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Prince George's County, Maryland Nuisance Flood Plan

Phase 1: Tidal Nuisance Flooding

December 30, 2020

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Executive Summary

The definition of nuisance flooding in accordance with §3-1001 of the Natural Resource Article of the Maryland Annotated Code is “high tide flooding that causes a public inconvenience”. Pursuant to §3-1018 of the Natural Resource Article of the Maryland Annotated Code, any local jurisdiction that experiences high tide flooding shall develop a nuisance flood plan to address it. Impacted jurisdictions are required to update the plan on a five-year basis; publish the plan on the local jurisdiction’s website; and submit a copy of the plan to the Maryland Department of Planning. The State recommends that each jurisdiction’s plan include three critical components (State of Maryland, 2019):

- An inventory of known flood hazard areas where nuisance flooding occurs
- Identification of flood thresholds/water levels/conditions leading to nuisance flooding
- A mechanism to document tidal nuisance flood events and response activities over the next five years

Various terms have been used to define high tide flooding. These include sunny-day, nuisance, recurrent, tidal, and sea level rise flooding (NOAA, 2020a). While there is no nationally recognized definition of high tide flooding, for purposes of this plan, high tide flooding refers to when local sea level temporarily rises above an identified threshold height for flooding, in the absence of storm surge or riverine flooding (U.S. Federal Government, 2020), to the point where it causes a public inconvenience. It should be noted that the term nuisance flooding is sometimes also used to describe flooding that is a result of clogged or overflowing storm drain systems that are outside of the floodplain and occurs during minor storm events. The term nuisance flooding as used in this plan is limited to high tide flooding.

High tide flooding in the absence of storm surge or riverine flooding may not pose as serious a threat to Prince George’s County or result in major damages to public and private properties, but it can interrupt the daily routines of residents in the County’s coastal areas. Locations subject to high tide flooding may eventually be vulnerable to more severe floods due to sea level rise, land subsidence, and the loss of natural barriers (NOAA, 2020a). This plan will enable the County to determine the extent of high tide flooding, create a baseline inventory for the years 2019 through 2021, and be used to evaluate contributing conditions. The County will document the number and location of nuisance flood events over the next five years. The purpose is to catalog the number of occurrences and severity over time to catalyze response and risk reduction actions. This plan will be used to develop strategies and actions to mitigate the effect of high tide flooding.

This nuisance flood plan has been developed by the Prince George’s County Department of the Environment Sustainability Division. Prince George’s County, like other jurisdictions, has its own unique needs, resources, and strategies that can be used to develop and implement a nuisance flood plan. The plan is being developed in two phases. This part of the plan is Phase 1. It includes background on high tide flooding; identifies impacted areas; and provides recommended actions. Phase 2 will serve to build upon and expand this analysis to identify and track localized flood events and create a more robust nuisance flood plan.

Introduction

The purpose of Phase 1 of the Prince George’s County Nuisance Flood Plan is to identify areas within the County prone to high-tide flooding, assess the impacts, provide options for tracking the effects of high-tide flooding over time, and identify recommended actions.

Prince George's County has experienced some large flooding events in recent decades. Flooding is the most frequent and costly natural hazard in the United States, and Prince George’s County is no exception. Of the five natural hazard categories analyzed as part of the 2017 Prince George’s County and the City of Laurel Hazard Mitigation Plan Update (2017 Hazard Mitigation Plan Update), the County found that riverine flooding, severe flood-related storms, and tornados were the most significant natural hazards. The 2017 Hazard Mitigation Plan Update has an extensive discussion of traditional flood related hazards. Understanding the background of the causes, management, and mitigation of conventional flooding is important because the objectives of the hazard mitigation and the nuisance flood plans must be aligned and integrated.

Periodic flooding of lands adjacent to rivers, streams, and shorelines (floodplains) is a natural and inevitable occurrence that can be expected to take place based upon established recurrence intervals, such as the 100-year 24-hour storm event. Many of the most notable floods that have occurred within the County are related to remnants of tropical storms and hurricanes that have also affected many other areas of the United States (Prince George’s County OEM and DoE, 2017). High tide floods or “sunny day floods” that are not linked to a tropical storm or heavy rainfall event are also becoming more common and are a growing concern. The National Oceanic and Atmospheric Administration (NOAA) recently reported that the national median high tide flood occurrence was 4 days in 2019, based on observations from NOAA’s national tide gauge network. This is over double the median number of high tide floods experienced in 2000 (NOAA, 2020a).

The number of high tide floods experienced in the North Atlantic in 2019 was much higher than the national median, with records set at tide gauges within the Chesapeake Bay region. The two nearest tide gauges to Prince George’s County are the Washington, DC (near the Washington DC Police Harbor Patrol Unit) and Solomon’s Island, MD gauges. Washington, DC experienced 10 high tide flood days in 2019, and Solomon’s Island, MD experienced 11 high tide flood days. Table 1 provides location-specific high tide flooding occurrences as reported by NOAA (NOAA, 2020a).

Table 1. Location-specific high tide flooding (HTF) occurrences at NOAA gauges¹

Tide Gauge Location	Record HTF (days/year)	Years of Record	Typical HTF Days in 2000	HTF Days in 2019	2020 HTF Outlook	Peak HTF Season
Solomons Island, MD	11	2019	1	11	6-9	Fall
Washington, DC	22	2018	3	10	6-11	Spring

Note: 1. The complete table is available in Appendix 1 (pp. 15-16) of “2020 State of U.S. High Tide Flooding with a 2020 Outlook.”



Figure 1. High tide flooding in Eagle Harbor, MD, courtesy the Town of Eagle Harbor



Figure 2. Shoreline erosion in Eagle Harbor, MD, courtesy the Town of Eagle Harbor

Mapping Vulnerability to Flood Hazards

There are several causes of flooding that occur in the County. These include extreme weather events such as hurricanes, intense rainfall events, inadequate storm drain infrastructure, and tidal flooding. Mapping flood hazards creates broad-based awareness of the flood hazards. Prince George’s County has dedicated extensive resources to mapping and managing the effects of hazardous flooding events.

Section 4 of the County’s 2017 Hazard Management Plan Update addresses natural and manmade flood hazards such as riverine flooding, dam or levee failures, and/or floods related to severe storm or major catastrophic events. Areas impacted by riverine floods and/or major storms are often referred to as being in the floodplain. Floodplains are designated by the depth, frequency, and extent of the flood that is large enough to cover them. For example, the 100-year floodplain represents the area inundated by a one-percent probability flood. Flood frequencies are determined by plotting a graph of the size of all known floods for an area and determining how often floods of a particular size occur. Flood frequencies are used to characterize flood modeling by the Federal Emergency Management Agency (FEMA). The frequency, elevation, and extent of the flooding is shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM).

The FIRM is FEMA’s official community map that delineates the Special Flood Hazard Areas, the Base Flood Elevations (BFEs) and the risk premium zones applicable to Prince George’s County. The boundaries of these Special Flood Hazard Areas are important because they are used to help determine the flooding risk and flood insurance rates. The extent of flooding from a 100-year and

500-year event is typically viewed as the most important for the protection of the community. The County’s current FIRM became effective on September 16, 2016.

Prince George’s County recognizes and manages riverine flood hazard areas designated on the County FIRM as areas identified as vulnerable to flooding from the 100-year floodplain. The County also recognizes and manages riverine flood hazards based on studies prepared by the County to evaluate the impact of future development. These maps often include areas not studied by the National Flood Insurance Program.

Areas subject to high tide flooding are often contained within or intersect the County’s regulatory floodplain. High tide flooding may also occur outside of these areas. The potential impacts of coastal storm surges are addressed in the 2017 Hazard Mitigation Plan Update and are described below.

Coastal Flooding Impacts and Vulnerability

The County’s 2017 Hazard Mitigation Plan Update was finalized prior to the release of the Maryland nuisance flood plan guidance. It does not currently provide a comprehensive strategy to address high tide flooding. Coastal flooding is addressed. Coastal flooding is described as typically resulting from storm surge, wind-driven waves and heavy rainfall produced by hurricanes, tropical storms, and other large coastal storms. The plan states that in the future, it is “highly likely that Southern Prince George’s County may be subject to coastal flooding associated with possible sea-level rise” (Prince George’s County OEM and DoE, 2017, p. 4-18).



Figure 3. A timeline of coastal erosion along the Potomac River around Fort Washington, MD

Coastal erosion is described as the landward displacement of the shoreline caused by the forces of waves and currents. The plan states that while many areas have “significant historic or contemporary erosion conditions... the erosion processes do not currently threaten public or private interests. These areas are therefore designated as noncritical eroded areas and require close monitoring in case conditions become critical” (Prince George’s County OEM and DoE, 2017,

p. 4-27). The 2017 Hazard Mitigation Plan Update ranks the County's overall vulnerability to coastal flooding as medium-low when compared to hazards related to flood, wind, fire, geologic, and extreme temperatures. Wind-related hazards from hurricanes/tropical storms and severe storms, both of which impact coastal flooding, were ranked medium-high. The plan notes that the overall ranking does not mean that a medium-low hazard will not occur or does not impact communities; the ranking is only relative comparative to other hazards.

FEMA's 2016 Flood Insurance Study for Prince George's County included a coastal analysis to provide estimates of flood elevations along the coast. The study states that the majority of the County's coastal flooding is due to the Potomac and Patuxent Rivers. The County's western portions are impacted by the Potomac River, and its eastern portions by the Patuxent River (including Upper Marlboro, Eagle Harbor, and rural areas along the Patuxent River coastline).

Coastal flooding along the Potomac/western side of the County was evaluated by the US Army Corps of Engineers (USACE). USACE performed a " cursory frequency-of-occurrence analysis of storm surge" to determine the extreme water levels along the tidal Potomac River from the confluence with the Chesapeake Bay to Washington, DC (FEMA, 2016, p. 31). Anticipated flood elevations were replicated using wind and atmospheric pressure forcings from a hurricane the force of Hurricane Isabel. Results are provided in Table 2.

Table 2. Summary of Storm Surge Elevations (Potomac), extracted from FEMA FIS (2016)*

Flooding Source and Location	Elevation (Feet) NAVD 88 1-Percent Annual Chance
POTOMAC RIVER	
At the corporate limit for District of Columbia	9.98
At confluence with Broad Creek	9.64
At confluence with Piscataway Creek	9.39
At boundary with Charles County	9.33

*Note: See Table 7 in Flood Insurance Study Report: Prince George's County, Maryland and Incorporate Areas (2016).

Coastal flooding along the Patuxent River (which borders the County's eastern side) was evaluated by incorporating information from a FEMA Region III study completed in 2012 to update coastal storm surge stillwater elevations. Stillwater elevations represent the water surface when there is an absence of waves. FEMA and USACE used an end-to-end storm surge model (referred to as SWAN+ADCIRC). The FEMA FIS identifies the coastal floodplain as extending 18 miles northward from the Charles County boundary on the Patuxent River (FEMA, 2016). This accounts for approximately 33.5 square miles or 7 percent of the County's total land area (FEMA, 2015). Storm-surge elevations were determined for the 10-, 2-, 1-, and 0.2- percent annual chance floods (Table 3). These can also be described as the 10-, 50-, 100- and 500- year storm events. These reflect stillwater elevations due to tidal and wind setup effects (FEMA, 2016).

Table 3. Summary of Coastal Stillwater Elevations (Patuxent), extracted from FEMA FIS

Flooding Source and Location	Elevation (Feet) NAVD 88			
	10-Percent Chance	2-Percent Chance	1-Percent Chance	0.2-Percent Chance
PATUXENT RIVER				
Entire Shoreline within County limits	3.9 - 4	4.8 - 5	5.3 - 5.5	7.8 - 8.3

*Note: See Table 8 in Flood Insurance Study Report: Prince George’s County, Maryland and Incorporate Areas (2016).

There are two primary flood hazard zones within a FEMA coastal special flood hazard area: Zone VE and Zone AE. Areas of coastline subject to strong wave hazards with the potential to cause dramatic structural damage are referred to as coastal high hazard zones and are depicted on the FIRMs as Zone VE. Zone AE is depicted on the FIRMs where the delineated flood hazard includes wave heights less than three feet (FEMA, 2016; FEMA, 2020). Figure identifies the extent of the area classified by FEMA as Zones AE and VE in the limits of the FEMA-defined coastal floodplain area as well as the flood zones identified in the remainder of the County.

