

WETLANDS WATCH – LOOKING FOR SOLUTIONS



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



Skip Stiles
Wetlands Watch



WETLANDS WATCH OVERVIEW

- Based in Norfolk, work statewide
- Working on Sea Level Rise Adaptation for 12 years – mostly with local governments
- Budget of \$250,000 – 4 staff, 2 CFM's 1 AICP
- Have partnerships with all sectors at all levels – regional, state, federal, private, academic sector



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



COASTAL CONVERSATION HAS CHANGED FROM “WHAT’S GOING ON?” TO “WHAT DO WE DO?”



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

EVIDENCE OF CHANGE

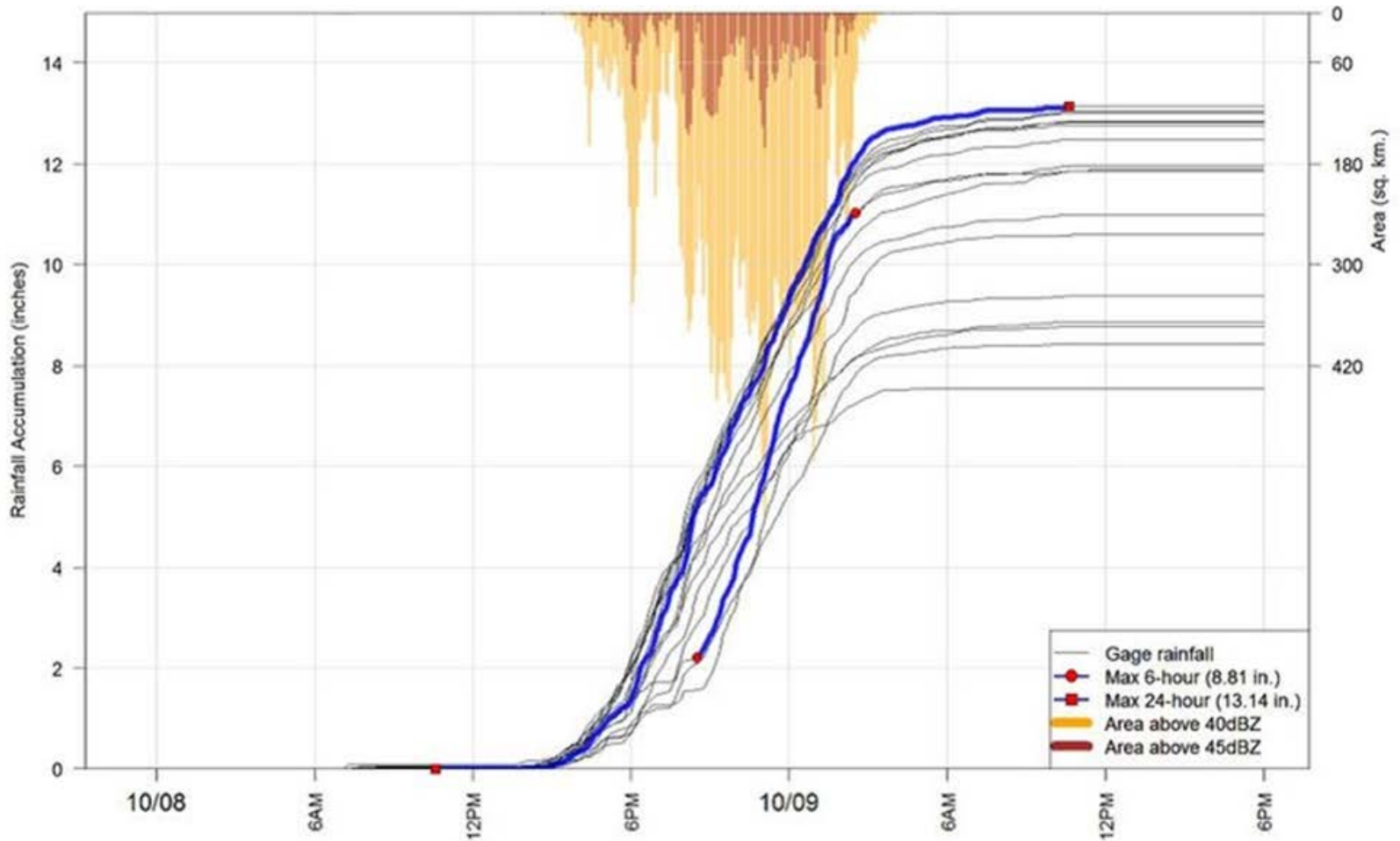


WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

RAINFALL INTENSITY IS INCREASING

MATTHEW

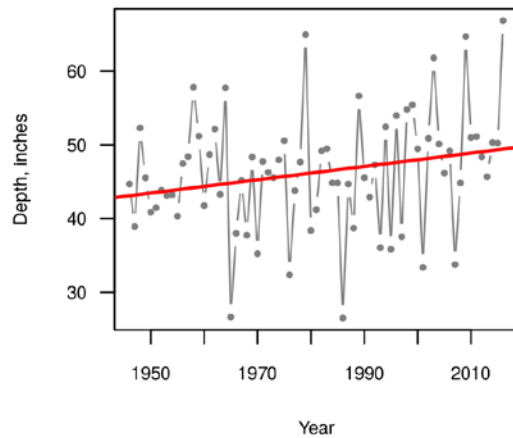


WETLANDS
WATCH

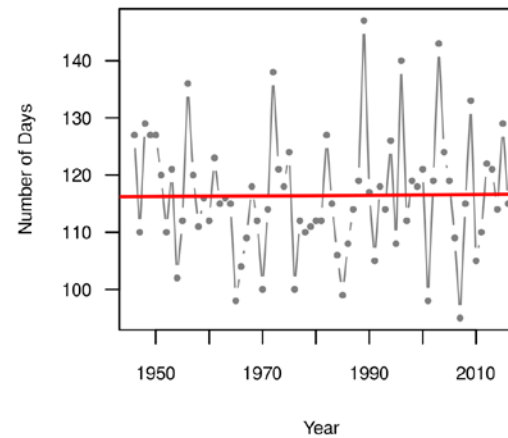
WWW.WETLANDSWATCH.ORG

RAINFALL INTENSITY IS INCREASING

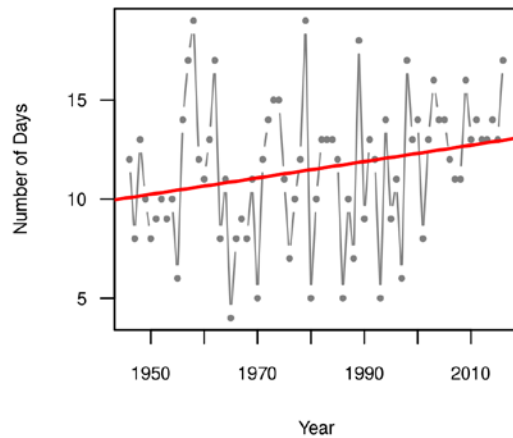
Annual Total Rainfall Depth, $p = 0.051$



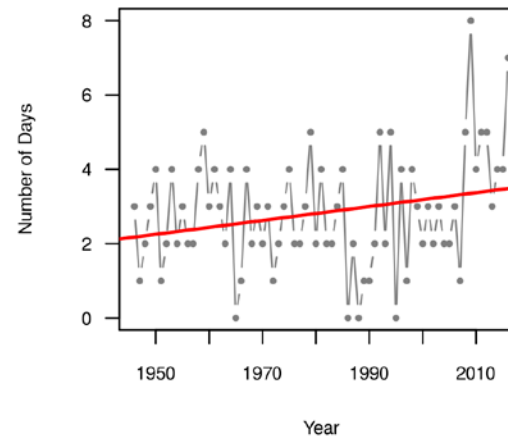
Days with Rainfall > 0 inch. $p = 0.917$



