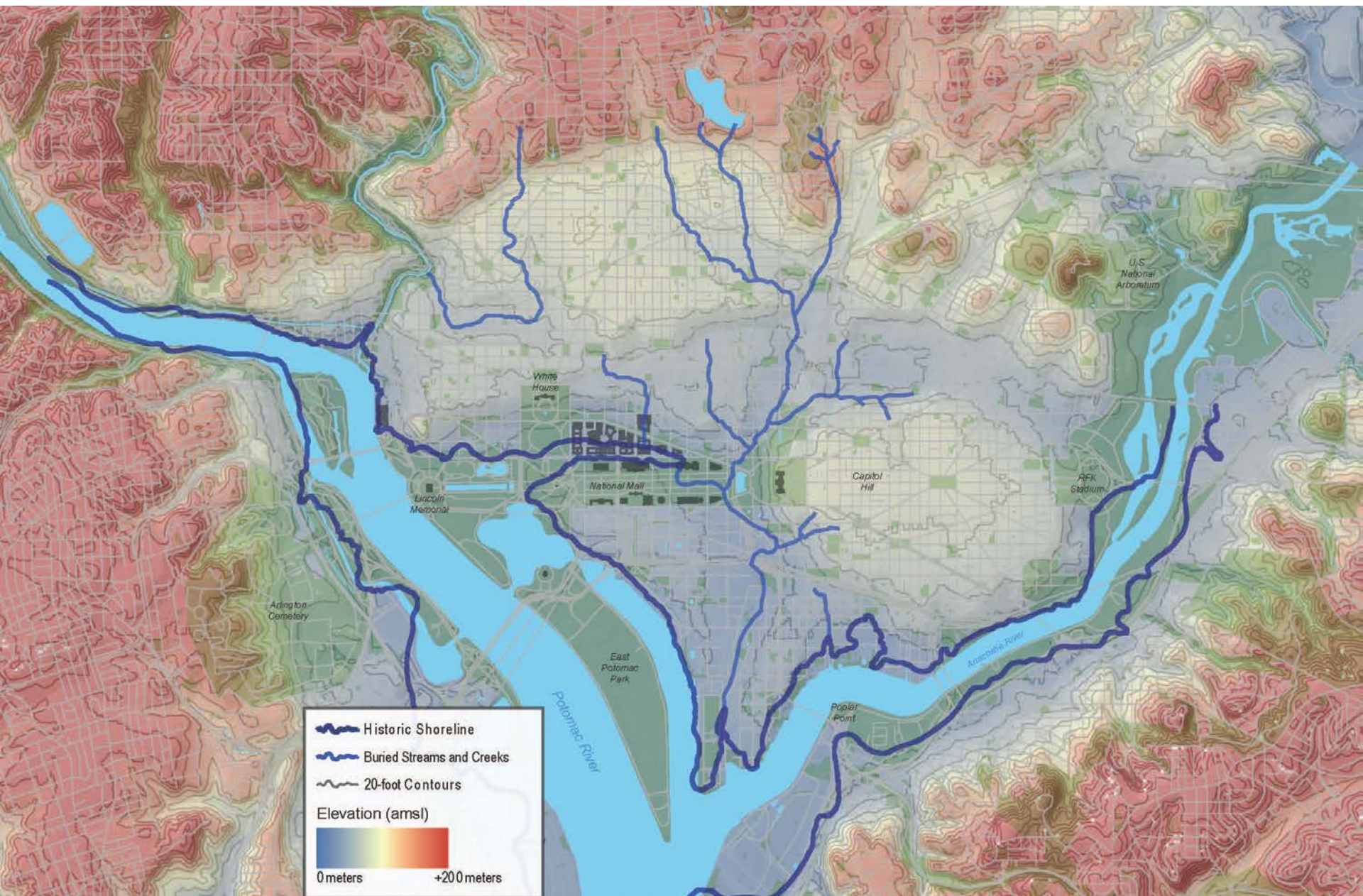


Proposed Floodplain Regulation Updates



Why do we have them?

- Required for communities if they want the benefits of participating in the National Flood Insurance Program (NFIP)
- Protect life and property
- Protect the important environmental functions of floodplains
- DC has flood risk!





GEORGE TOWN.

POTOMAC RIVER.

EASTERN BRANCH.

17th Street →

← Washington City Canal

From the entrance of this River up to the second Bridge, the depth of water is from 5½ to 4 fathoms. The deepest all along the shore where Wharfs are marked.

PART OF VIRGINIA, WITHIN THE FEDERAL DIS

New Road

Road to Alexandria

President's house

Congress House

Washington

E.

E.

N. 2nd

N. 3rd

N. 4th

N. 5th

E.

E.

N. 6th

M.

L.

M.

B.

E.

C.