Prince George's County FEMA Flood Zones

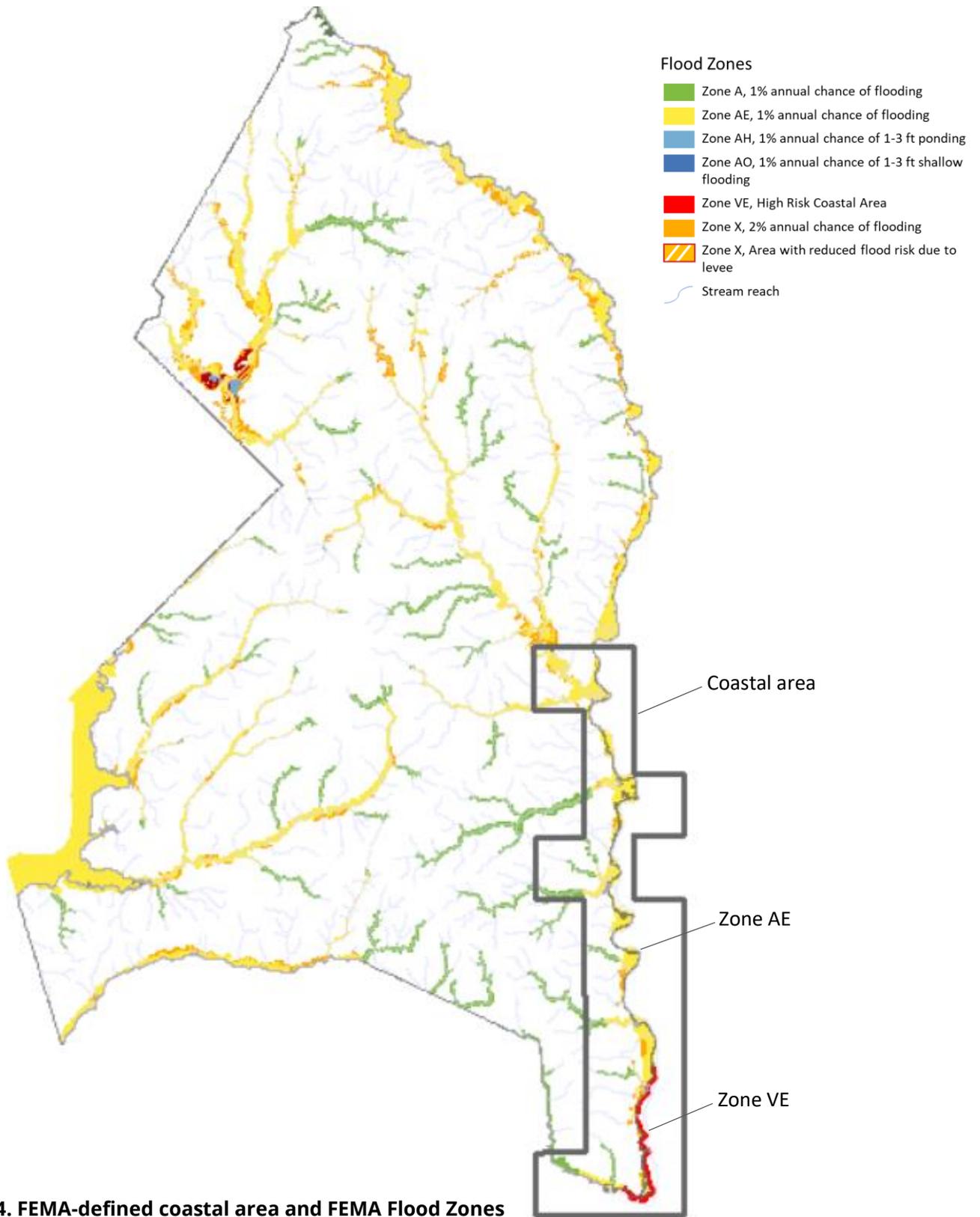


Figure 4. FEMA-defined coastal area and FEMA Flood Zones



Figure 5. Flooding of paved areas at Truman Point, courtesy of the Town of Eagle Harbor.

High Tide Flooding (Nuisance Flooding)

Whereas coastal flooding considered the influence of storm surge associated with nor'easters and tropical cyclones, high tide flooding refers to “when local sea level temporarily rises above an identified threshold height for flooding in the absence of storm surge or riverine flooding” (US Federal Government, 2020). They are considered a nuisance because of the public inconveniences experienced when this overtopping of the banks and edge of waterways leads to road closures, overwhelmed storm drains, and compromised infrastructure (NOAA, 2020b). High tide flooding can restrict access to homes and important transportation links; flood homes and businesses; increase the need and cost to rehabilitate existing storm and wastewater systems impacted by rising seas and groundwater tables; lead to adverse health effects due to storm and sewer system overflows; and drive down real estate values (NOAA, 2018). These impacts are becoming increasingly disruptive and damaging within many coastal communities due to rising sea levels. This is especially true within the Chesapeake Bay region (NOAA, 2020a).

High tide flooding is becoming commonplace in coastal communities during peak high tide flood season. Its more than twice as likely to experience a high tide flood now than it was in the year 2000. The impacts of increased frequency, duration, and extent of nuisance flooding threaten coastal infrastructure and properties (NOAA, 2018).

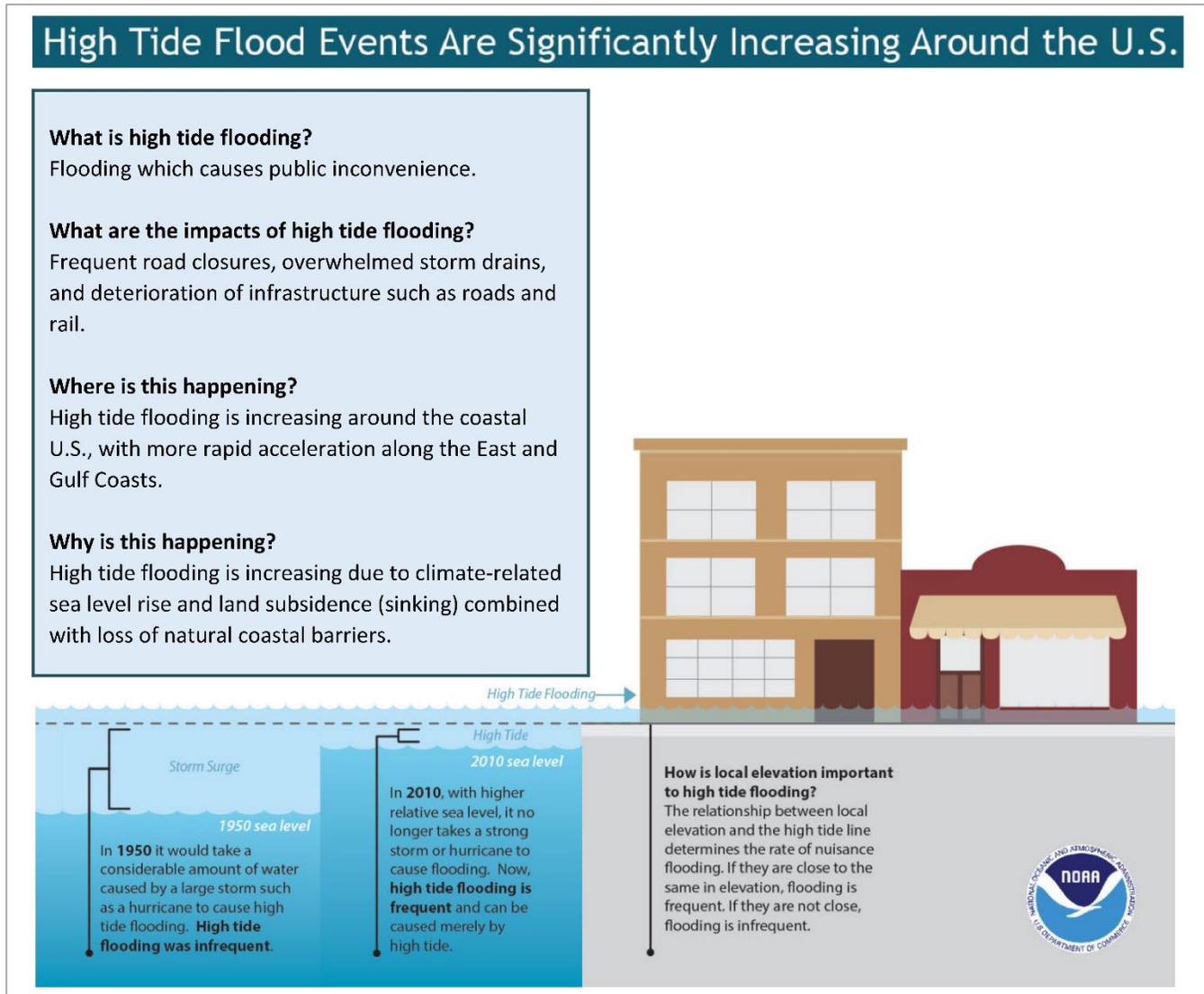


Figure 6. High tide flooding events have increased as coastal sea levels rise. Figure adapted from NOAA, 2020b.

High Tide Flood Thresholds

NOAA has established three coastal flood severity thresholds for forecasting purposes and to ensure public safety: minor, moderate, and major. These thresholds are based upon water level heights calibrated to NOAA tide gauge measurements. NOAA issues a flood advisory warning for minor events or a flood warning for moderate/major events when coastal flooding is anticipated

(not associated with tropical storms). NOAA applied a linear regression analysis using information on the data set of observed thresholds to establish a ‘derived’ set of flood threshold proxies for coastal areas within the continental US (except for Maine). In general, NOAA found that *minor*, *moderate*, and *major* coastal flooding typically begin about 0.5 m, 0.8 m and 1.2 m above a height slightly higher than the multi-year average of the daily highest water levels measured by NOAA tide gauges.

Table 4 provides the observed and derived minor, moderate, and major coastal flood severity thresholds at the two NOAA tide gauges nearest Prince George’s County: Solomons Island, MD for the Patuxent River, and Washington, DC, for the Potomac and Anacostia Rivers. A complete list of official and derived thresholds for NOAA gauges is provided in Appendix One of *NOAA Technical Report NOS CO-OPS 086* (NOAA, 2018).

Table 4. NOAA Derived Coastal Flood Severity Thresholds*

Tide Gauge Location	Lat	Long	Observed Flood Thresholds (meters, MHHW)			Derived Flood Thresholds (meters, MHHW)		
			Minor	Moderate	Major	Minor	Moderate	Major
Solomons Island, MD	38.8	-76.5	0.39	0.77	1.07	0.52	0.81	1.19
Washington, DC	38.9	-77.0	0.32	0.65	1.17	0.54	0.83	1.21

*Notes: Modified from Appendix 1 of NOAA Technical Report NOS CO-OPS 086. Conversion to feet added.

NOAA refers to the derived threshold for minor flooding as high tide flooding (also referred to as ‘nuisance’, ‘sunny day’ and ‘recurrent tidal’ flooding). The derived threshold for minor flooding was used to prepare the high tide flooding map shown on both the NOAA Sea Level Rise Viewer and the NOAA Coastal Flood Exposure mapper. It starts at about 0.50 meters above Mean Higher High Water (MHHW). MHHW is the average height of the highest tide recorded at a tide station each day during the current national tidal datum epoch (1983–2001 is the current NOAA epoch) (NOAA, 2020a). It should be noted that the mapped thresholds do not address the duration or frequency of the high tide flooding or the effects of other factors on the extent and elevation such as off-shore storm surge, seasonal long term weather patterns, such as El Niño Southern Oscillation (ENSO), or the influence of non-tidal flood events.

Prince George’s County has set the threshold for high tide flooding as occurring when the water level at a NOAA tidal gauge exceeds the following derived thresholds for minor flooding, as established by NOAA:

- Patuxent River: 0.52 meters above MHHW
- Potomac River/Anacostia River: 0.54 meters above MHHW

The NOAA derived thresholds were selected because of the recognition and acceptance of the accuracy, historical record, and availability of the data. They were also chosen because of the movement towards utilizing nationally recognized definitions and data sets to facilitate integration with other federal resource efforts such as FEMA floodplain mapping. The County will revisit these thresholds in Phase 2 and over the course of the next five years to evaluate how well these thresholds correspond to water elevations that could produce high tide flooding along Prince

George's County's tidal areas. For example, the County will evaluate whether these thresholds correspond to the height at which the water elevation exceeds the top of roads, trails, or other public infrastructure or the structural stability of buildings and road embankments in tidal areas. The County will also evaluate the set of actions taken when an inundation level has been reached in Phase 2.