Days with Rainfall > 1 inch. $p = 0.042$



Days with Rainfall > 2 inch. $p = 0.038$



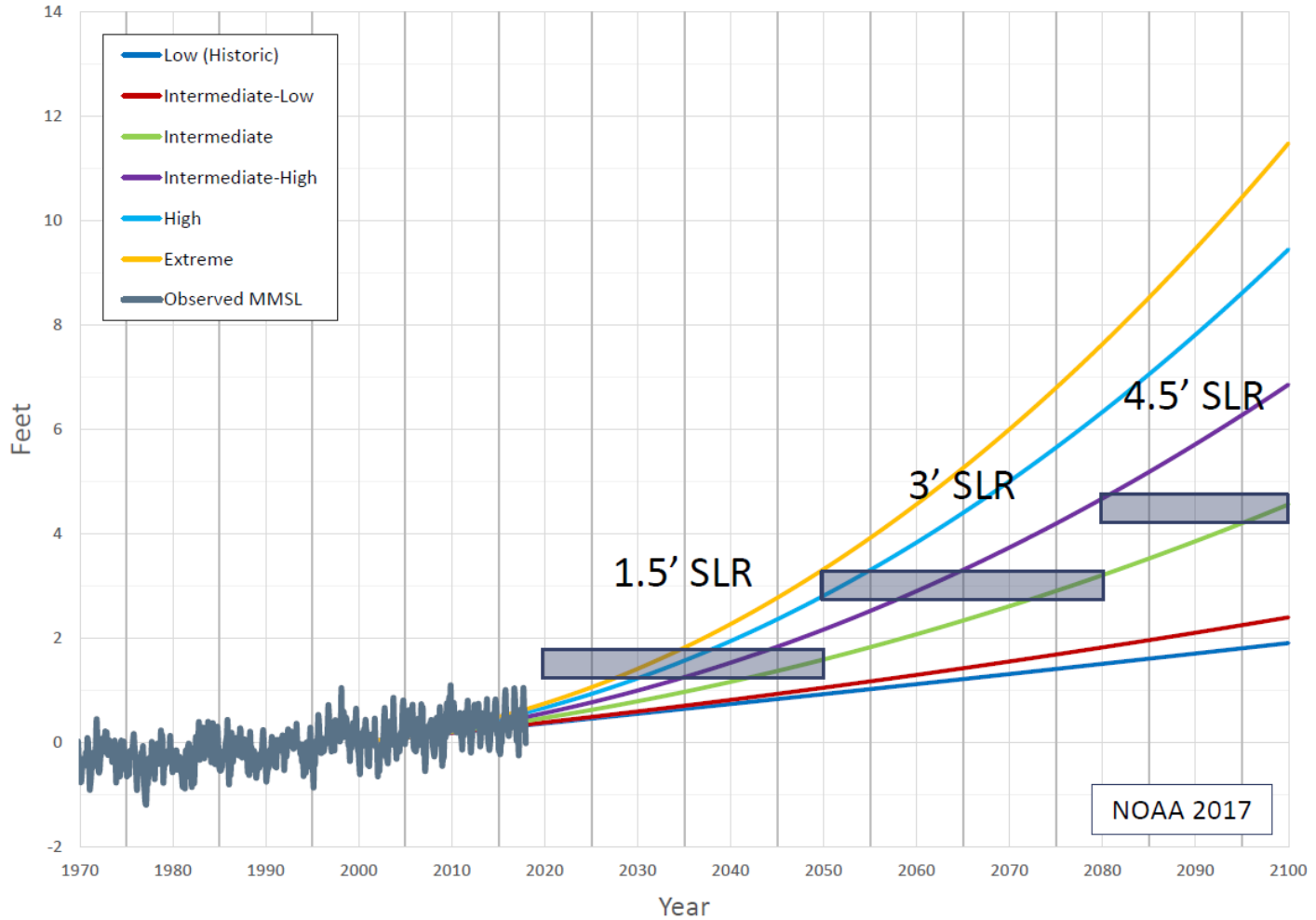
WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