N. 7th

N. 8th

N. 9th

Washington

River Flooding – 1889



River Flooding – 1936



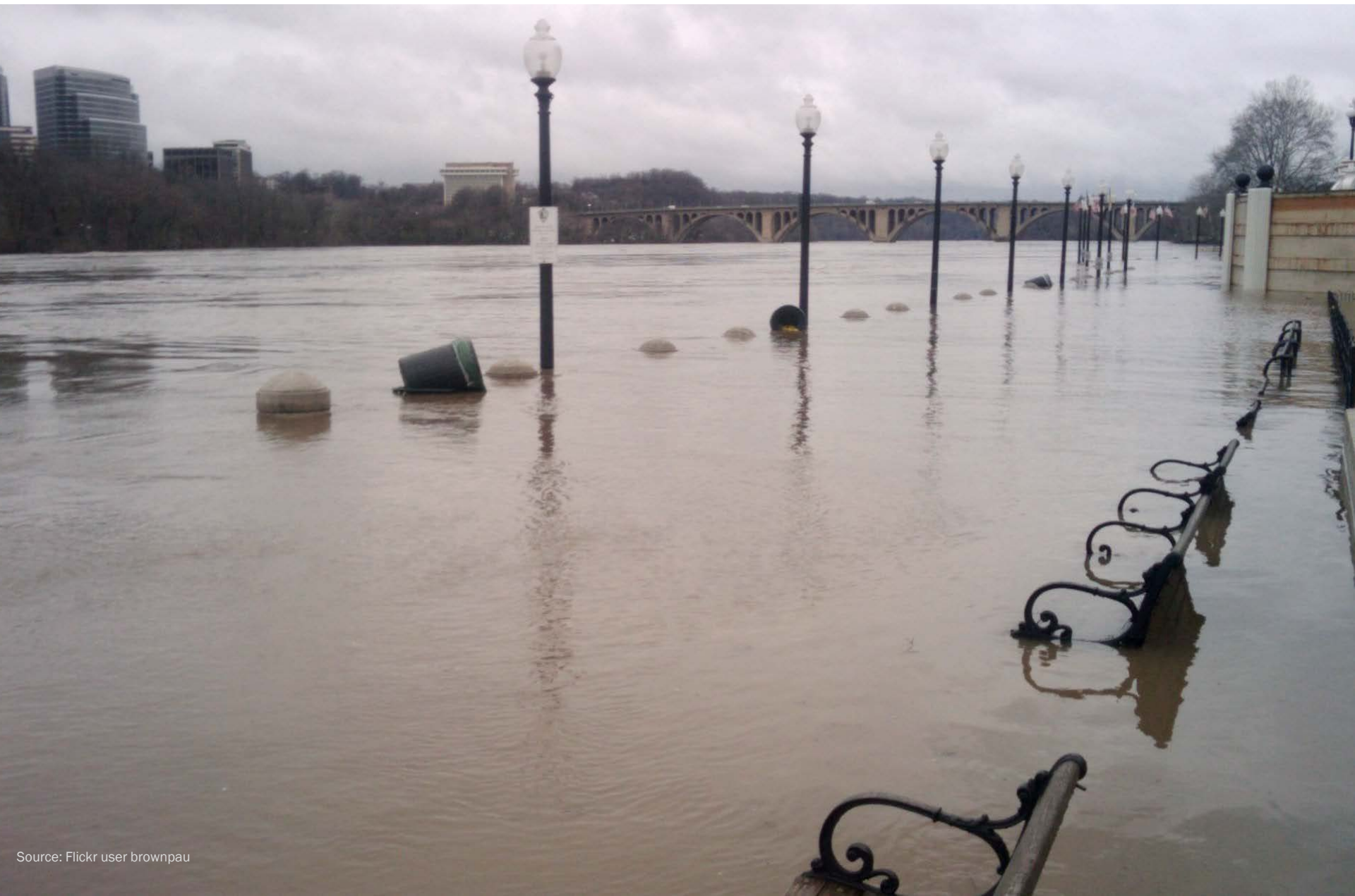
Source: National Archives

River Flooding – 1936



Source: U.S. Naval Historical Center

River Flooding – 2010



Interior Flooding - 2012

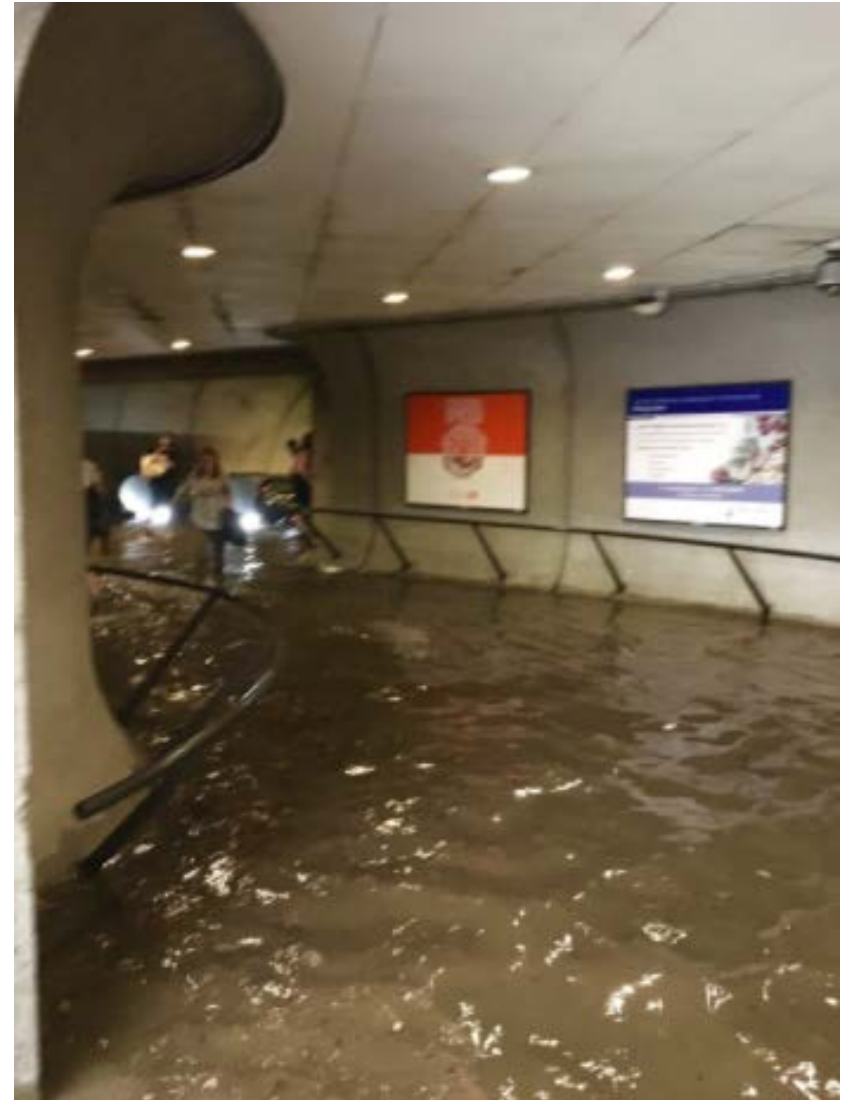


Source: Bloomingdale Neighborhood Blog

Interior Flooding - 2016



Source: Christin Fernandez

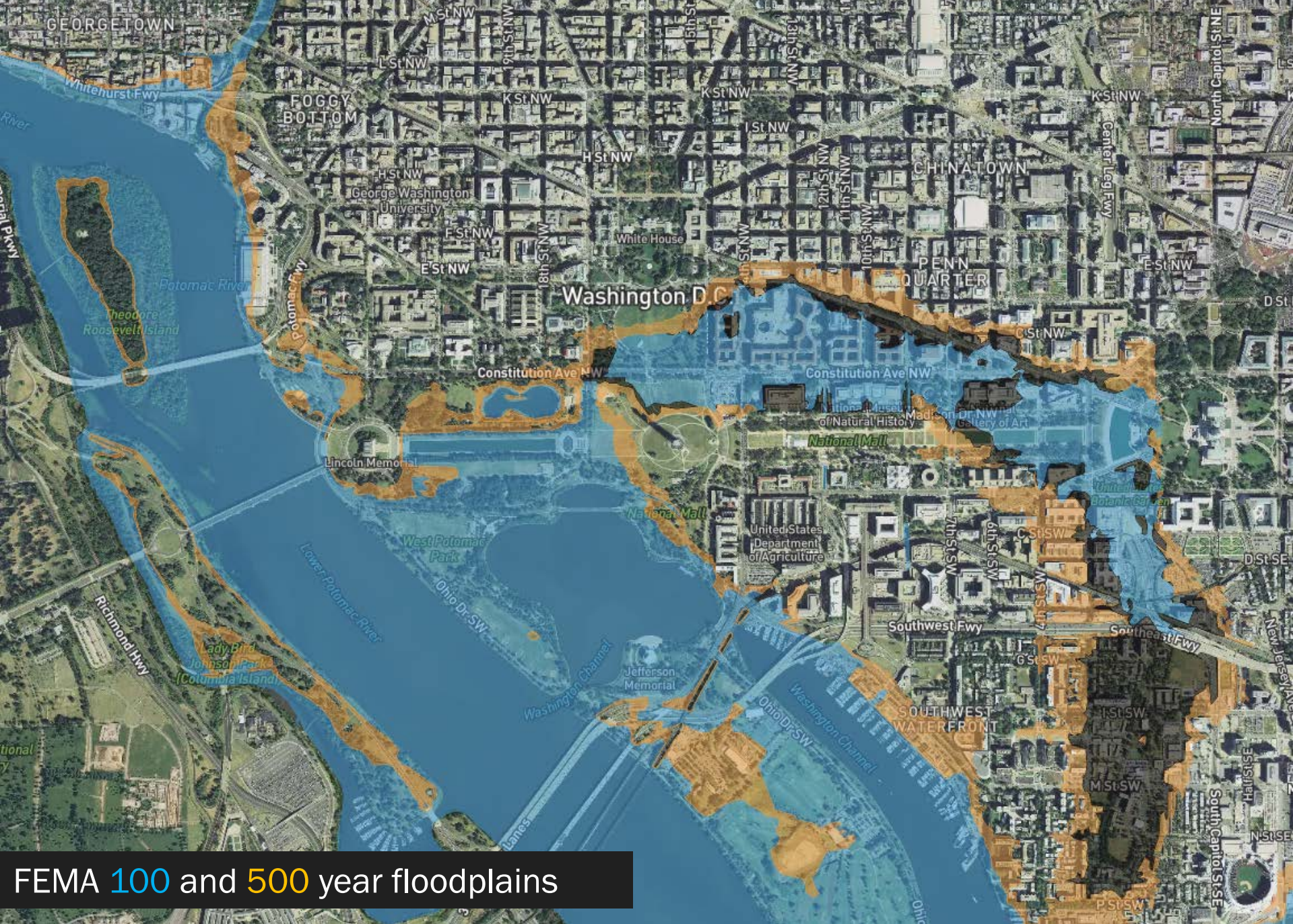


Interior Flooding - 2019



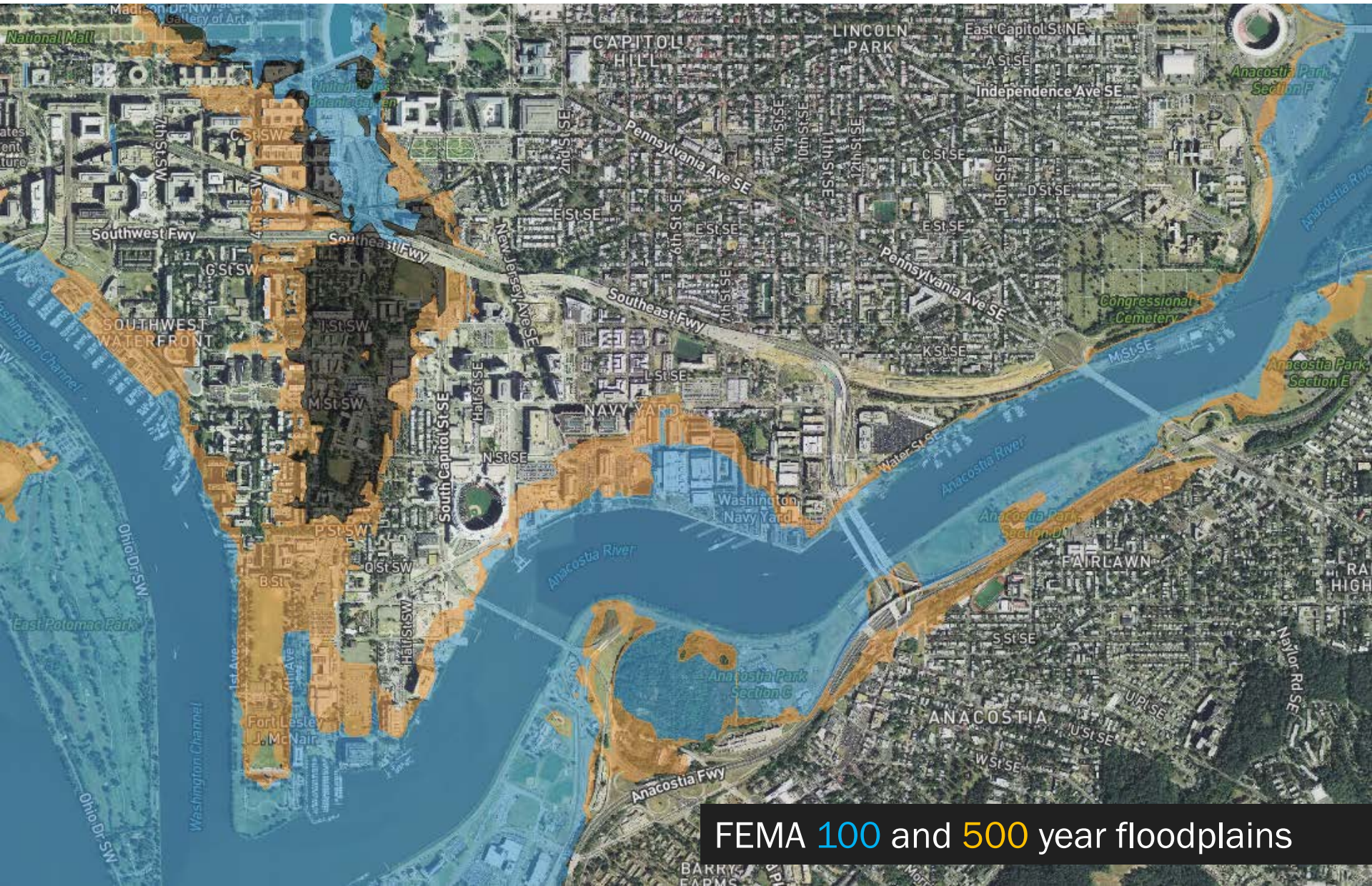
Interior Flooding - 2019



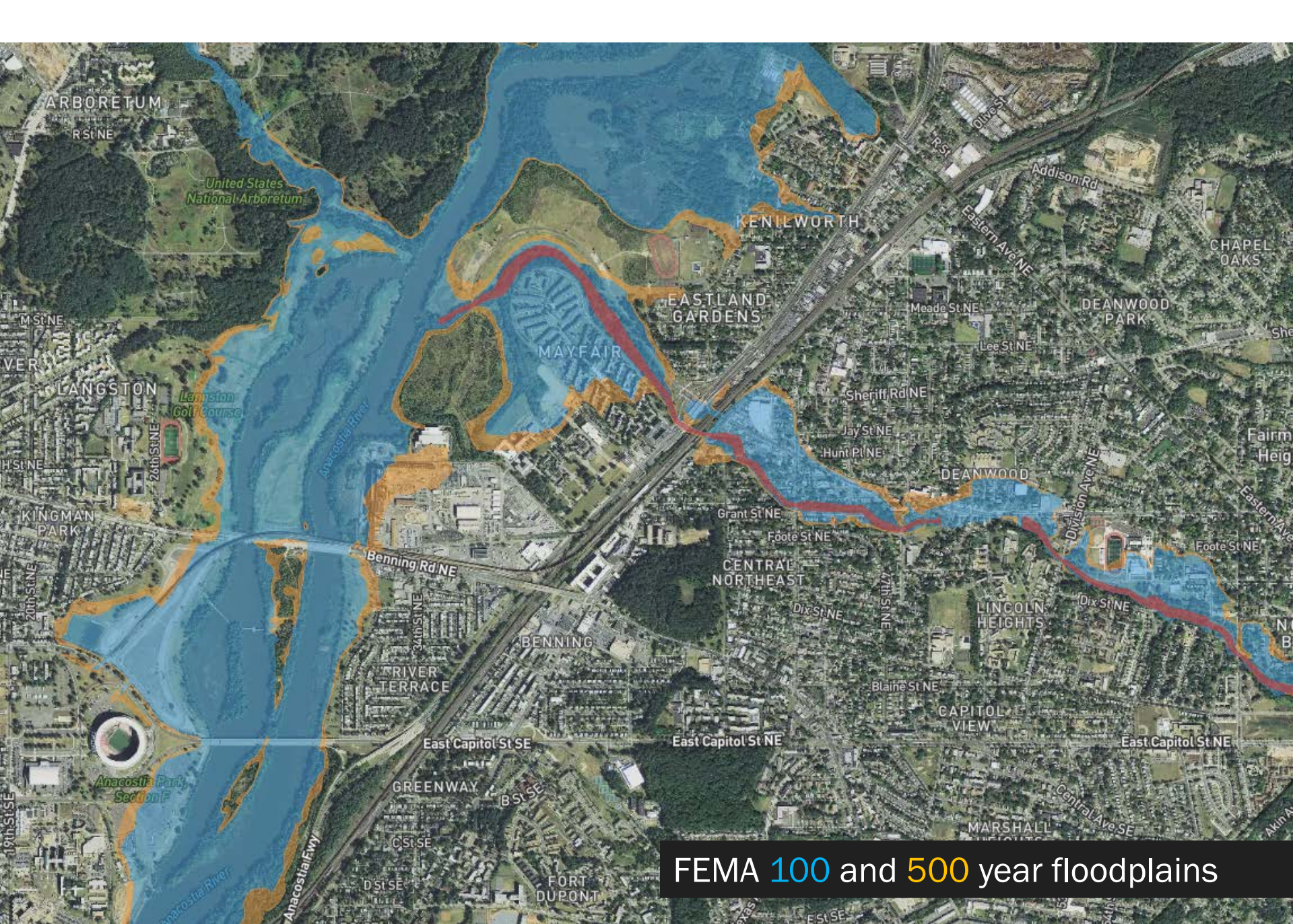


FEMA 100 and 500 year floodplains

DC Flood Risk Tool: <http://dcfloodrisk.org/>

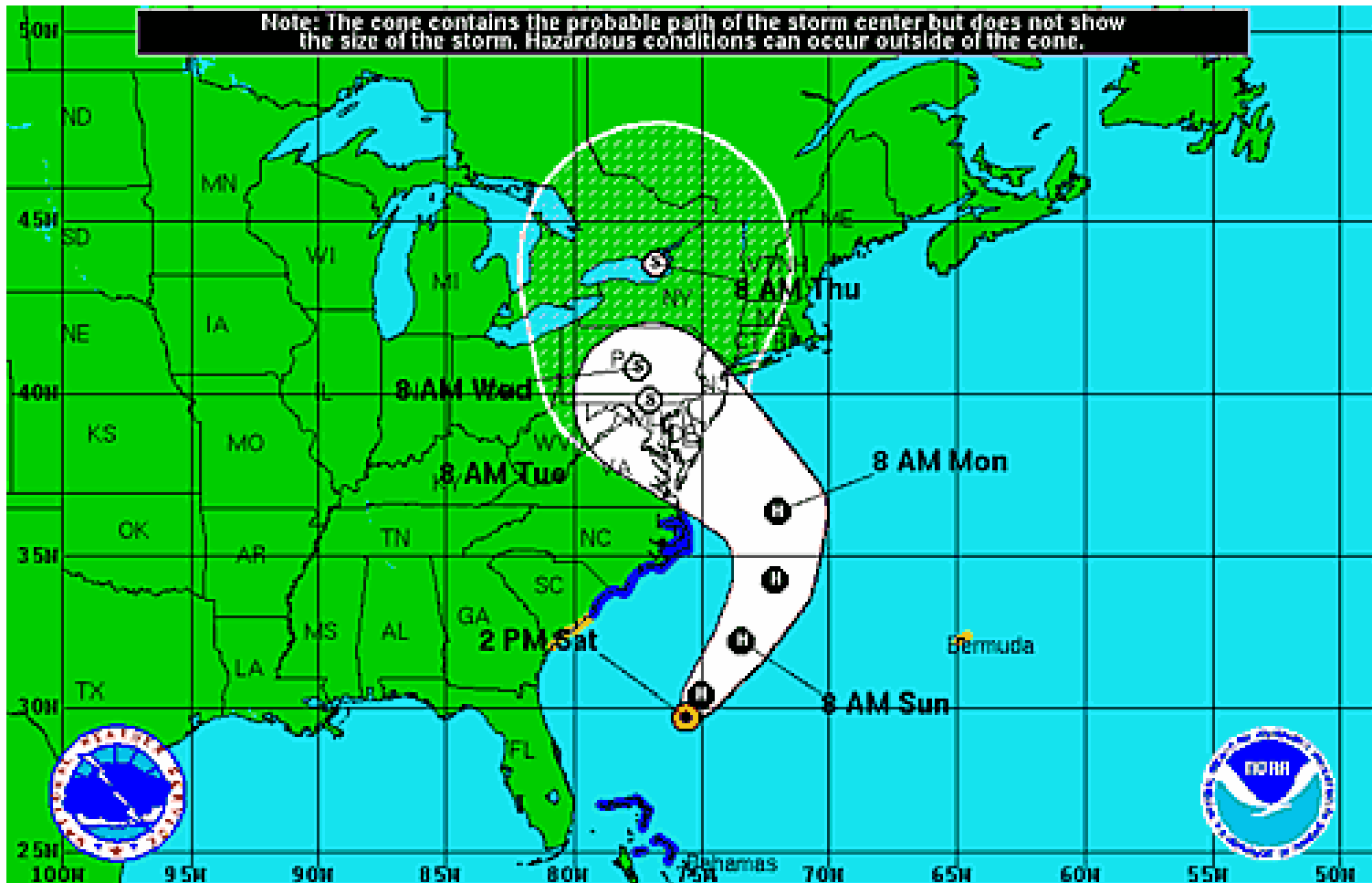


FEMA 100 and 500 year floodplains






FEMA 100 and 500 year floodplains

Hurricane Sandy - 2012



Hurricane Sandy
 Saturday October 27, 2012
 2 PM EDT Intermediate Advisory 21A
 NWS National Hurricane Center

Current Information: 
 Center Location 29.7 N 75.6 W
 Max Sustained Wind 75 mph
 Movement NE at 11 mph

Forecast Positions:
 Tropical Cyclone  Post-Tropical
 Sustained Winds: D < 39 mph
 S 39-73 mph H 74-110 mph M > 110mph

Potential Track Area:
 Day 1-3  Day 4-5

Watches:
 Hurricane  Trop.Storm

Warnings:
 Hurricane  Trop.Storm

Hurricane Sandy - 2012

- 90,000 buildings flooded
- 302,000 housing units in storm surge area
- \$19 billion in total damages
- 117 fatalities
- Approximately 80,000 residents in 423 New York City Housing Authority buildings were affected by lost power, heat, and/or hot water as a result of the storm.