High Tide Flood Impact and Vulnerability

Prince George's County utilized NOAA's "High Tide Flooding" map in Phase 1 to identify areas that may currently be subject to high tide flooding. NOAA's "High Tide Flooding" map is available to view on both the [NOAA Sea Level Rise Viewer](#) (NOAA, 2020b) and the [NOAA Coastal Flood Exposure Mapper](#) (NOAA, 2020c). This map represents low-lying coastal areas currently subject to tidal flooding during extreme high tides. The flood thresholds used in this map are the derived national flood thresholds from NOAA Technical Report NOS CO-OPS 086 (NOAA, 2018). NOAA's "High Tide Flooding" map was used to delineate baseline conditions because it best represents existing low-lying coastal areas subject to flooding in Prince George's County.

County departments and agencies responsible for responding to and addressing flood events were engaged to gather information on their occurrences. This includes the Prince George's County Department of the Environment, the Department of Public Works and Transportation, the Fire and Emergency Medical Services Department, the Office of Emergency Management, and the CountyClick311 Service. This information was used to identify roadways and other public infrastructure or flood-risk areas within or adjacent to high tide flood areas. A preliminary inventory of high tide flood areas of concern and high tide maps can be found in Appendix A and Appendix B. Working from this inventory, a goal in Phase 2 will be to discuss each site, identify appropriate emergency preparedness, response, and/or mitigation measures for each, and potentially identify a list of pilot projects for future implementation.

Proposed Tracking Reporting and Response to High Tide Flood Incidents

The proposed tracking, reporting, and response to be utilized by County agencies to collect information on high tide flooding incidents is the same that is used to report and track other flooding or service concerns. This will be confirmed in Phase II of the Plan through the process of public, stakeholder, and inter-agency engagement. In the past, high tide flooding incidents have not been reported or cataloged separately from other types of flooding. High tide flooding incidents are expected to increase in frequency and severity over the next decades. The County anticipates that many of the systems for collecting data from residents will remain the same, but how that information is cataloged once in the system will be modified to allow the County to better track these incidents over time.

The Prince George's County Department of the Environment, through its Sustainability Division, will be responsible for tracking high tide flood events over time. This will require a coordinated effort between County agencies and departments such as the Office of Emergency Management, the Department of Public Works and Transportation, the Fire and Emergency Medical Services Department. In Phase 2 of this nuisance flood plan, the Sustainability Division will further engage County departments and agencies in how to improve inter-agency coordination when logging and tracking events. Regional, state, and federal agencies such as the Maryland-National Capital Park and Planning Commission, Maryland State Highways Administration, Maryland Department of Natural Resources, Maryland Emergency Management Agency, and NOAA may also be asked to participate or otherwise provide input into the process.

There are 27 municipalities within Prince George's County. The Sustainability Division will similarly engage municipalities in this effort. The high tide flood baseline runs adjacent to and/or intersects eight of these municipalities (Eagle Harbor along the Patuxent River; Bladensburg, Colmar Manor, Cottage City, Edmonston, Hyattsville, and North Brentwood along the Anacostia River; and Forest Heights along the Potomac River). Municipalities are also expected to be impacted by urban flooding. This process for collecting data, once established, will be evaluated over the first five years of the plan and adjusted as necessary to correct any identified shortcomings.

Another key source for tracking and logging information is the Prince George's CountyClick 311 service. CountyClick 311 is a one-stop call center that County residents may call to get answers to questions and receive assistance with non-emergency issues. Residents may ask questions, report problems, request a service, or check on the status of a previously submitted service request via a live agent-assisted phone call, in person during regular business hours, or through the self-service web or mobile portal at any time. Issues stemming from high tide flood events may be logged under several different service types, such as:

- Drainage Ditch
- Flooding (Yard/Private Property)
- Flooding and Drainage Issue (Public Right-of-Way)
- Storm Drain Maintenance
- Storm Drain Pipes – Repair/Replace
- Sewage Overflow

Information from County departments and agencies and CountyClick 311 will be collected on a quarterly basis, and flooding or service request data received will be reviewed based on the event's location and whether the incident occurred during a high tide event. Information will be collected and an internal dataset maintained of nuisance flood events. This will allow the County to analyze data to validate known high tide flood areas of concern, identify new ones, identify appropriate responses, and prioritize areas for future action.

MyCoast Application

The projected extent of nuisance flooding through modeling alone is limited because of the influence of local conditions (e.g. wind direction, local topography, etc.) which are at too small of a

scale that the model cannot account for. The County will also evaluate the use of the MyCoast: Maryland mobile app to help manage and monitor nuisance flooding impacts at the local level. The MyCoast app was developed by NOAA and the NWS and tailored to fit the needs of Maryland in partnership with the Maryland Department of Natural Resources. It is a citizen-based data collection app to document the effect and impact of high tides flooding on the state's coastline. Users take photographs of flooding and submit them through MyCoast. These submissions are called "reports." The application captures the time and location of the photograph, as well as the weather and tidal conditions. They can be downloaded to inform decisions on how to address nuisance flooding. The app has been tailored for Maryland to also collect information on precipitation-caused flood events.

Next Steps and Future Considerations

Prince George's County, like most communities that have coastal exposure, is experiencing flooding outside mapped floodplains with increasing frequency. This is only expected to increase in duration, depth, and frequency (NOAA, 2020a). This includes high tide flooding as described in this nuisance flood plan. It also includes urban flooding, which is defined in the 2017 Hazard Mitigation Plan Update as occurring "where manmade development has obstructed the natural flow of water and decreased the ability of natural groundcover to absorb and retain surface water runoff" (Prince George's County OEM and DoE, 2017). The County has seen an uptick in urban flooding events due to the increased number of high-intensity, short duration rain events the area is experiencing.

The Prince George's County Department of the Environment, through its Sustainability Division, will establish and convene a steering committee to expand the scope of this nuisance flood plan to ensure cross-departmental interaction, encompass urban flooding, further refine the plan's development, and lay out a strategy for public engagement. Future enhancement to the plan may incorporate information on sea level rise, equity and vulnerability assessments, and additional information and studies to ensure that public safety, current and future infrastructure, comprehensive planning, and hazard mitigation planning are appropriately addressed.

Responsibility for implementing this plan and future phases of the plan will be shared by County departments and agencies. Approval of the plan by County Council will allow elements and actions to be incorporated in the Hazard Mitigation Plan update in 2023 and the next Comprehensive Plan update. The Council may similarly approve the plan by incorporating it as an appendix to the 2023 Hazard Mitigation Plan update. Projects identified under this plan may be incorporated into the Capitol Improvement Plan or proposed for grant funding.

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Appendix A: Facilities In/Adjacent to High Tide Flood Threshold

The table below provides an inventory of public or critical infrastructure within, intersecting, or directly adjacent to the high tide flood threshold. This table corresponds to the map panels provided in Appendix B. Insufficient information currently exists to determine whether drainage or flooding concerns are related to high tide flooding, urban flooding, or some other concern. The County will evaluate this information over the next five years to better catalog the location and frequency of occurrences and severity over time. This will enable the County to catalyze responses and risk reduction actions. The map panels are provided in Appendix B.

Table A-1. Public or Critical Facilities In/Adjacent to High Tide Flood Areas of Concern

	Name	Location	Description	Type	River	
					River	Panel
1	Brentwood Station Trash Rack	Allison St	Flood prone area; no high water signs	Trash Rack	Anacostia	1 of 1
2	Rhode Island Ave Trash Rack	Rhode Island Ave	Flood prone area; no high water signs	Trash Rack	Anacostia	1 of 1
3	North Brentwood Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Anacostia	1 of 1
4	Colmar Manor Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Anacostia	1 of 1
5	Colmar Station Trash Rack	Monroe St	Flood prone area; no high water signs	Trash Rack	Anacostia	1 of 1
6	Bladensburg Station Trash Rack	Annapolis Rd	Flood prone area; no high water signs	Trash Rack	Anacostia	1 of 1
7	Station 57 – Potomac River	King Charles Terr	Volunteer fire and marine rescue station	Emergency	Potomac	4 of 7
8	Fort Washington Pool Assn Trash Rack	King Charles Terr	Flood prone area; no high water signs	Trash Rack	Potomac	4 of 7
9	Riverview Park Cluster	Broad Creek Dr	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Potomac	5 of 7
10	Henson Creek / Forte Foot Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Potomac	5 of 7; 6 of 7
11	Fire Station Company 58	Mariner Passage	Volunteer fire station	Emergency	Potomac	6 of 7

	Name	Location	Description	Type	River	
					River	Panel
12	Forest Heights Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Potomac	7 of 7
13	Huron Drive Trash Rack	N Huron Dr	Flood prone area; no high water signs	Trash Rack	Potomac	7 of 7
14	Eagle Harbor Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Patuxent	1 of 9
15	Marlboro Meadows Cluster	Roads / structures near HTF threshold	Flood prone area; identified as area of interest due to drainage/flood complaints	Road	Patuxent	8 of 9

Appendix B: Prince George’s County High Tide Flood Map

The following map has been broken into multiple panels. It shows the proximity of County facilities and infrastructure as they relate to the FEMA floodplain and the NOAA-identified high tide flood threshold. DPW&T facilities or infrastructure in flood-prone areas is shown. Data collected on 311 and 911 calls related to drainage or flooding concerns was also mapped using a cluster analysis. Areas where DPW&T facilities in flood-prone areas or potential nuisance flood clusters intersected or were directly adjacent to the NOAA high tide flood threshold were marked as preliminary high tide flood areas of concern.

Symbol	Legend Name	Description
1	Preliminary High Tide Flood Area of Concern	Public facility or infrastructure within/adjacent to the high tide flood threshold and identified by the County as a potential area of concern due to either: 1) its identification by DPW&T as a County facility/infrastructure located in a low-lying area or 2) a clustering of 911 and 311 calls related to drainage or flood complaints.
	DPW&T-Identified Roads and Structures	County roads and structures maintained by DPW&T that are located in low-lying flood prone areas, as identified by DPW&T.
	311 / 911 Cluster	Areas of interest identified by performing a density-based clustering analysis of 911 and 311 calls related to drainage or flooding complaints. The specific nature and date of calls are unknown.
(varies)	Critical Facilities	Includes airports, police stations, fire stations, hospitals, schools, and recreation centers provided for public use. The information shown is available from PG Planning Open Data.
	M-NCPPC Parks	Parks owned and operated by the M-NCPPC Prince George's County Parks Department. For display purposes, only parks equal or greater than 2 acres are shown.
	Zone A; AE; AH; AO; OPEN WATER	Areas identified as FEMA flood zones A, AE, AH, AO or Open Water. Flood zones A, AE, AH, and AO represent the extent of the 1-percent annual chance flood (or 100-year flood).
	Zone VE	FEMA flood zone VE represents the extent of the coastal high hazard areas. The VE zone incorporates areas subject to high velocity water including waves. They are defined by the 1% annual chance flood limits (also known as the 100-year flood) and wave effects 3 feet or greater.
	NOAA High Tide Flood Threshold	NOAA-identified areas currently subject to high tide floods, based on derived thresholds. Note that these thresholds may deviate from NOAA’s National Weather Service (NWS) impact thresholds which take into account local flood risk and are used to issue NWS coastal flood watches, warnings, and advisories.