Peter Pommerenk
City of VA Beach

HRPDC - OCTOBER 2018

Projected Relative Sea Level Change at Sewell's Point, Virginia - 2000-2100



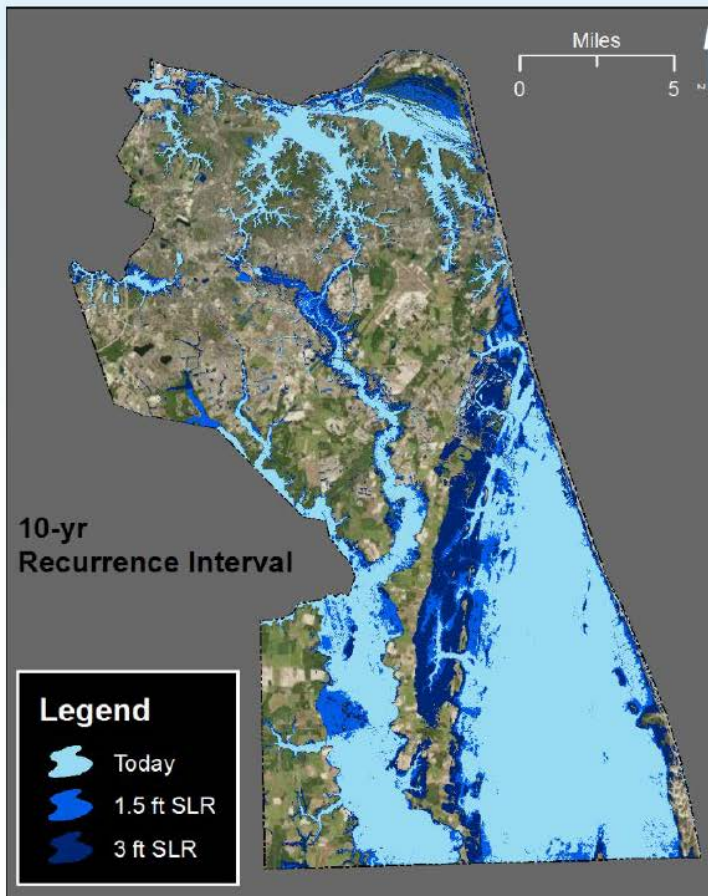
WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

VIRGINIA BEACH STUDY REACHES TO NC



Projected Changes in Coastal Flooding

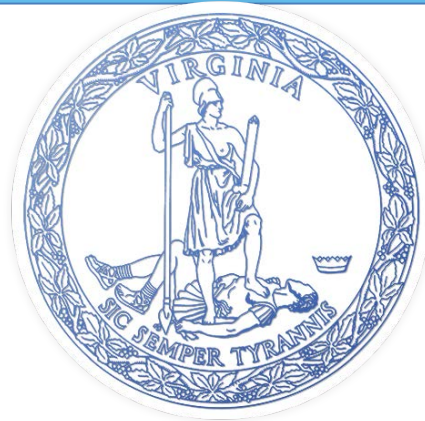


- Areas subject to flooding will increase:
 - In 30-40 years: 1.5 times
 - In 60-70 years: 2 times



WETLANDS
WATCH

VIRGINIA TAKING INITIATIVE ON FLOODING



Gov. Northam Executive Order – Nov 8, 2018
**INCREASING VIRGINIA'S RESILIENCE
TO SEA LEVEL RISE AND NATURAL HAZARDS**

- Studies on State-Owned Buildings
- Study of pre-disaster mitigation/Dept. of Conservation and Recreation
- Guidance to localities on sea level rise rates
- Guidance to localities on freeboard
- Development of a Coastal Resilience Master Plan

(No Interagency Council, unfortunately.)