Hurricane Sandy - 2012



Photo courtesy FEMA

Hurricane Katrina - 2005



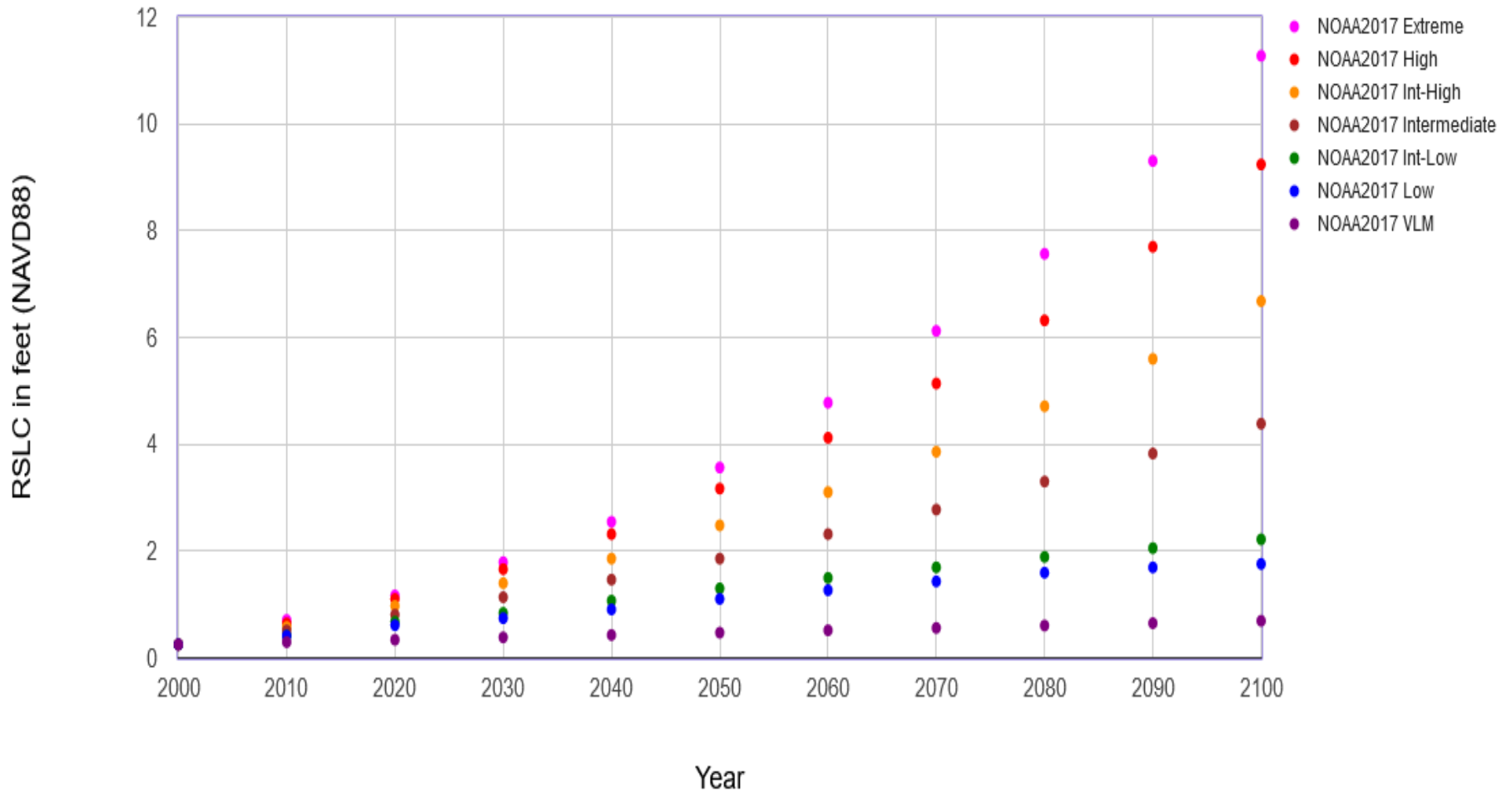
Photo courtesy CNN

Why Update Now?

- FEMA requirements - Community Assistance Visit (CAV)
- 2017 Construction Codes - Appendix G
 - DCRA and DOEE must coordinate to ensure that development in a flood hazard area is compliant with the flood resistant construction provisions of the D.C. Construction Codes
- Prepare for the Future - Climate Ready DC

Sea Level Rise

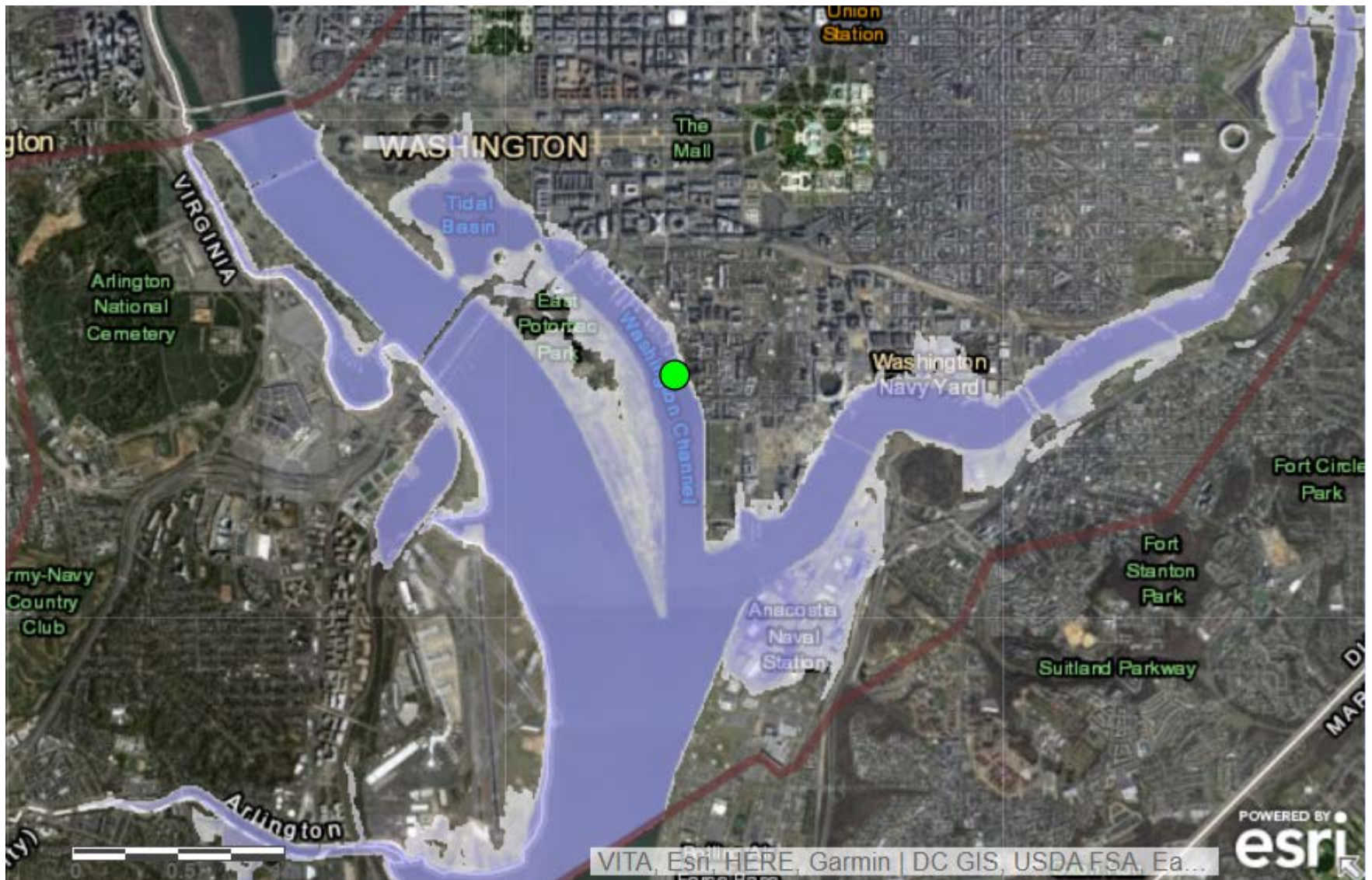
NOAA et al. 2017 Relative Sea Level Change Scenarios for : WASHINGTON DC