Prince George's County High Tide Flooding Areas of Concern Anacostia River Panel 1 of 1

Key Features

- ▲ DPW&T-Identified Roads and Structures
- Streams
- M-NCPPC Parks

Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers

▨ 311 / 911 Cluster

▭ Municipal Boundary

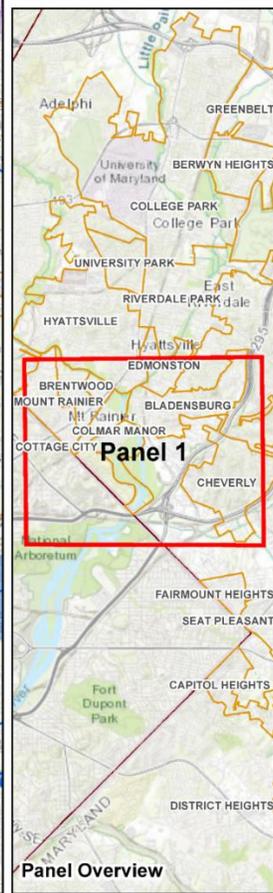
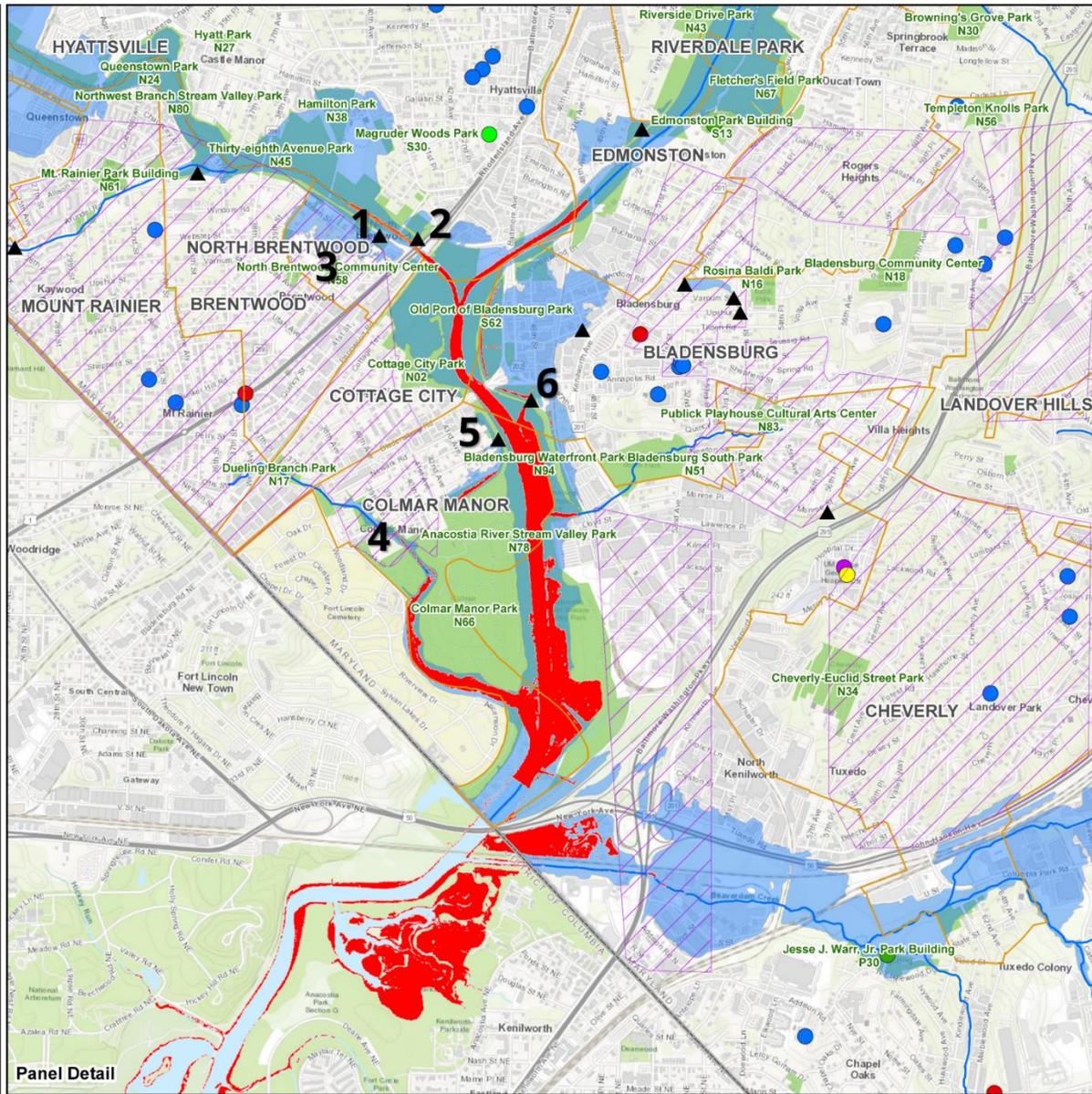
▭ County Boundary

■ NOAA High Tide Flood Threshold

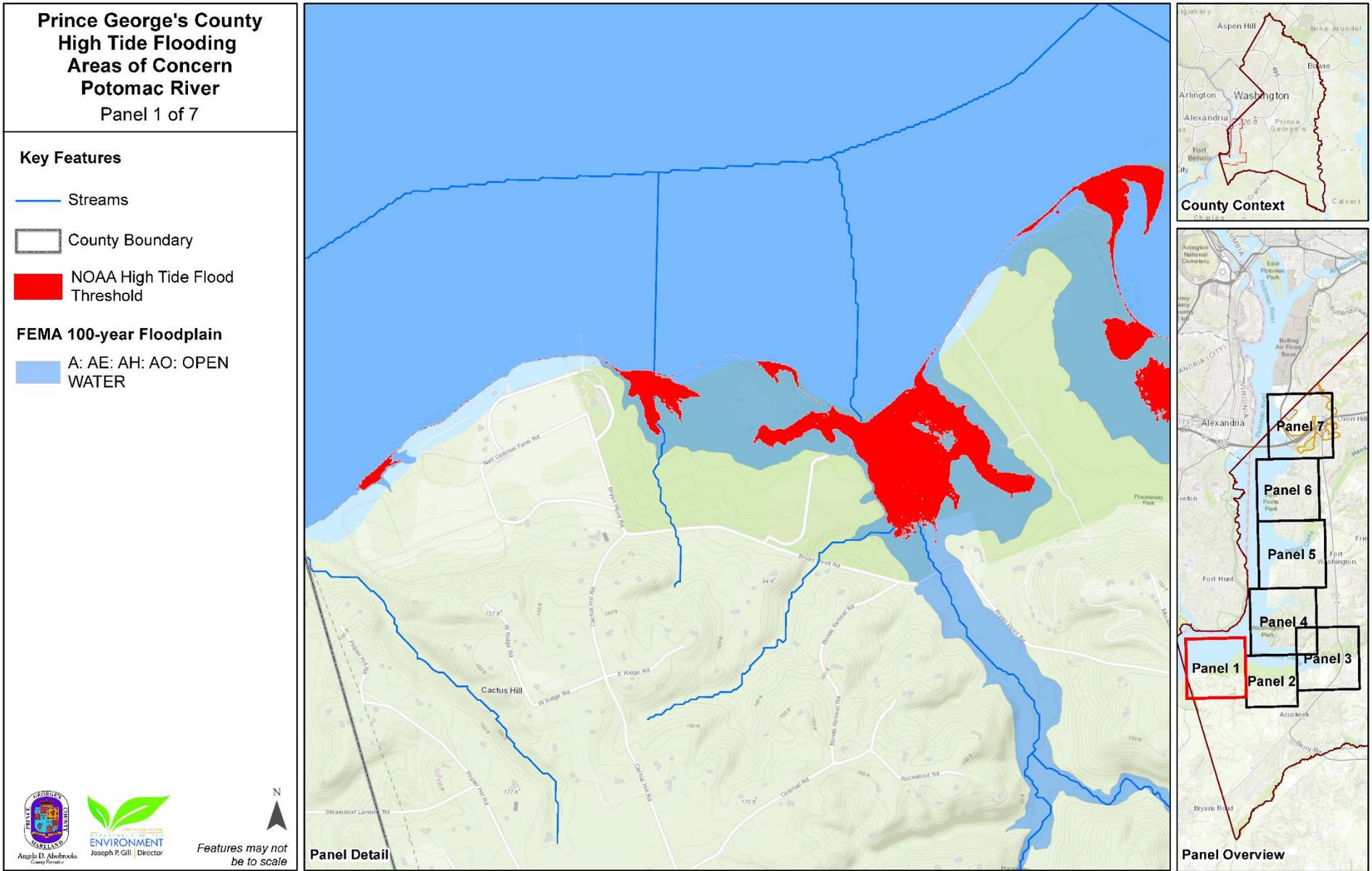
FEMA 100-year Floodplain

A: AE: AH: AO: OPEN WATER

Features may not be to scale



Map Date: December 2020, DoE, SD



**Prince George's County
High Tide Flooding
Areas of Concern
Potomac River
Panel 2 of 7**

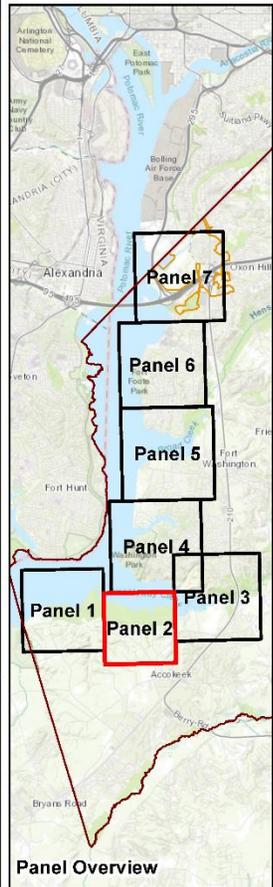
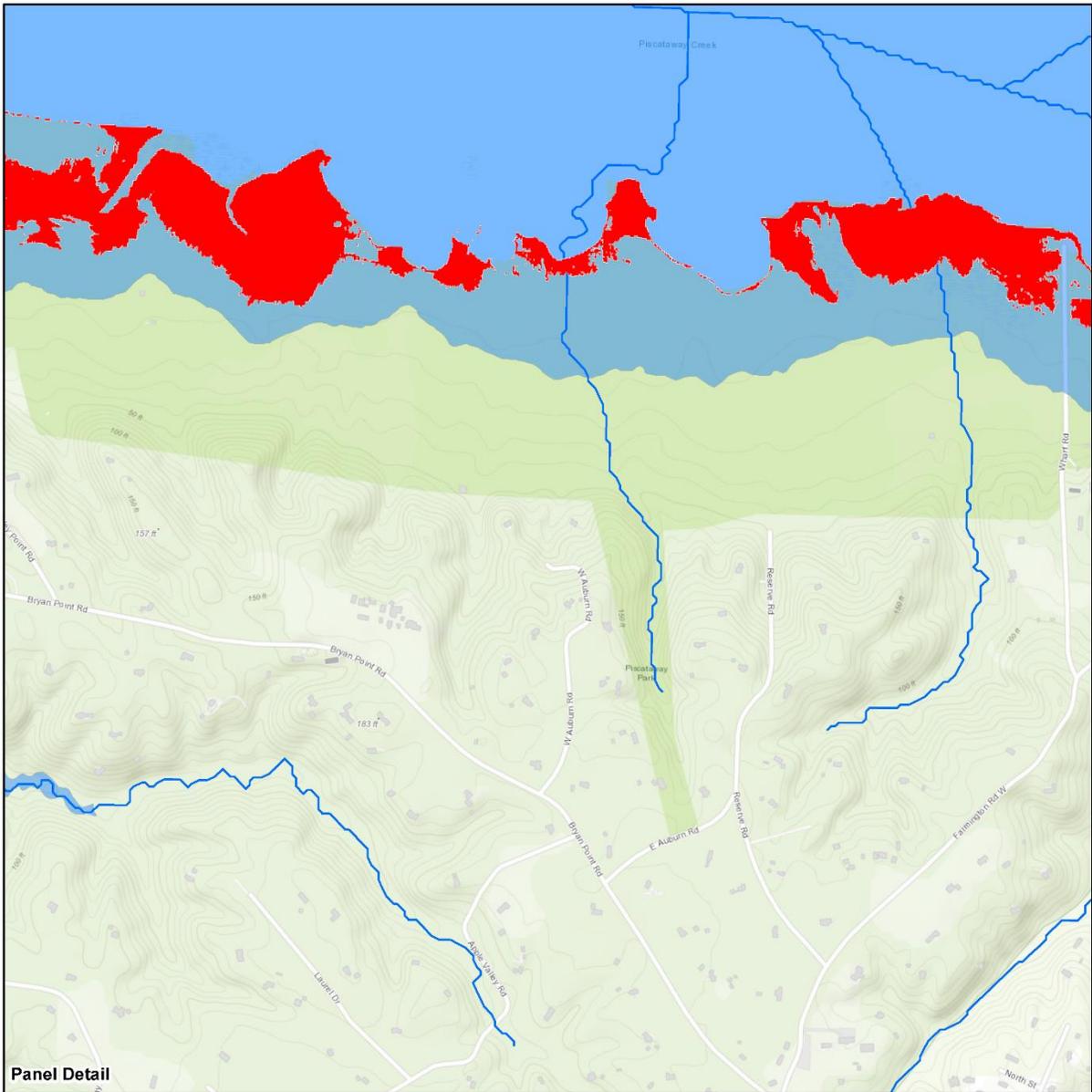
Key Features

