Metropolitan Washington, District Of Columbia (MD, DC, and VA) Coastal Storm Risk Management Feasibility Study

Study Summary Air and Climate Public Advisory Committee September 17, 2018

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US Army Corps of Engineers Baltimore District

BACKGROUND

The District of Columbia metro area was identified in the North Atlantic Coast Comprehensive Study (NACCS) as an area warranting further analysis:

- NACCS completed January 2015: http://www.nad.usace.army.mil/CompStudy.aspx
- Nine focus areas warranting further analysis by USACE
 - Four studies currently underway
- Opportunity for USACE to use existing authority to investigate coastal flooding problems in the District of Columbia metro area



Superstorm Sandy, 2012





Middle Potomac – Washington DC and Metropolitan Area Coastal Flooding, DC, MD, and VA



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COASTAL STORM RISK MANAGEMENT FRAMEWORK

- Who and what is exposed to flood risk?
- Where is the flood risk?
- What are the <u>appropriate strategies</u> and measures to reduce flood risk?
- What is the <u>relative cost</u> of a particular strategy compared to the anticipated risk reduction?
- What data are available to make RISK INFORMED decisions?
- How can the science be advanced/data gaps closed through the study?



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TECHNICAL PRODUCTS SUPPORTING THE FRAMEWORK

(L	NACCS Coastal Storm Risk Management Framework		Technical Products Advanced by NACCS to Close Identified Data Gaps	
10	L	INITIATE ANALYSIS Identify Stakeholders, Partners, and Authorities Identify Constraints and Opportunities Formalize Goals	 Visioning Sessions Report & Focus Area Analyses Institutional & Other Barriers Report 	Proc tool were
	HE NAGCS	CHARACTERIZE EXISTING CONDITIONS Define Physical and Geomorphic Setting Compile Flood Probability Data Establish Baseline Conditions	NACCS GIS Geodatabase Environmental & Cultural Resources Conditions Report	as ma t Co Risk
	CONCEPTUAL LEVEL BY THE NACCS	ANALYZE VULNERABILITY AND RIŠK Map Inundation and Exposure Assess Vulnerability and Resilience Determine Areas of High Risk	Storm Suite Modeling NACCS GIS Geodatabase NACCS Barrier Island Sea Level Rise Inundation Assessment Report	
		IDENTIFY POSSIBLE SOLUTIONS Assess Full Array of Measures Consider Blended Solutions Develop Performance Metrics Establish Decision Criteria	 Natural & Nature-Based Features Report Conceptual Regional Sediment Budget State Appendix Vulnerability Decision Tree 	
	STEPS COMPLET	EVALUATE AND COMPARE SOLUTIONS Develop Cost Estimates Assess Benefits	• Enhanced Depth-Damage Functions for Coastal Storms	itan Washington

ducts, planning s, and models e developed to sist decision kers in going hrough the oastal Storm k Management Framework

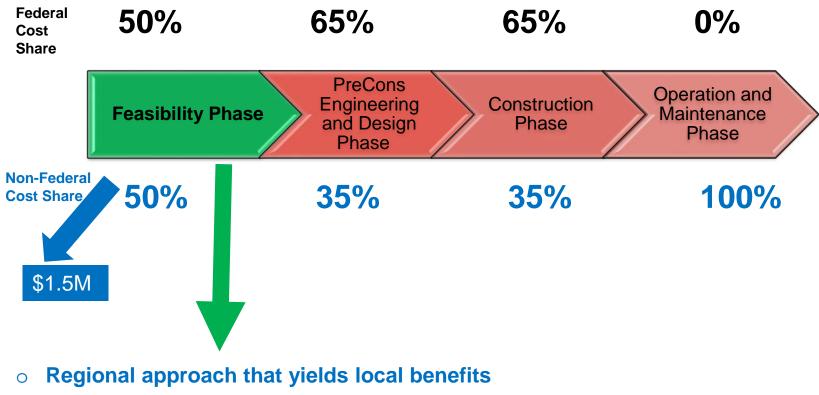
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USACE CIVIL WORKS PROJECT DEVELOPMENT "FEASIBILITY STUDY"



- USACE Feasibility Study end state is one constructible project, \$3M, 3 years to complete
- In the study efforts, *multiple projects* may be identified



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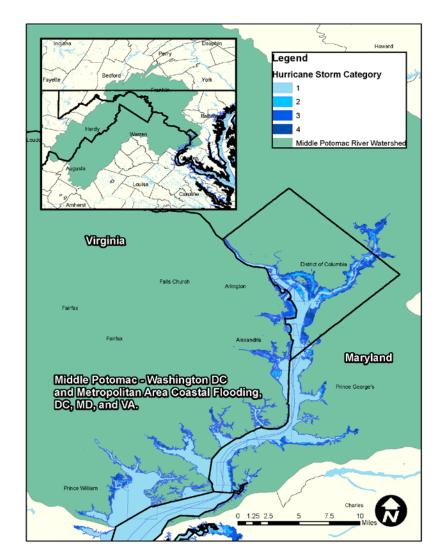


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STATUS

- USACE and MWCOG signed a cost-sharing agreement to conduct the study on 18 July 2017
- Three year study
- \$3M budget (50-50percent federal and nonfederal cost-sharing contributions)
 - NCPC
 - Jurisdictions
 - Other entities





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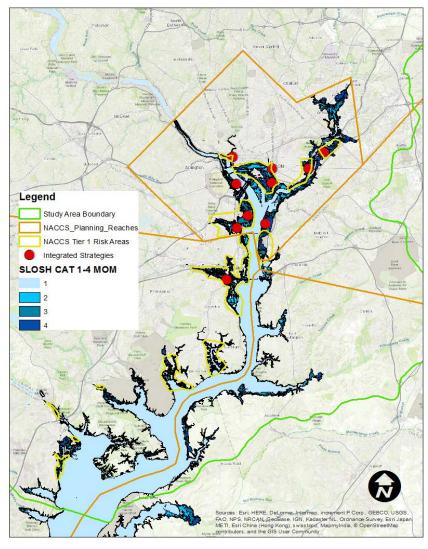
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PURPOSE OF THE STUDY