Coastal Flooding – High Tide

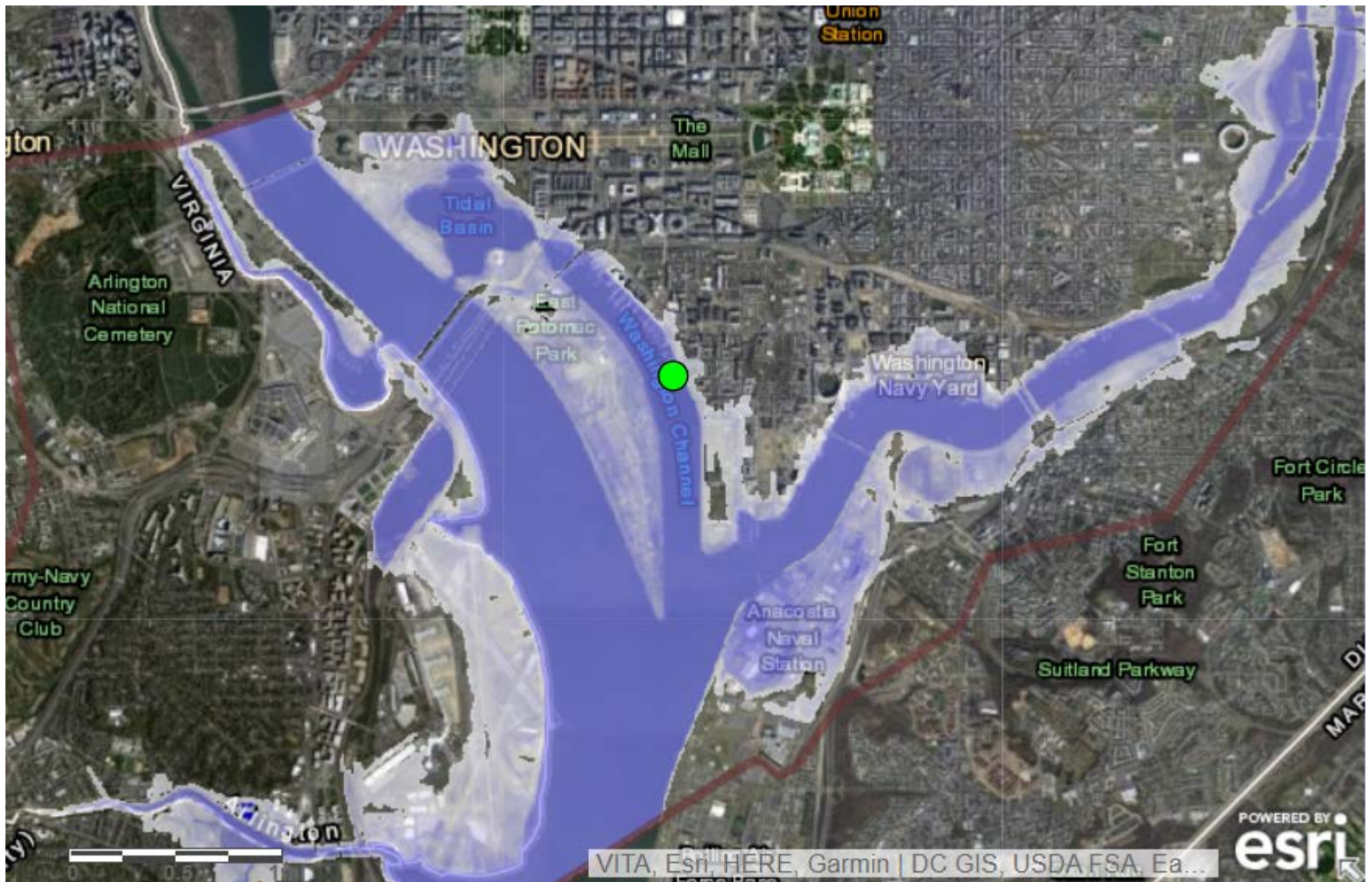


6.8 feet of SLR ~ NOAA Int – High Scenario 2100



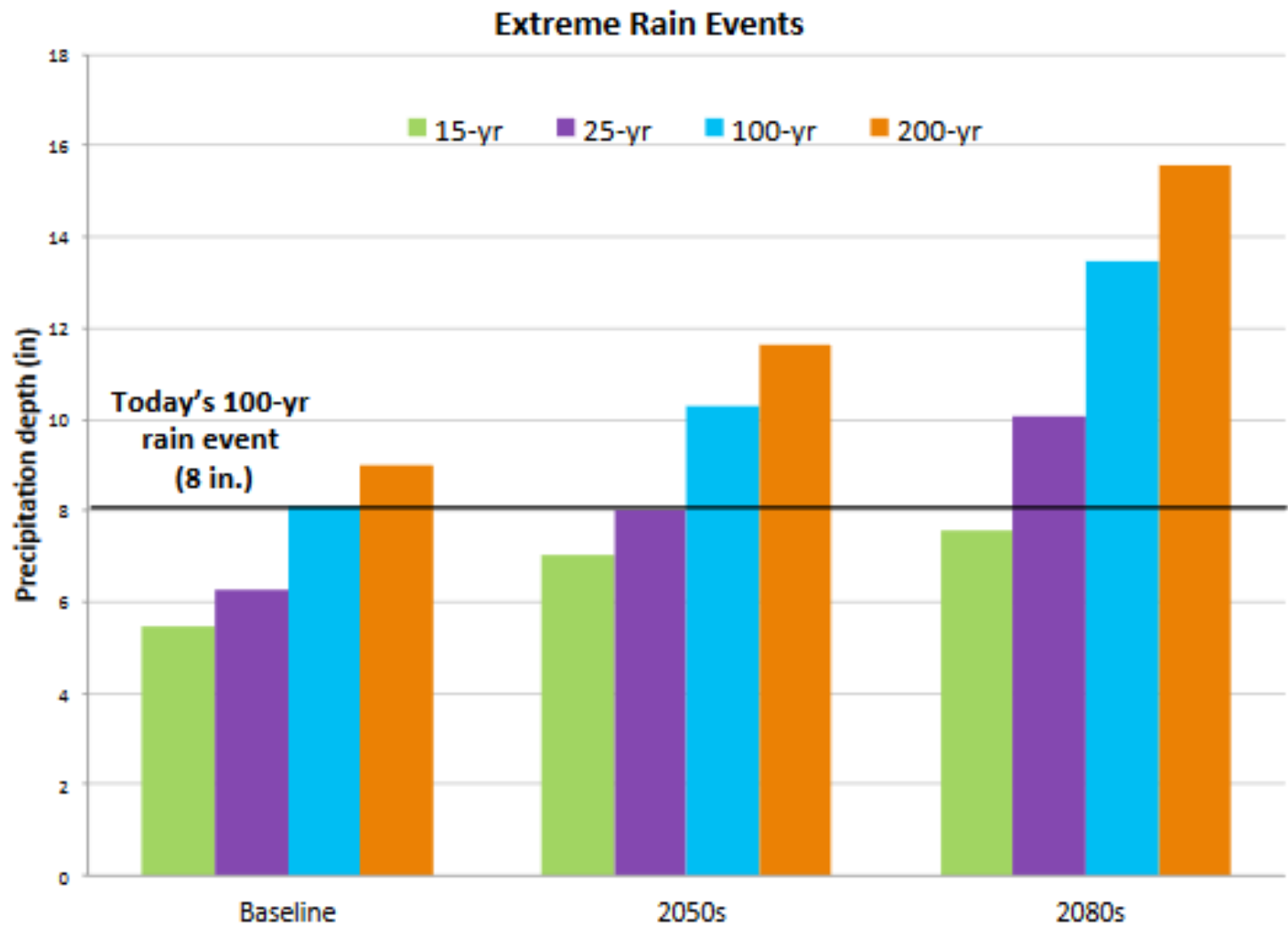
<https://water.weather.gov/ahps2/inundation/index.php?gage=wasd2>

10.8 feet of SLR ~ NOAA Extreme Scenario 2100



<https://water.weather.gov/ahps2/inundation/index.php?gage=wasd2>

Rainfall Projections – Climate Ready DC



What would change?

- Terms
 - Fees
 - Flood Hazard Areas
 - Design Flood Elevations
 - Insurance Requirements
 - Buffer Areas
 - Critical Facilities
- No Adverse Impact
 - Mixed Use
 - Hazardous Materials
 - Historic Structures