- Streams
- County Boundary
- NOAA High Tide Flood Threshold

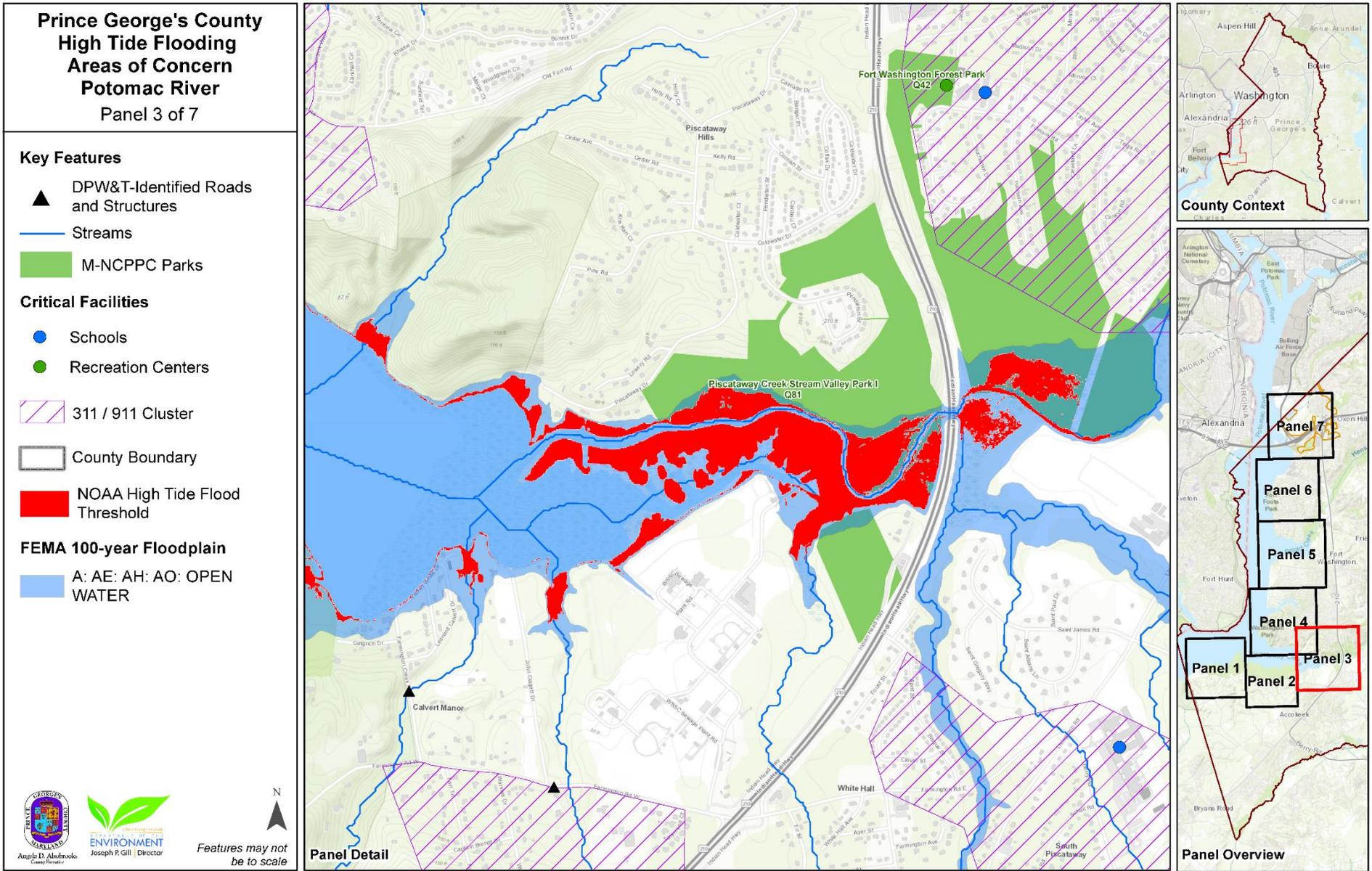
FEMA 100-year Floodplain

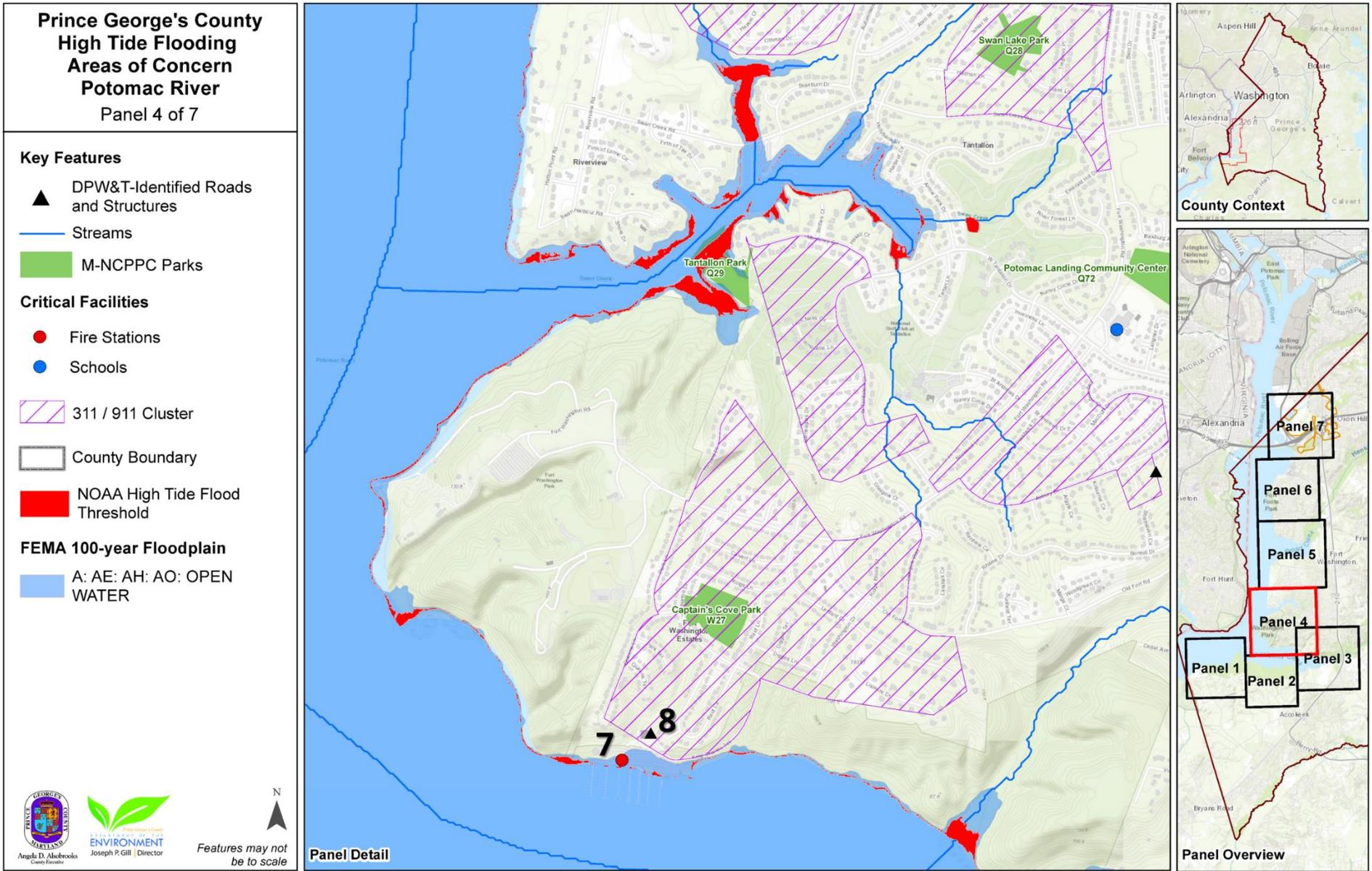
A: AE: AH: AO: OPEN WATER

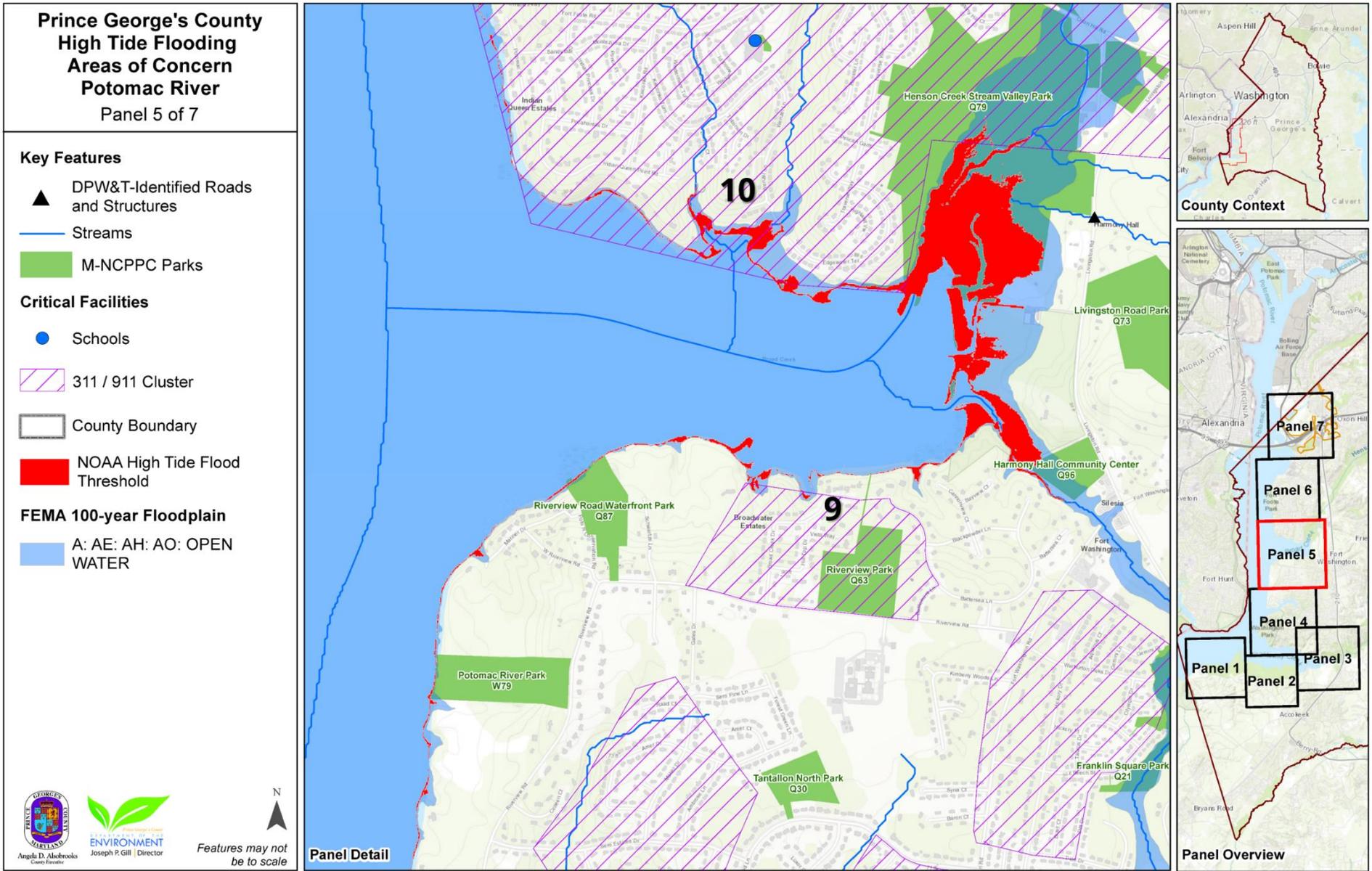
Features may not be to scale

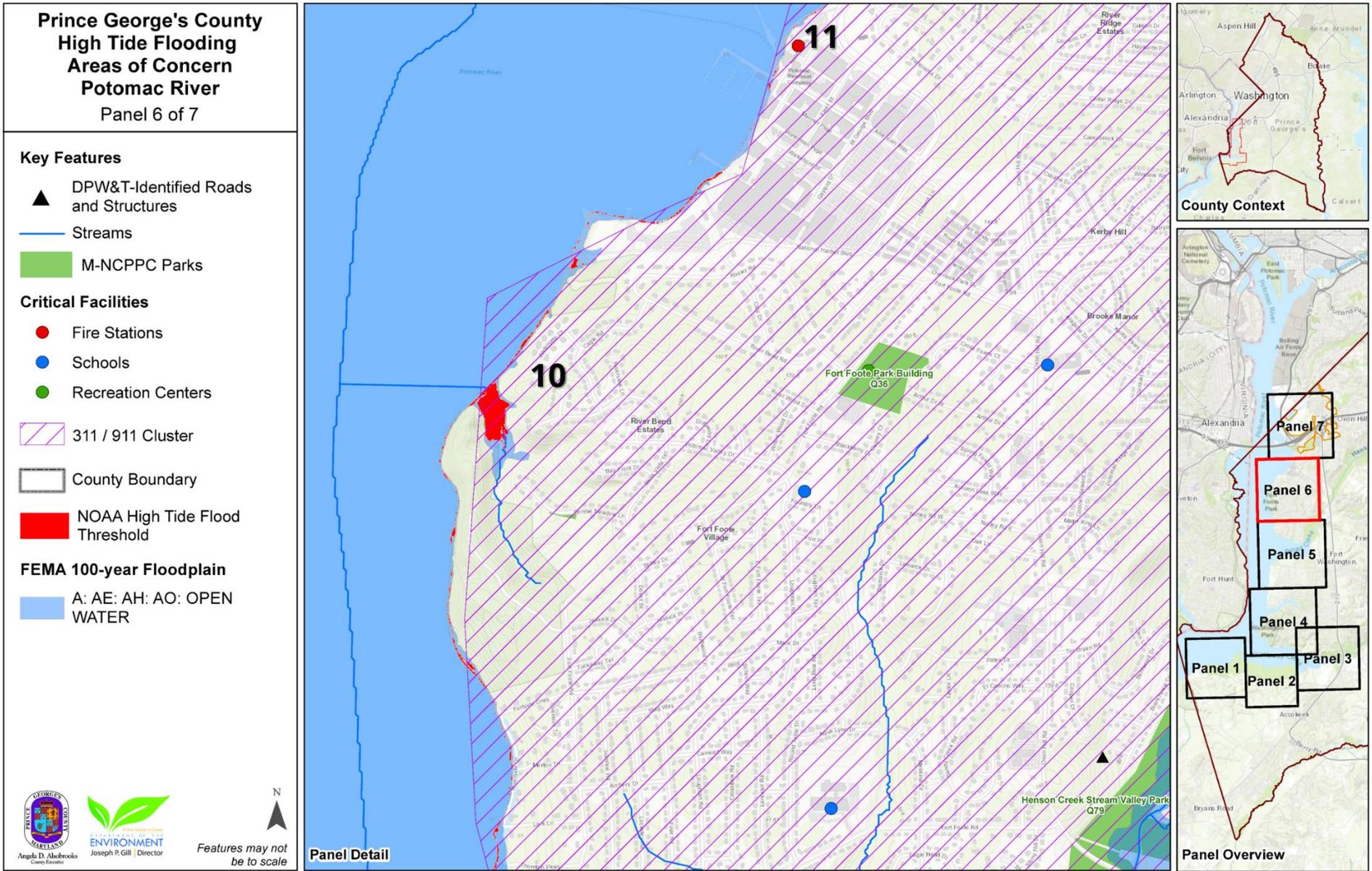


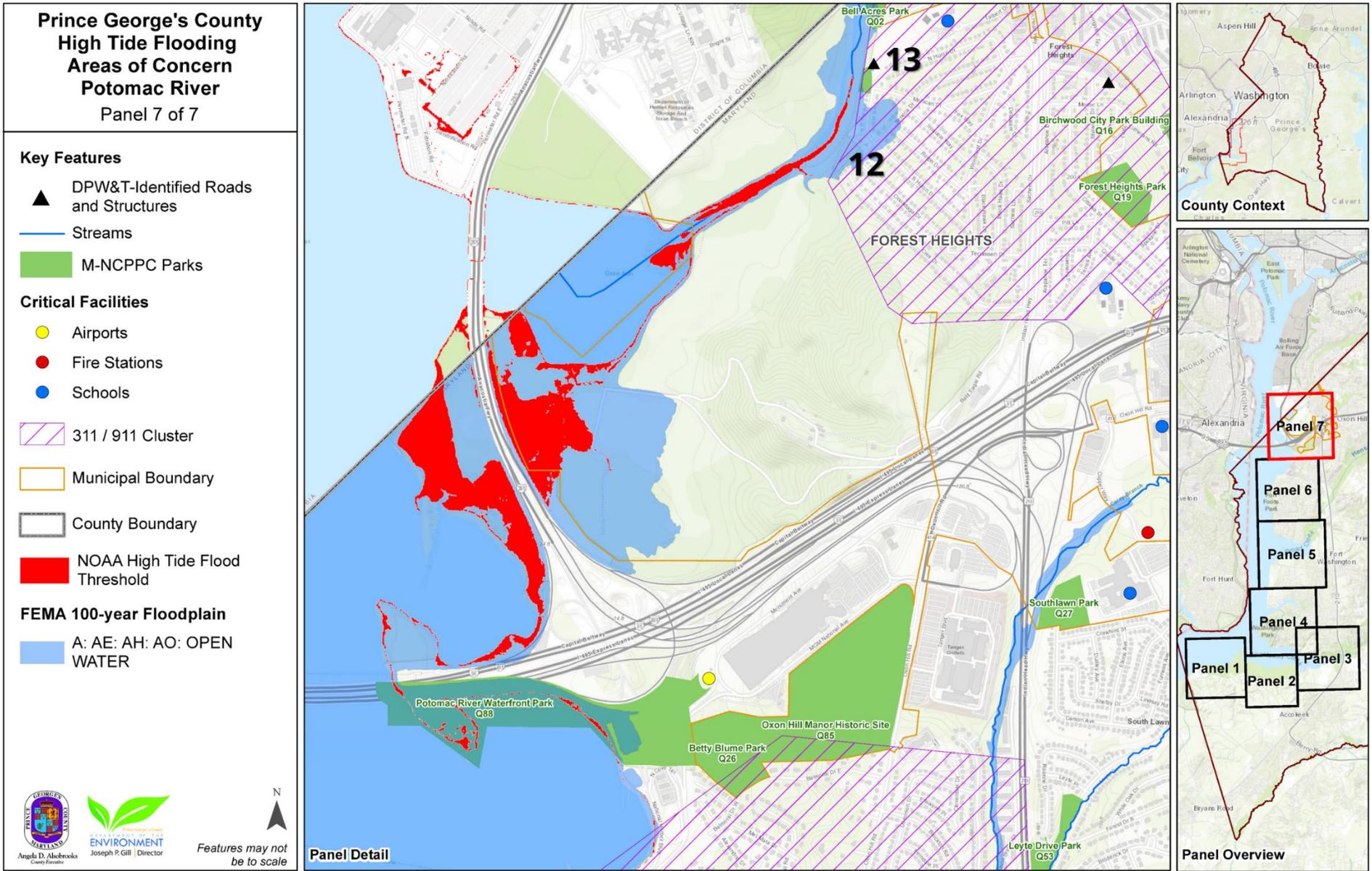
Map Date: December 2020, DoE, SD