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

VIRGINIA TAKING INITIATIVE ON FLOODING



Formed a Climate Change Committee to look at:

- Sea Level Rise
 - Septic failure
 - Salt water intrusion into drinking water supplies
- Air Temperature Increase/quality
 - Impact on vulnerable populations
- Water Temperature Increase/quality
 - Impact on drinking water quality
- Extreme weather events



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



DoD BEING LOOKED AT FOR SOLUTIONS

115TH CONGRESS }
2d Session

HOUSE OF REPRESENTATIVES

{ REPORT
115-???

JOHN S. McCAIN
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2019

CONFERENCE REPORT

TO ACCOMPANY

H.R. 5515



JULY --, 2018.—Ordered to be printed



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

DoD BEING LOOKED AT FOR SOLUTIONS

2019 DoD Auth - Public Law No: 115-232.

<https://www.congress.gov/bill/115th-congress/house-bill/5515/text>

SEC. 2805. UPDATES AND MODIFICATIONS TO DEPARTMENT OF DEFENSE FORM 1391, UNIFIED FACILITIES CRITERIA, AND MILITARY INSTALLATION MASTER PLANS.

(a) FLOOD RISK DISCLOSURE FOR MILITARY CONSTRUCTION

(Construction within 100-year floodplain= 2' freeboard for non-mission critical and 3' for mission critical)



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

DoD BEING LOOKED AT FOR SOLUTIONS

SEC. 2805. UPDATES AND MODIFICATIONS TO DEPARTMENT OF DEFENSE FORM 1391, UNIFIED FACILITIES CRITERIA, AND MILITARY INSTALLATION MASTER PLANS.

“(e) (8) MILITARY INSTALLATION RESILIENCE.— The term ‘military installation resilience’ means the **capability of a military installation to avoid, prepare for, minimize the effect of, adapt to, and recover from extreme weather events, or from anticipated or unanticipated changes in environmental conditions**, that do, or have the potential to, adversely affect the military installation or essential transportation, logistical, or other necessary resources outside of the military installation that are necessary in order to maintain, improve, or rapidly reestablish installation mission assurance and mission-essential functions.”.

f) ADJUSTMENT AND DIVERSIFICATION ASSISTANCE FOR RESPONDING TO THREATS TO THE RESILIENCE OF A MILITARY INSTALLATION
(Makes threats to resilience eligible for Office of Economic Assistance programs – Joint Land Use Studies, etc.)



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

DoD BEING LOOKED AT FOR SOLUTIONS

SEC. 2861. DEFENSE COMMUNITY INFRASTRUCTURE PILOT PROGRAM.
(Grant program with a 70/30 match)

“... to address **deficiencies in community infrastructure supportive of a military installation**, if the Secretary determines that such assistance will enhance the military value, resilience, or military family quality of life at such military installation. “

The term ‘community infrastructure’ means any transportation project; school, hospital, police, fire, emergency response, or other community support facility; or water, waste-water, telecommunications, electric, gas, or other utility infrastructure project that is located off of a military installation and owned by a State or local government.



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

DoD BEING LOOKED AT FOR SOLUTIONS

SEC. 2865. DEFENSE ACCESS ROADS RELATING TO CLOSURES DUE TO SEA LEVEL FLUCTUATION AND FLOODING.

"(i) Beginning in fiscal year 2019, funds appropriated for the purposes of this section shall be available to pay the cost of repairing damage caused to, and for any infrastructure to **mitigate the risks posed to, highways by recurrent flooding and sea level fluctuation**, if the Secretary of Defense shall determine that continued access to a military installation has been impacted by past flooding and mean sea level fluctuation."