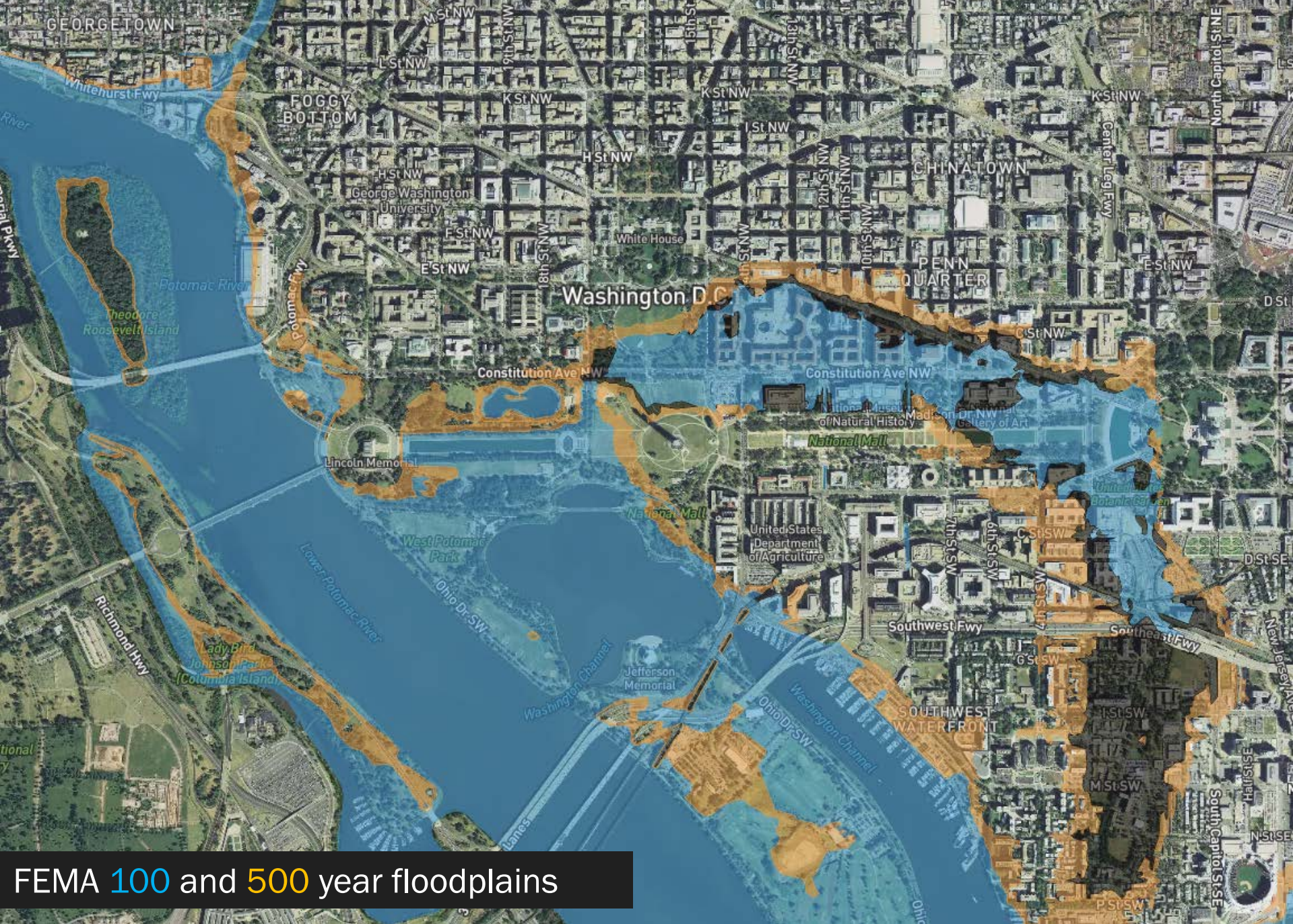
What would change? – Regulated Areas

Current Flood Hazard Rule:

- Special Flood Hazard Areas
 - FEMA 100-year floodplain
 - Only area regulated

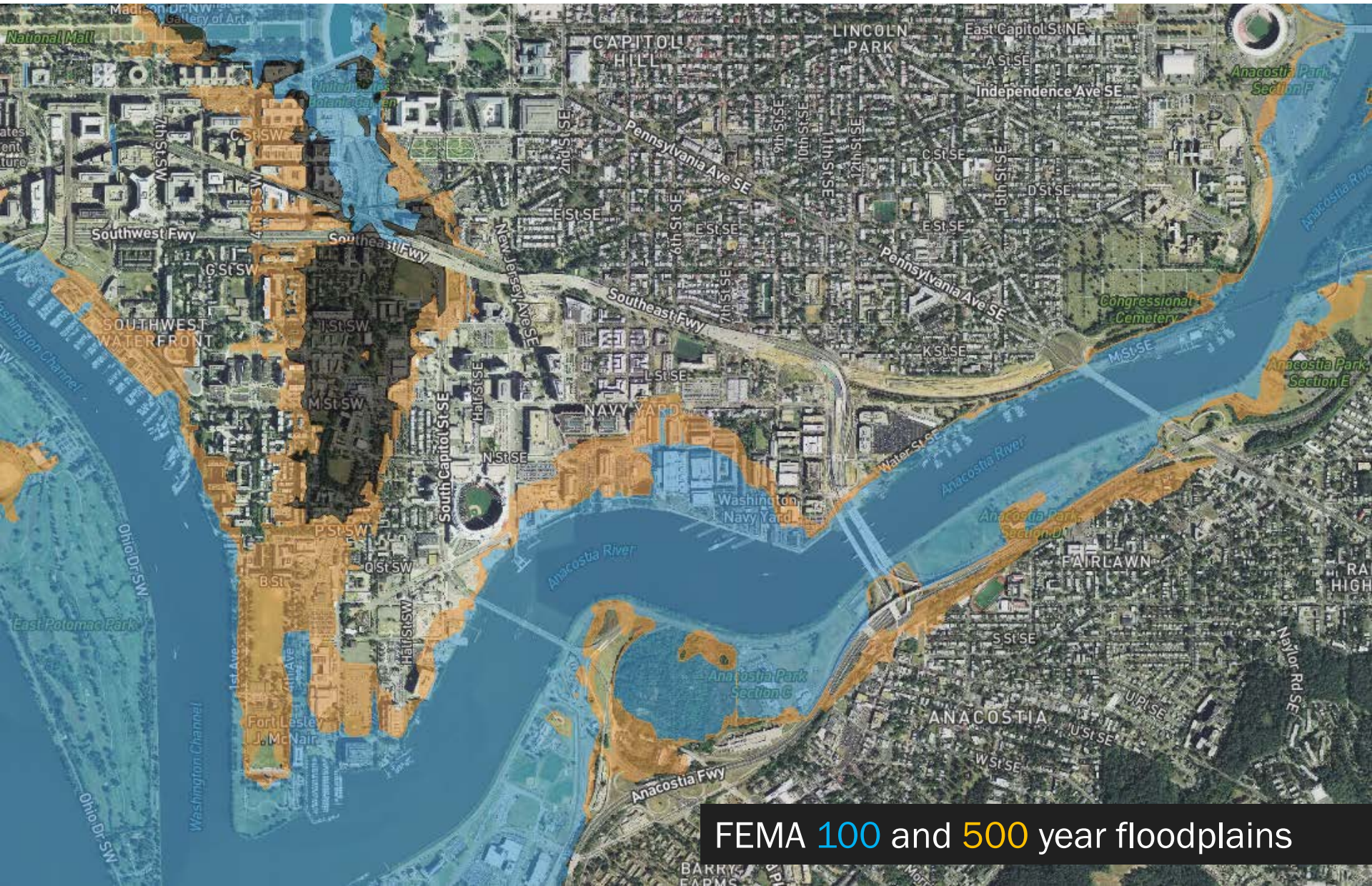
Proposed Update:

- Flood Hazard Areas
 - FEMA 100- and 500-year floodplains
 - Precedents in Baltimore, Houston, Austin, Charlotte, etc.
 - Areas removed from FEMA's 100-year floodplain by LOMR-F

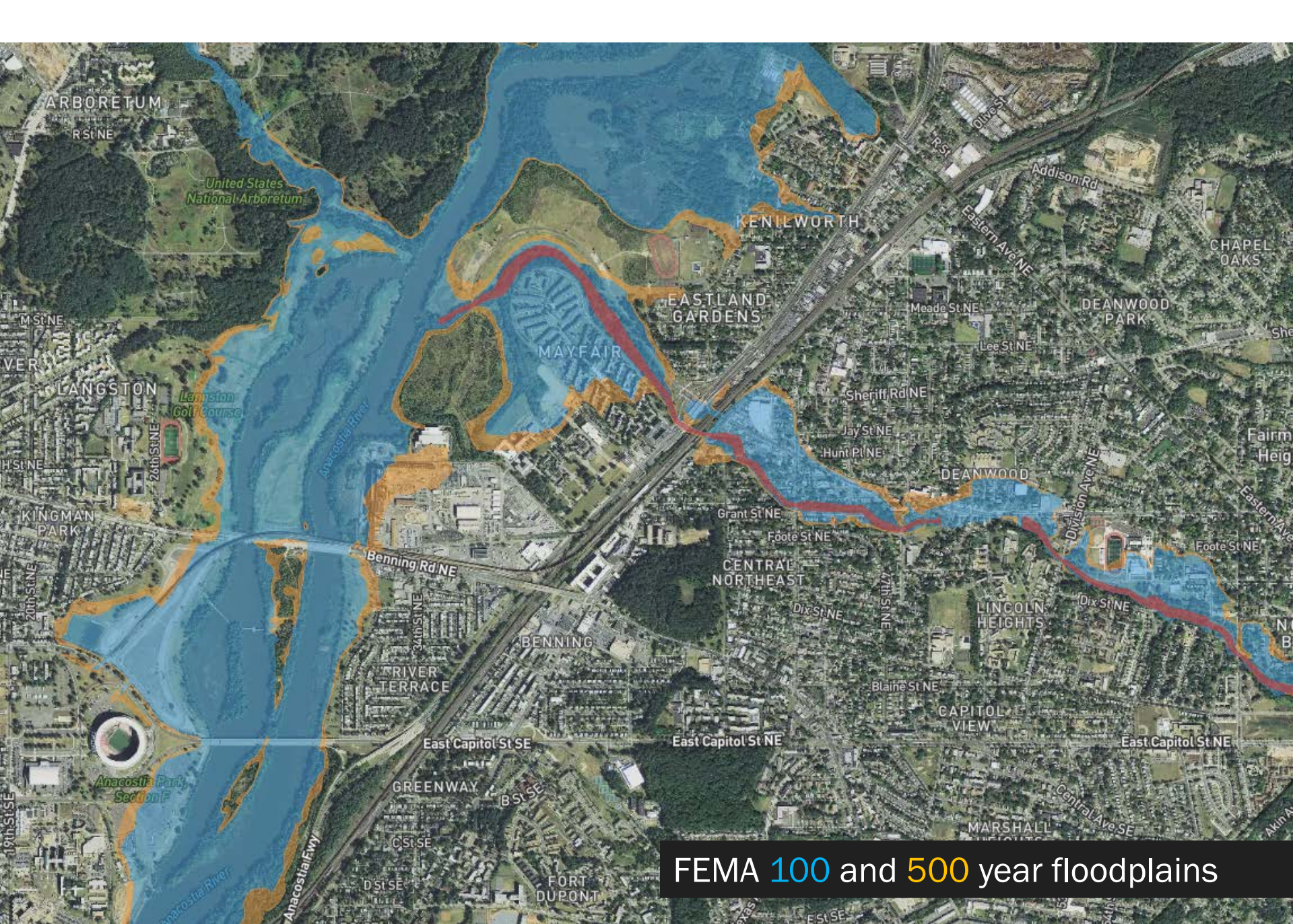


FEMA 100 and 500 year floodplains

DC Flood Risk Tool: <http://dcfloodrisk.org/>



FEMA 100 and 500 year floodplains



FEMA 100 and 500 year floodplains

What would change? – Design Flood Elevation

Current Flood Hazard Rule:

All new and substantially improved buildings must be elevated or floodproofed to the:

- Base flood elevation (BFE) + 1.5 feet

Proposed Update:

All new and substantially improved buildings must be elevated or floodproofed to the:

- Base flood elevation + 2 feet
- or high flood elevation, whichever is higher

What would change? – Flood Insurance

Current Flood Hazard Rule:

- No insurance requirement
 - There is a FEMA mandatory flood insurance requirement within the 100-year floodplain for properties with federally backed loans, but that is enforced directly by banks.