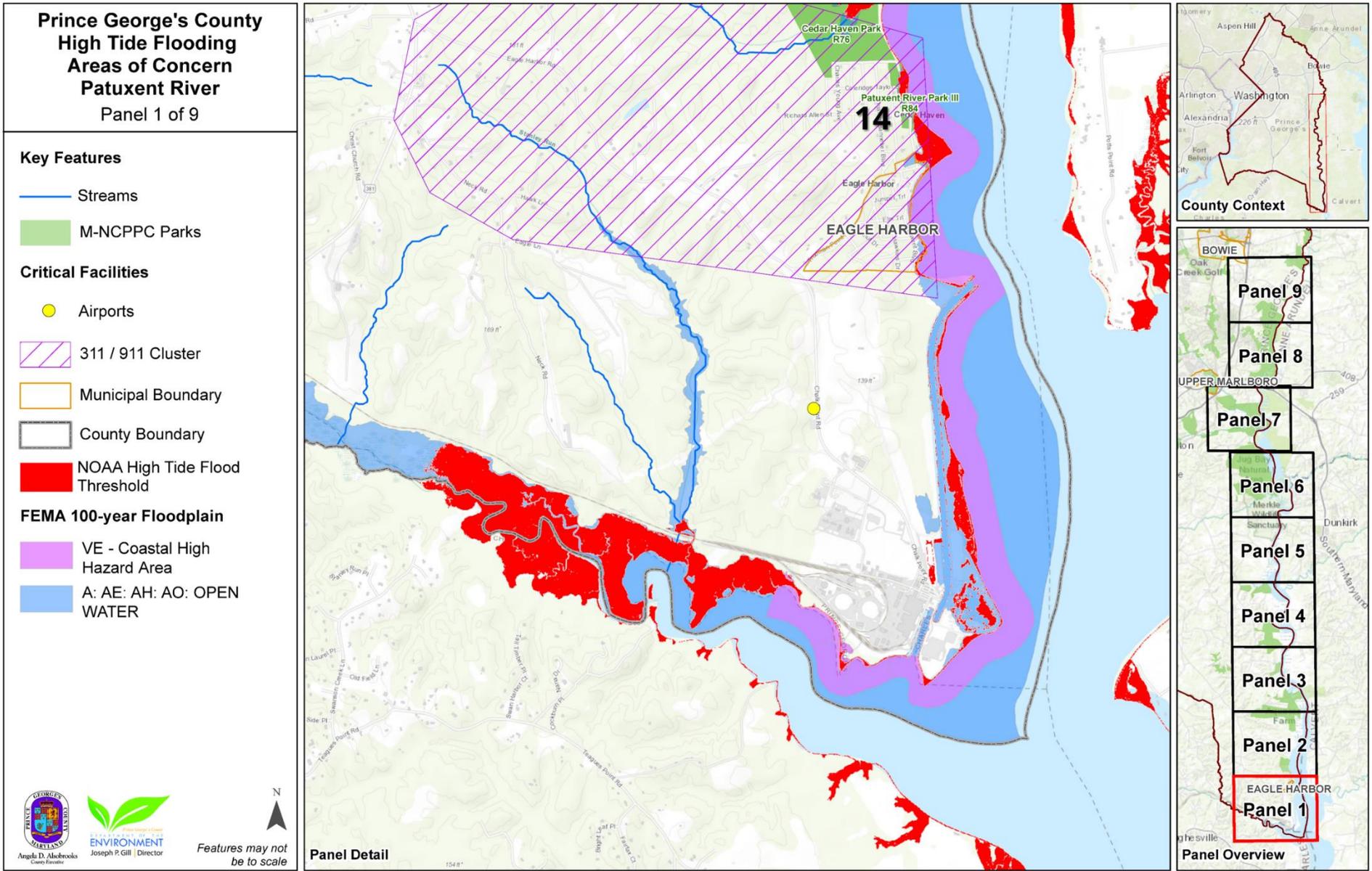


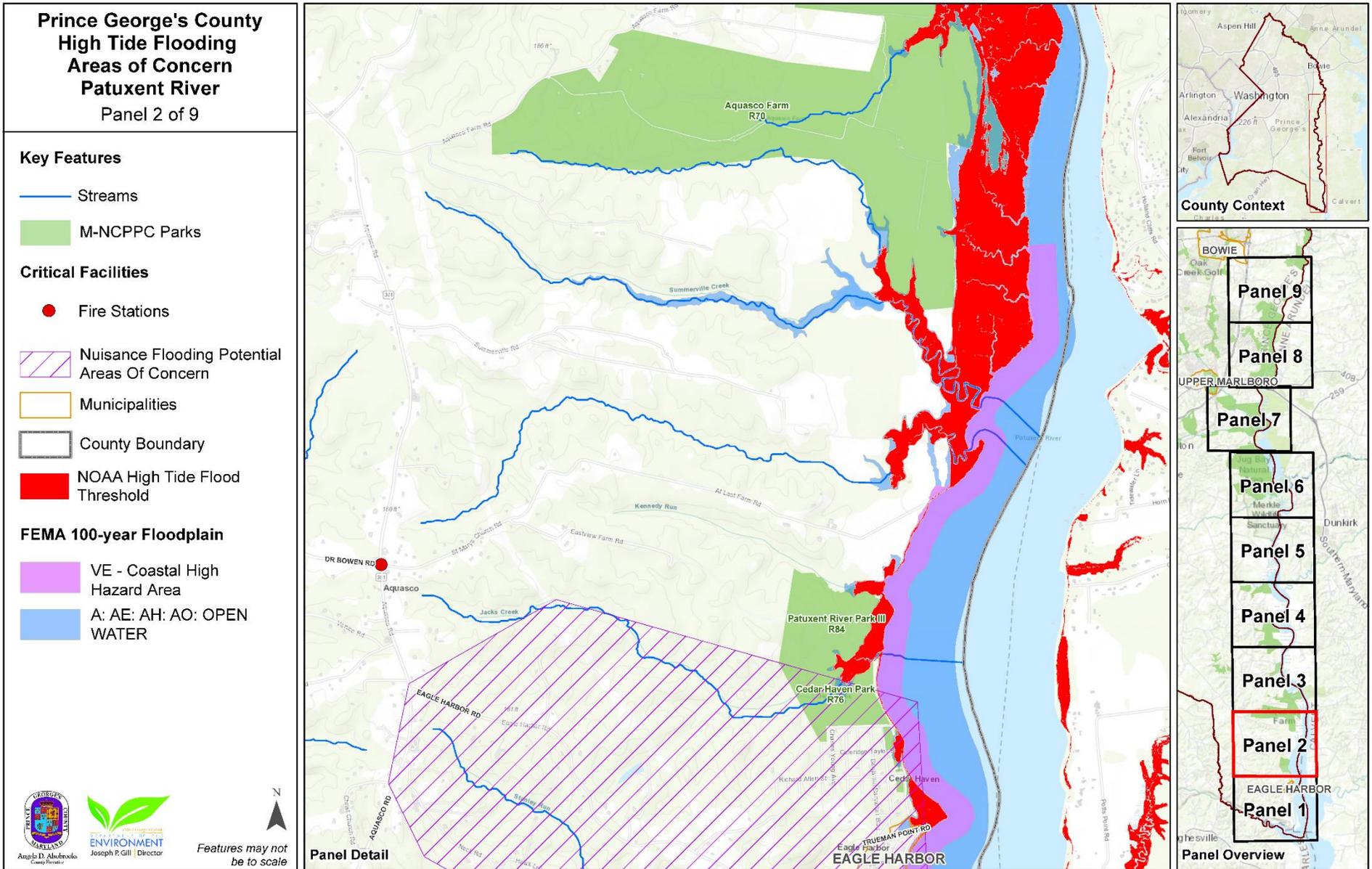












**Prince George's County
High Tide Flooding
Areas of Concern
Patuxent River
Panel 3 of 9**

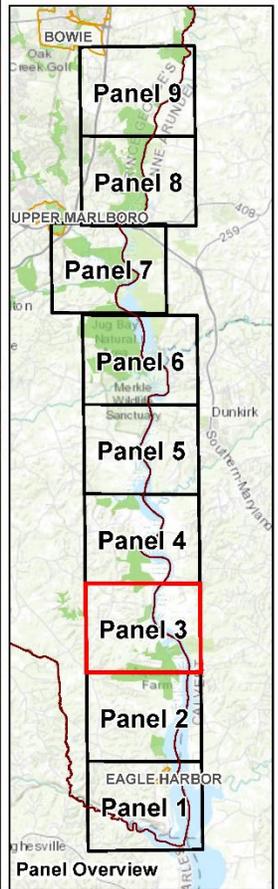
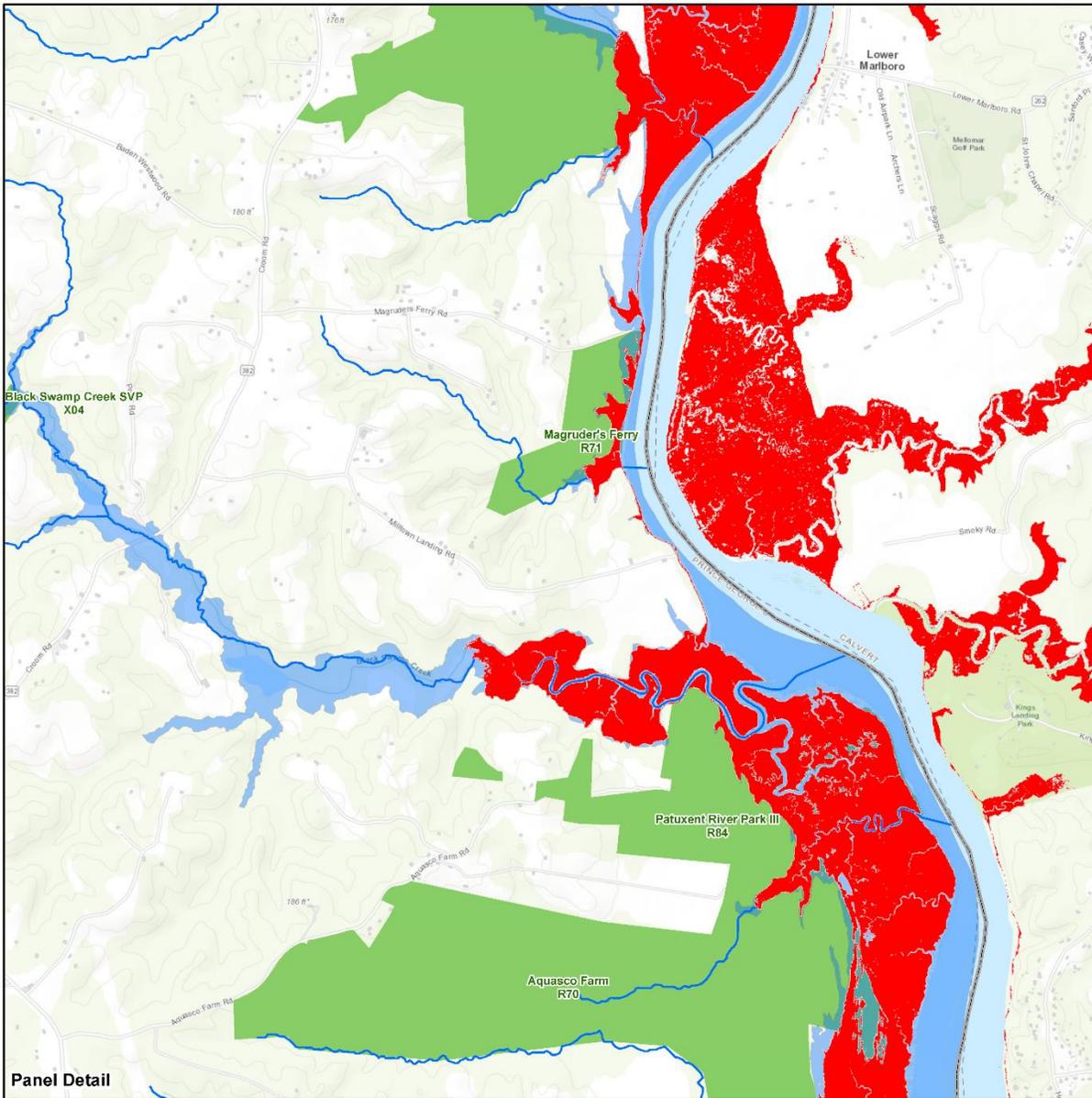
Key Features

- Streams
- M-NCPPC Parks
- County Boundary
- NOAA High Tide Flood Threshold

FEMA 100-year Floodplain