- Need for comprehensive flood risk assessment
- Shared responsibility of all levels of government
- Rethink approach to adapting to risk
- Improve community resilience and sustainability



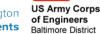




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COLLABORATIVE EFFORT

"No matter how it's done, addressing sea-level rise is expensive. In November, the Army Corps of Engineers told the much-larger city of Norfolk, just across the James River, that it would cost \$1.8 billion to build flood walls, storm-surge barriers and tidal gates around the city. Norfolk has secured a \$120 million grant from the Department of Housing and Urban Development and the Rockefeller Foundation to begin that work....

The city is working on creating bay, the city is working on creating bay, breakwaters in Parts or note and breakwaters or the in or of the bay, ...City officials also are banking on the fact that if their flood-mitigation plans work, property values will rise, boosting tax revenue that could help pay for the effort....

"If we're not proactive, there's going to be a financial impact, as well as civil instability," Tuck said."

https://www.washingtonpost.com/local/virginia-politics/this-coastal-towns-battle-against-sea-level-rise-could-offer-lessons-forothers/2018/07/26/8c7e43a2-8b6c-11e8-85ae-511bc1146b0b_story.html?utm_term=.c6374a0d509c





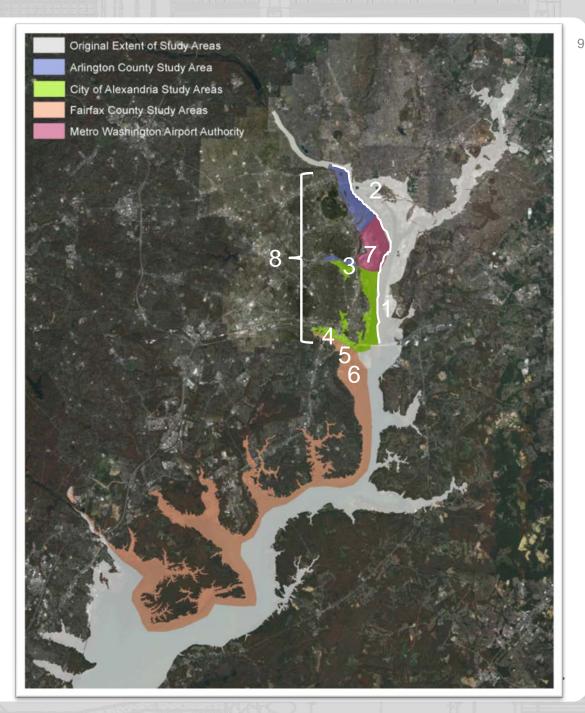
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RISK AREAS

- Potomac waterfront Alexandria
- 2. Potomac waterfront Arlington
- 3. Four Mile Run (less vulnerable than before FRM project but still needs help; Arlington Water Pollution Control Plant; parking areas associated with Reagan Airport)
- 4. Cameron Run (upstream of beltway)
- 5. Huntington (riverine and tidal flooding)
- 6. Belle View (tidal flooding)
- 7. Reagan National Airport
- 8. Metro/transportation in NOVA

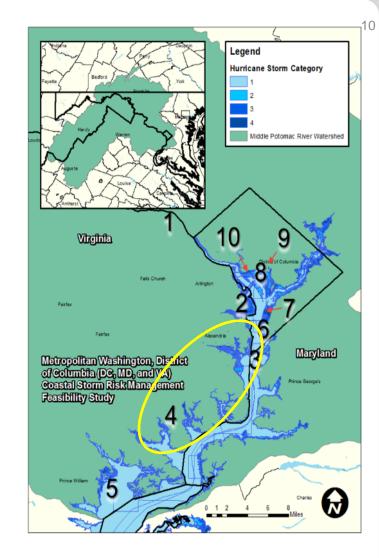
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STUDY HIGHLIGHTS

During this Study:

- Evaluate existing flood risk structures and measures
- o Investigate current/known flooding problems
- Assess flooding problems using future scenarios with respect to coastal storm surge and sea level rise
- Identify a range of possible solutions structural, nonstructural, and natural and nature-based features (e.g., Green Infrastructure)
- Assess Economic Damages:
 - Structure inventory and valuation
 - Number of properties impacted, property type, and demographics (e.g., vulnerable communities)
 - Most studies to date have not used an economic approach
 - Allow jurisdictions to prioritize work efforts and budget decisions – based on quantifiable 'risk assessments'





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EXAMPLE PROJECT TYPES FLOOD MITIGATION MEASURES AND STRATEGIES



This map shows various coastal storm damage risk management strategies communities can use to adapt to increased flood risk by 2100 (at a non-specific location). Although specific communities should consider a range of all possible solutions based on site-specific conditions, not all strategies to reduce coastal storm damage risk are structural solutions. A text-only version of this information is available at the bottom of the page.

http://www.nad.usace.army.mil/CompStudy/





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STUDY - OUTCOMES

1. Comprehensive coastal storm risk management strategies

- **Riverine & precipitation considerations**
- Coastal storm + sea level change scenarios
- Inland drainage connected to coast
- 2. Vulnerability assessment region-wide, plus targeted analysis
 - Critical infrastructure & system interdependencies
 - Determine damage and failure thresholds
- 3. Recommendations for Corps and local actions to address or mitigate risks
 - USACE structural or non-structural projects
 - Potential local actions
 - Locations TBD





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