Proposed Update:

- Proof of flood insurance
 - In flood hazard areas
 - Prior to final inspection & continuing for life of structure
 - Amount Required is lesser of:
 - The maximum amount available under the NFIP for the type of structure, or
 - The insurable value of the property minus the value of the land on which it is located.

What would change? – Buffer Areas

Current Flood Hazard Rule:

- No buffers

Proposed Update:

- Tidal Shoreline Buffer
 - Areas to be inundated by Sea Level Rise by 2100
 - New development must be protected to **high flood + 6 ft.** to account for NOAA predicted sea level rise.
 - Review by OP for harmony with surrounding urban design
- DC Parkland Buffer
 - DC parkland in 100-year floodplain upstream of backwater area
 - Prohibit new development, except park amenities

Tidal Shoreline Buffer Calculation

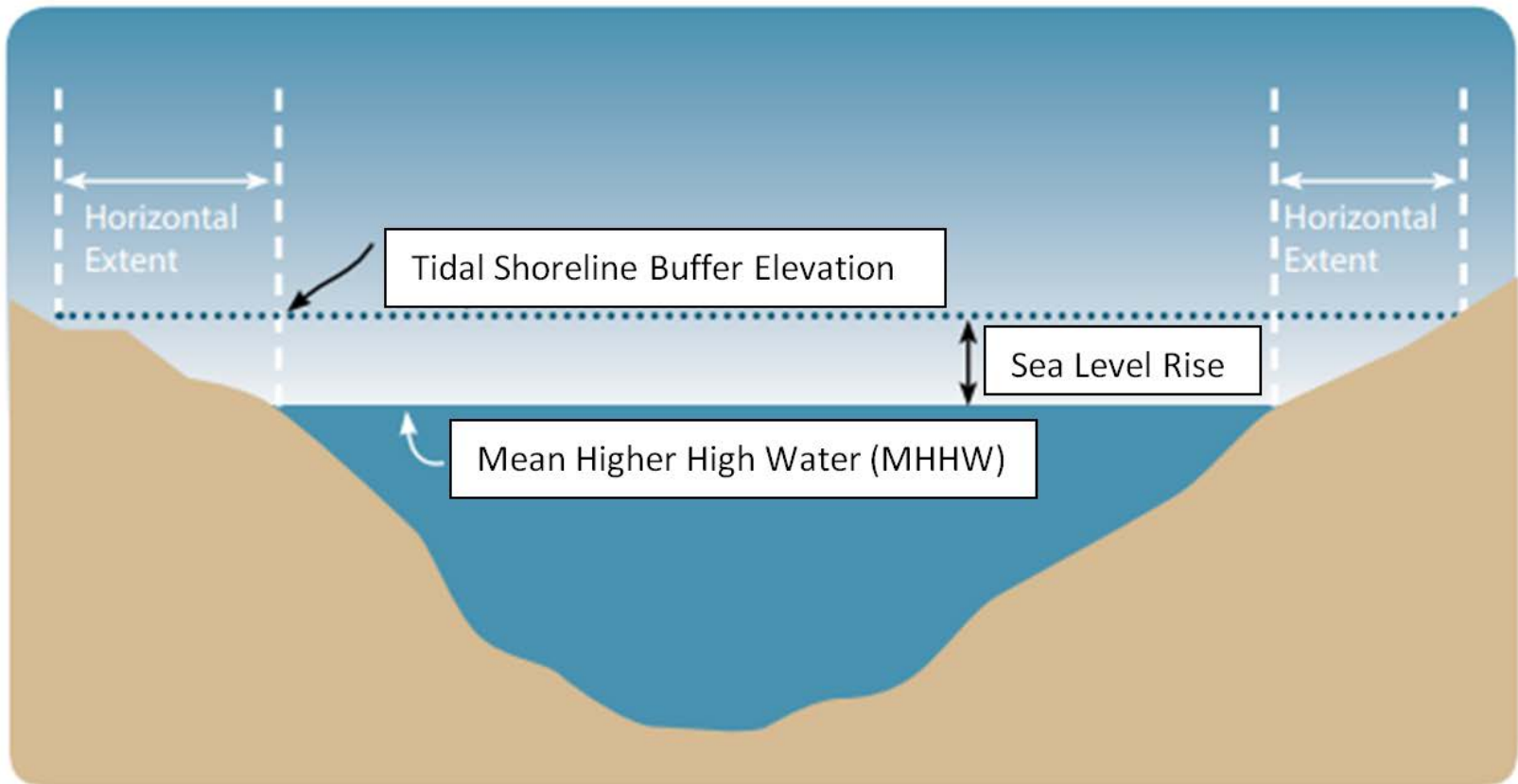
Mean Higher High Water (MHHW) in the year 2000: 2.2' NAVD88

+

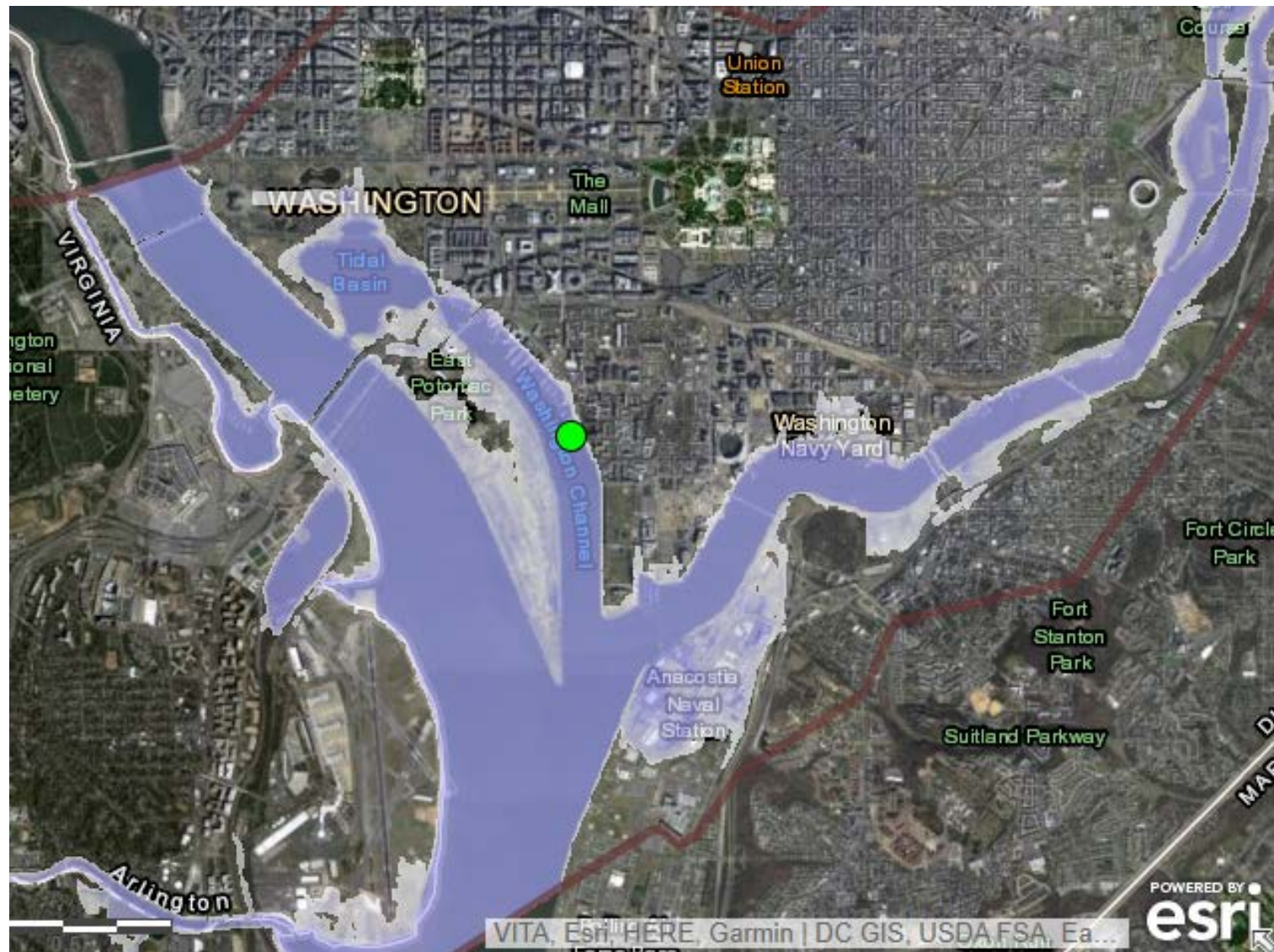
Relative Sea Level Rise between the year 2000 and 2100: 6.4'