A: AE: AH: AO: OPEN WATER

Features may not be to scale



Map Date: December 2020, DoE, SD

**Prince George's County
High Tide Flooding
Areas of Concern
Patuxent River
Panel 4 of 9**

Key Features

- Streams
- M-NCPPC Parks

Critical Facilities

- Airports
- Fire Stations

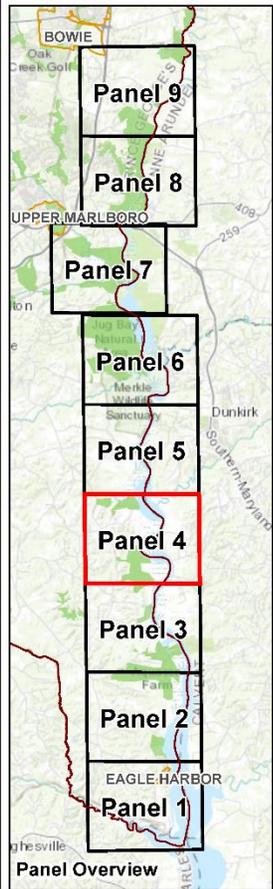
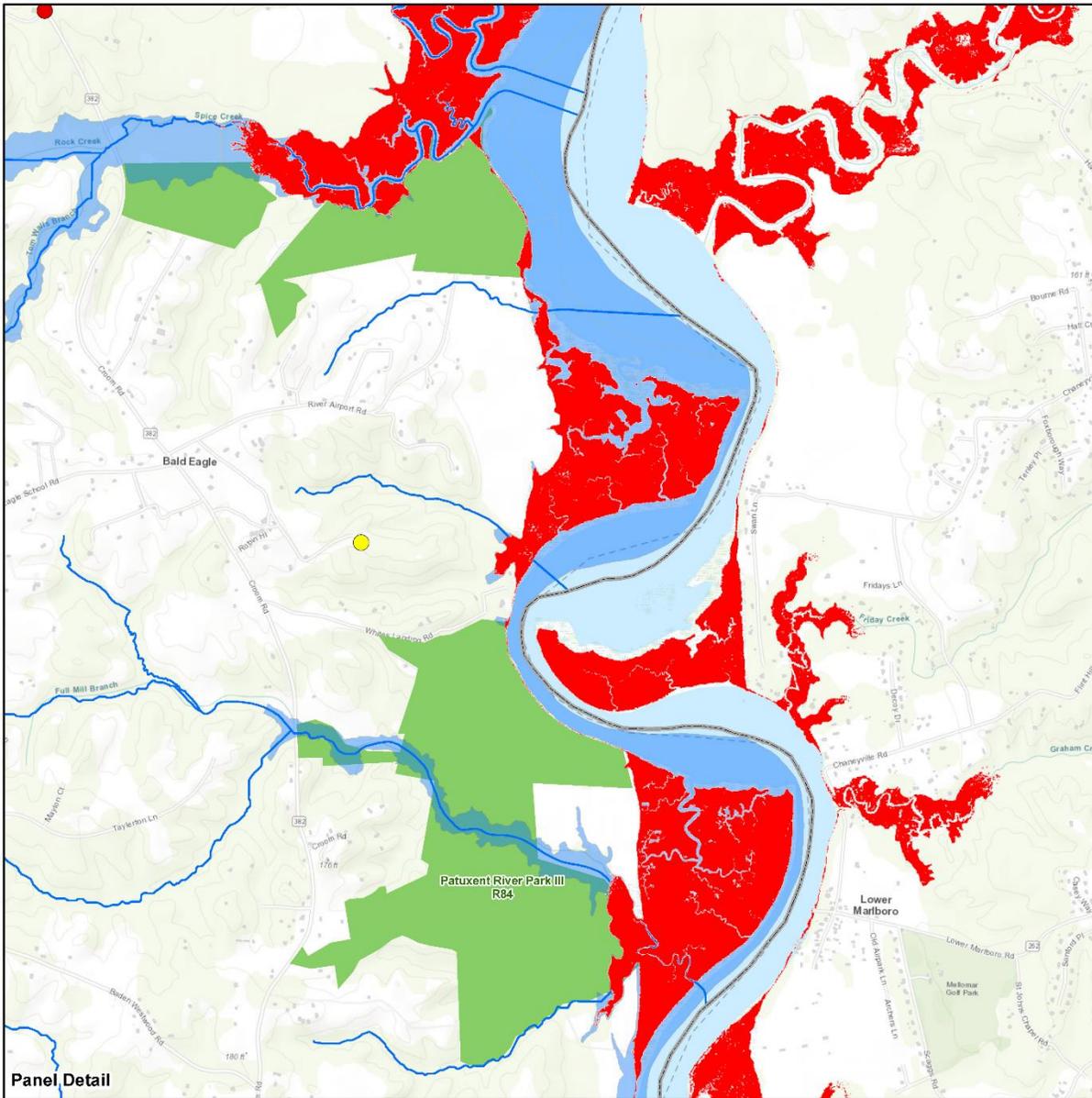
County Boundary