=

Tidal Shoreline Buffer Elevation (MHHW in the year 2100): 8.6' NAVD88

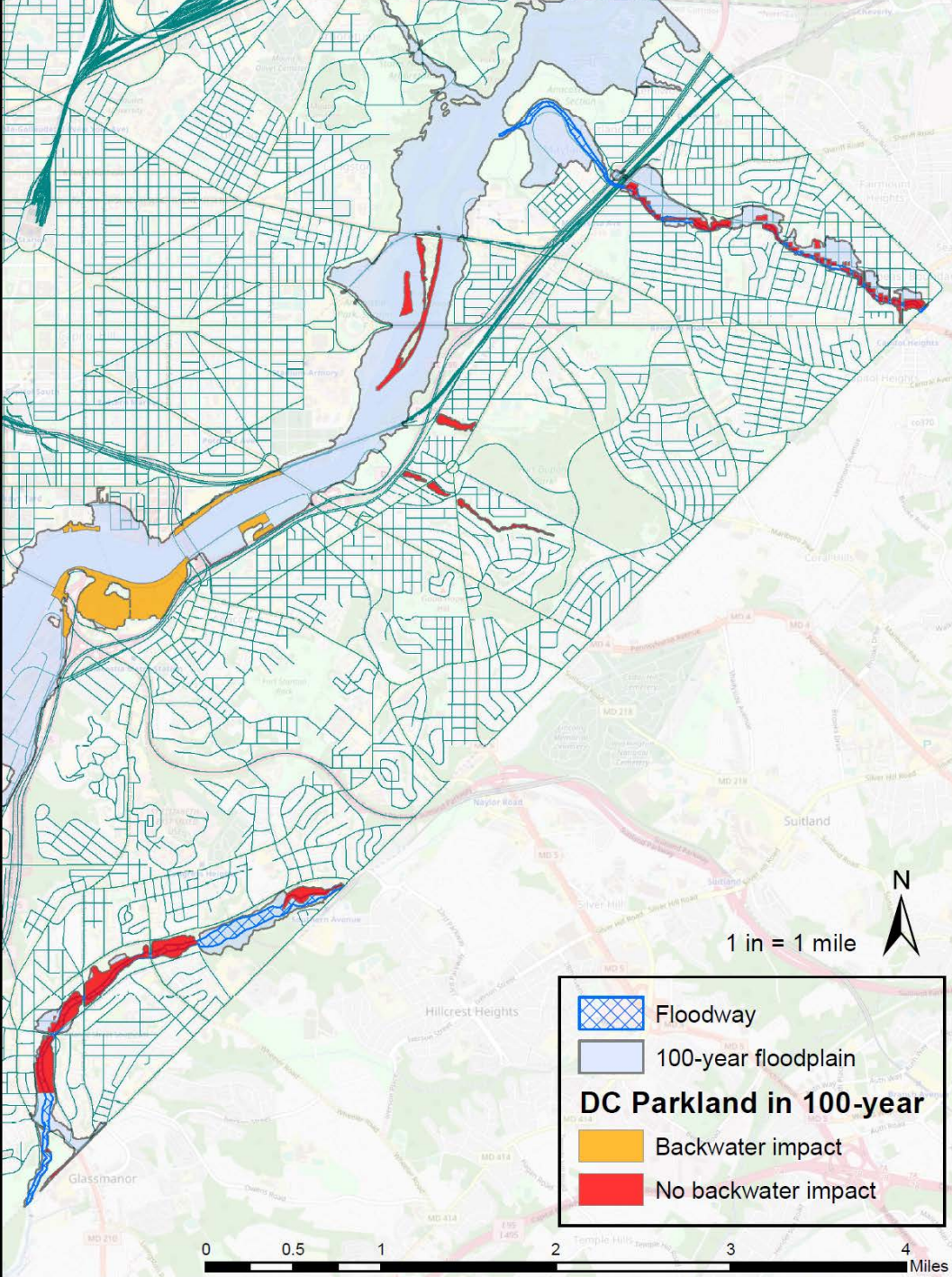


6.8 feet of SLR (9 feet NAVD88)



<https://water.weather.gov/ahps2/inundation/index.php?gage=wasd2>

DC Parkland Buffer



What would change? – Critical Facilities

Current Flood Hazard Rule:

- Not addressed
- references ASCE design standard (ASCE 24)

Proposed Update:

- Critical Facilities defined
 - Flood Design Class 4 structures (ASCE 24)
 - Some Flood Design Class 3 structures (ASCE 24)
- Prohibit new or substantially improved critical facilities in flood hazard areas without variance or alternatives analysis and stringent protective measures
- HSEMA roles: review and approve evacuation and resilient power plans

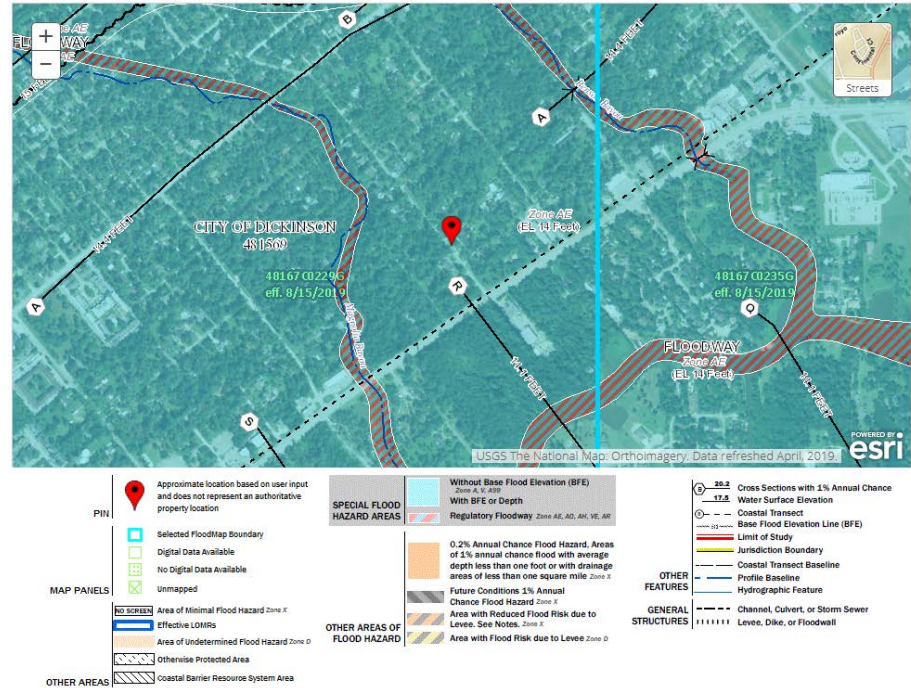
Proposed Critical Facilities List

- **Hospitals** and health care facilities having surgery or emergency treatment facilities;
- **Jails**, correctional facilities, and detention facilities;
- **Care facilities** where residents have limited mobility or ability, including nursing homes but not including care facilities for five or fewer persons;
- **Housing** owned or operated by the DC Housing Authority;
- **Shelters** and short-term family housing facilities for individuals experiencing homelessness;
- **Elementary schools**, secondary schools, and buildings with college or adult education classrooms;
- **Preschool and child care facilities** not located in one- and two-family dwellings;
- **Fire, rescue, ambulance, and police stations** and emergency vehicle garages;
- **Designated emergency shelters**;
- **Designated emergency preparedness, communication, and operation centers** and other facilities required for emergency response;
- **Power generating stations** and other public utility facilities required in emergencies;
- **Critical aviation facilities** such as control towers, air traffic control centers, and hangars for aircraft used in emergency response;
- **Ancillary structures** such as communication towers, electrical substations, fuel or water storage tanks, or other structures necessary to allow continued functioning of a critical facility during and after an emergency.

Critical Facilities



Photo courtesy CNN



This Dickinson, TX assisted living facility flooded during Hurricane Harvey was in the 100- year floodplain.

What would change? – No Adverse Impact

Current Flood Hazard Rule:

- Allows no increase in 100-year flood elevations in floodway
- Allows an increase in 100-year flood elevations up to 1-ft

Proposed Update:

- Allows no increase in 100-year flood elevations in floodway
- Allows no increase in 100-year or 500-year flood elevations on anyone else's property.

What would change? – Hazardous Materials

Current Flood Hazard Rule:

- Existing provision has
 - one threshold (550 gallons)
 - List of 18 substances
- Not enforced

Proposed Update:

- Relies on several hazmat laws to identify relevant properties that have reporting requirements
- Requires a flood emergency action plan during any permit review

What would change? – Historic Structures

Current Flood Hazard Rule:

- Not addressed

Proposed Update:

- Requires coordinated review with SHPO
- Must show that flood proofing is achieved to the maximum extent practicable while still maintaining historic designation

What would change? – Mixed Use

Current Flood Hazard Rule:

- Not addressed
- Has been grey area for FEMA
- DCRA Administrative Bulletin in 2016 requires code modification if entire building not elevated above 100-year elevation
- DOEE has required use of 500-year floodproofing standard as condition of support for code modification

Proposed Update:

- Better define mixed use, residential use, non-residential use
- Lowest floor of residential portion must be above DFE
- Requires 500-year standard (for all buildings)
- Relieves burden of code modification if any non-residential floors are below DFE

Next Steps

- Gather informal feedback from multiple stakeholder groups
 - Please send comments by 4/17/2020
- DOEE to consider comments in refining draft rules
- DOEE to begin public rulemaking process, which includes:
 - Internal approval process
 - Publication of proposed rules in the DCMR
 - Consideration of public comments
 - Ultimately, finalization of rules

Questions / Comments?

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