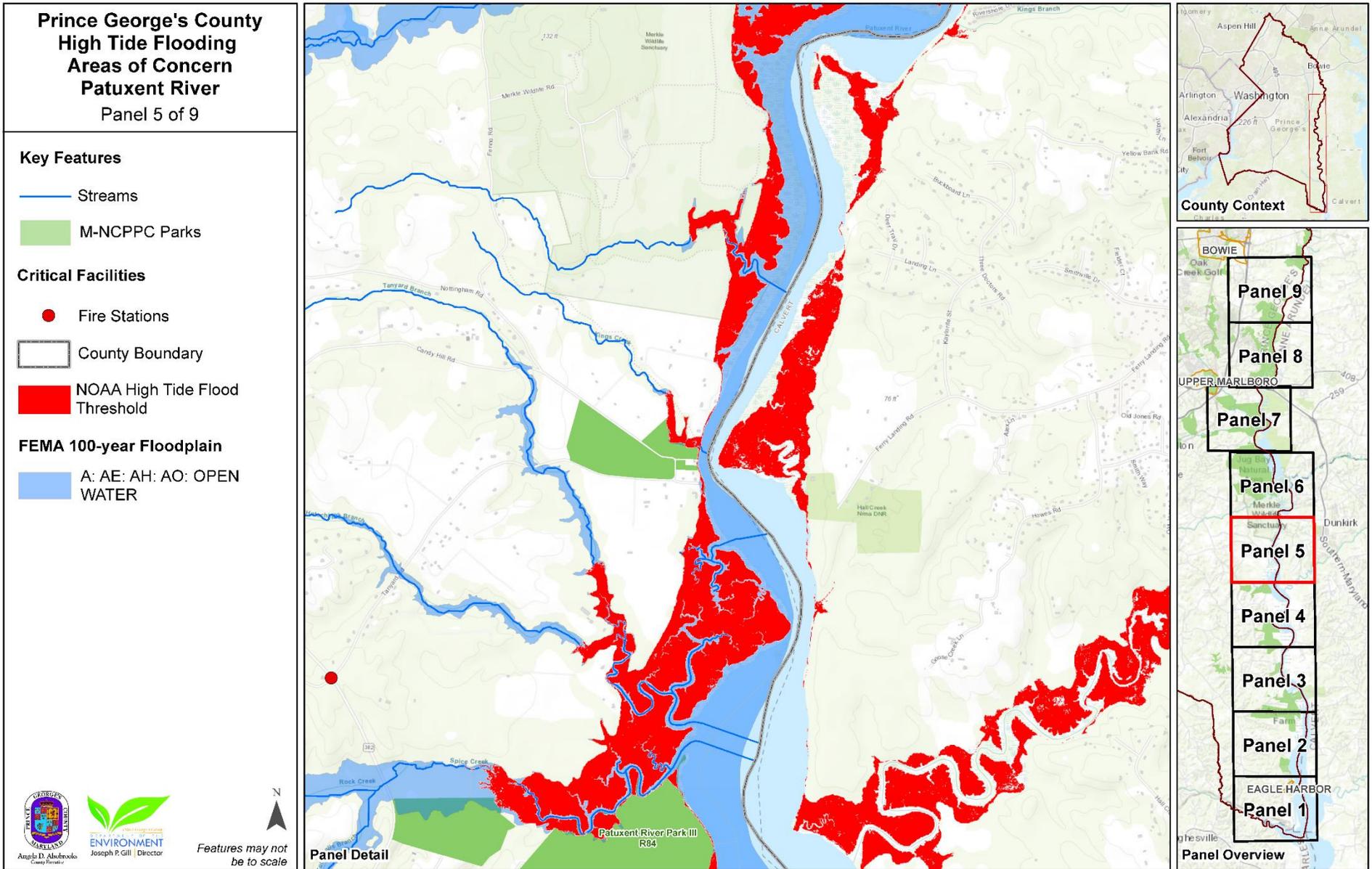
NOAA High Tide Flood Threshold

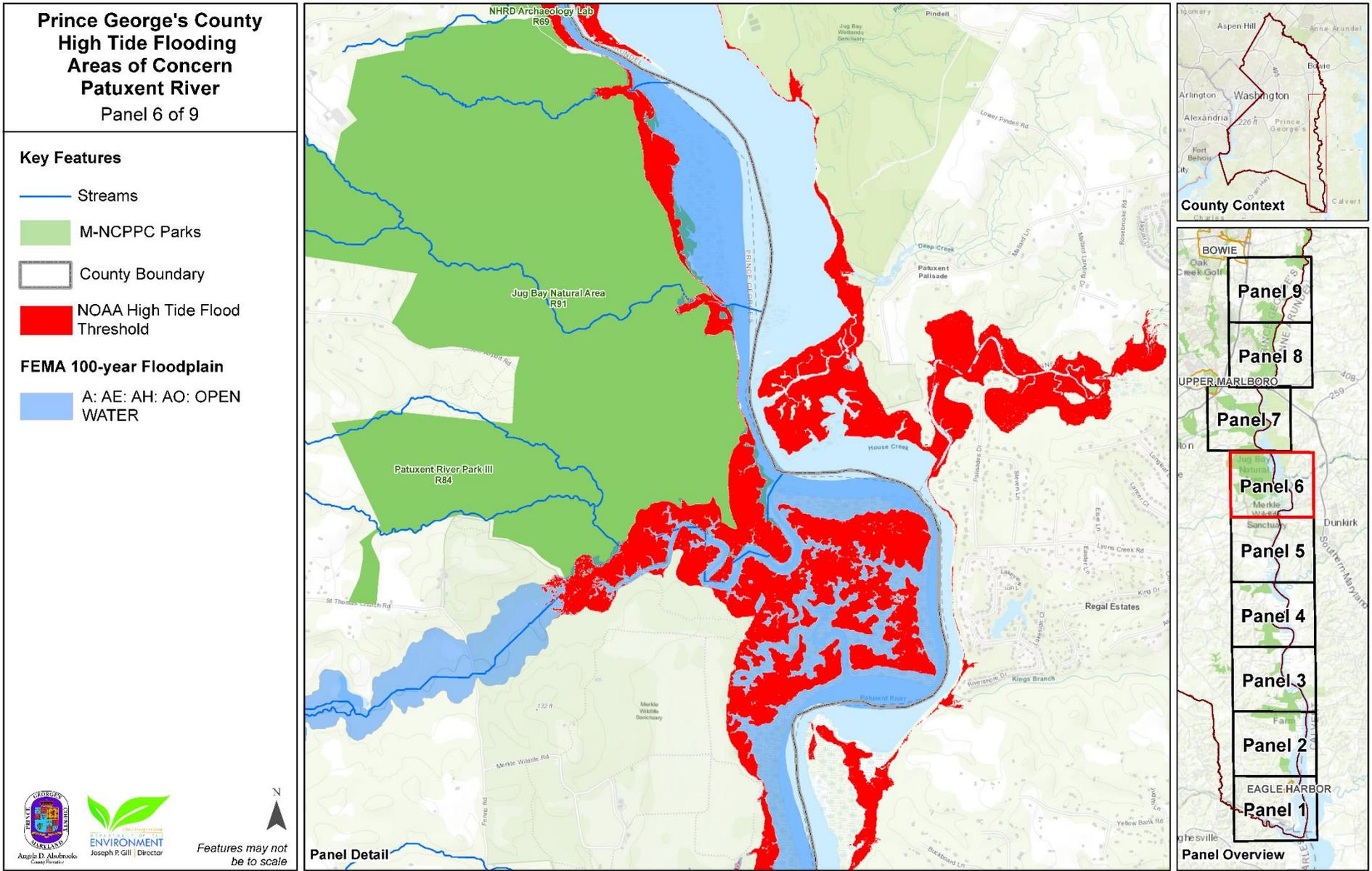
FEMA 100-year Floodplain

A: AE: AH: AO: OPEN WATER

Features may not be to scale







**Prince George's County
High Tide Flooding
Areas of Concern
Patuxent River
Panel 7 of 9**

Key Features

- Streams
- M-NCPPC Parks

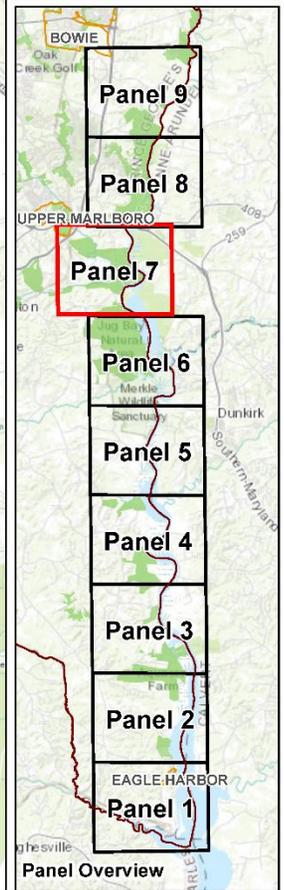
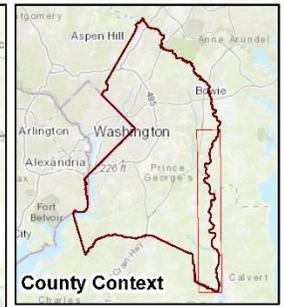
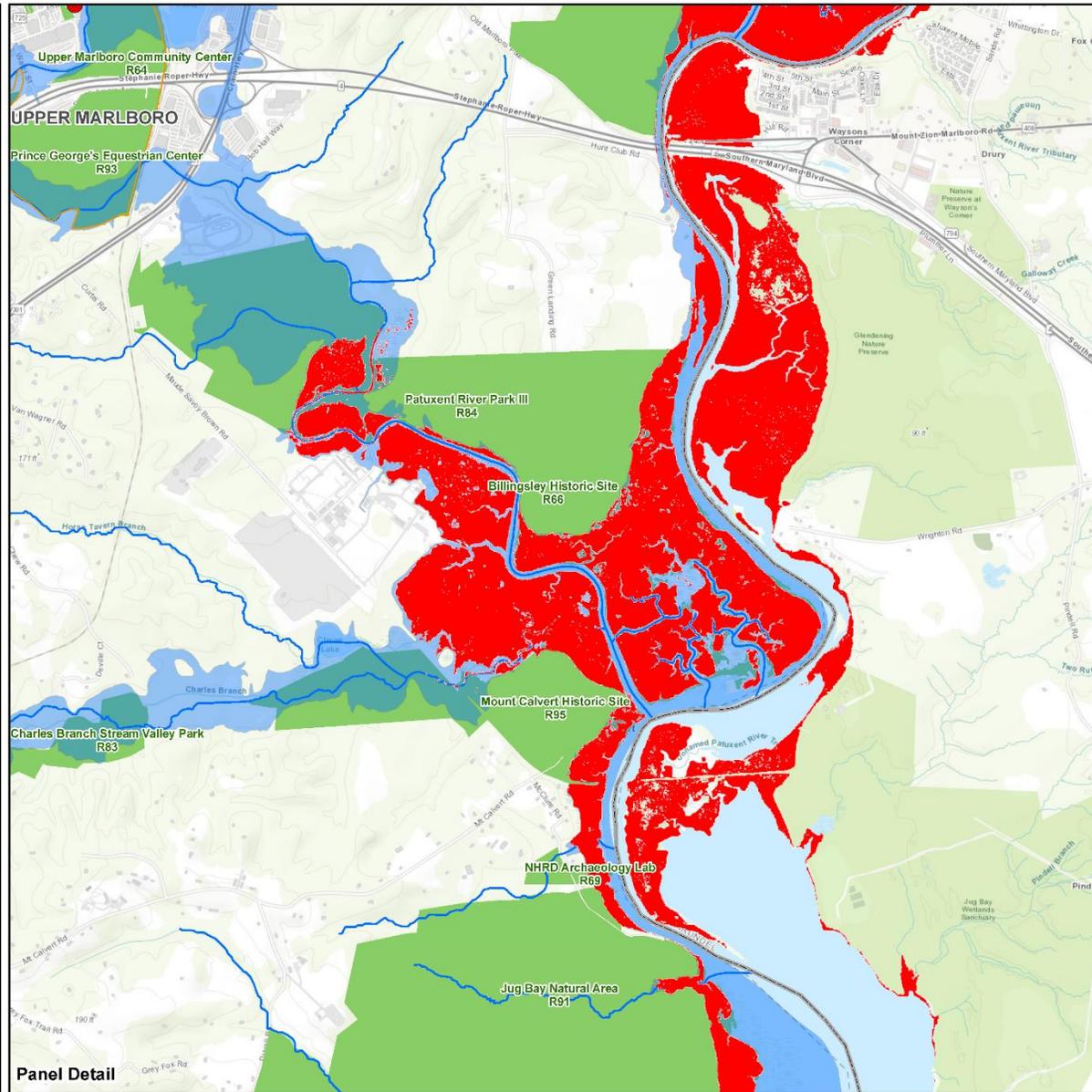
Critical Facilities

- Fire Stations
- Municipal Boundary
- County Boundary
- NOAA High Tide Flood Threshold

FEMA 100-year Floodplain

- A: AE: AH: AO: OPEN WATER

Features may not be to scale



Map Date: December 2020, DoE, SD