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

JLUS STUDIES IN HAMPTON ROADS



Norfolk and Virginia Beach

Joint Land Use Study—Fact Sheet #1

Portsmouth Chesapeake JLUS - started

St. Eustis JLUS – completed 2018



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

OUR PROGRAMS, TOOLS, AND ACTIVITIES



Rising seas endanger Virginia's tidal wetlands- learn about our adaptation efforts here

[LEARN MORE](#)



Helping localities protect, enhance, and restore open space in floodplains

[LEARN MORE](#)



Creating resilient landscapes and shorelines with nature-based solutions

[LEARN MORE](#)



85% of the Chesapeake Bay's shoreline is privately owned- find out how to be a steward of wetlands

[LEARN MORE](#)



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



FIND PROBLEMS/BARRIERS AND SEEK SOLUTIONS

No pre-disaster plans, at a community scale, that focus on ecosystem services. Not enough professionals in the design/build community with needed experience.

Hold a resilience design effort in a tidal shoreline community, using state university students, to see if we can develop practical approaches.



TIDEWATER RISING RESILIENCY DESIGN CHALLENGE

Co



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG

Willie Pa

FIND PROBLEMS/BARRIERS AND SEEK SOLUTIONS

No guidance to Virginia's shoreline localities from state on adaptation and no policy tools provided for addressing sea level rise.

Develop and maintain a web-based Virginia local government guide to adaptation. Promote solutions in one-on-one sessions with local government staff.



SEA LEVEL RISE ADAPTATION GUIDE

The Guide is broken down into four types of Adaptation Actions, Planning, Regulatory, Financial, and Construction.



Planning

- Comprehensive Plan
- Green Infrastructure Plan
- Long Range Transportation Plan
- Hazard Mitigation Plan
- Capital Improvement Program



Financial

- Property Acquisition and Demolition
- Conservation Easement
- Rolling Easement
- Land Use Value Assessment
- Transfer of Development Rights
- Purchase of Development Rights



Regulatory

- Resilient Zoning
- Floodplain Management
- Chesapeake Bay Preservation Act & Primary Dune Law
- Building Code
- MS4 Stormwater Management
- non-MS4 Stormwater Management



Construction

- Design Standards
- Hard Armoring
- Soft Armoring
- Beach Replenishment
- Structure Elevation
- Freeboard Requirements



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



FIND PROBLEMS/BARRIERS AND SEEK SOLUTIONS

High flood mitigation need and low FEMA funding puts flooded properties in a long waiting line = 188 years in Norfolk!

Work with legislators to establish and fund the Virginia Shoreline Resiliency Fund.



FLOOD DAMAGE MITIGATION – NEED AND OPPORTUNITY

TABLE 2 - REPETITIVE LOSS DATA BY LOCALITY

LOCALITY	# OF REPETITIVE LOSS PROPERTIES	AVERAGE COST OF MITIGATION	TOTAL COST OF MITIGATION	AVERAGE ANNUAL FEMA FUNDING	# OF YEARS TO MITIGATE W/ FEMA FUNDING ALONE
Chesapeake	409	\$250,000	\$102,250,000	\$787,500	130 years
Hampton	863	\$75,000*	\$64,725,000	\$833,333	78 years
Norfolk	900	\$162,500	\$146,250,000	\$778,000	188 years
Portsmouth	186	\$75,000*	\$13,950,000	NA	NA
Virginia Beach	561	\$185,000	\$103,785,000	\$725,000	143 years
TOTAL	2,919	NA	\$430,960,000	NA	NA

*No average mitigation costs were available, so the statewide average of \$75,000 was used.

FEMA Funding Levels:

- Hampton has received \$2,500,000 since 2011
- Chesapeake has received \$6,300,000 since 2006
- Norfolk has received \$3,890,000 since 2009
- Virginia Beach has received \$2,900,000 since 2010

Note: The most recent data available for Chesapeake, Norfolk, and Virginia Beach is September 2014; for Hampton, data is from 2013.



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



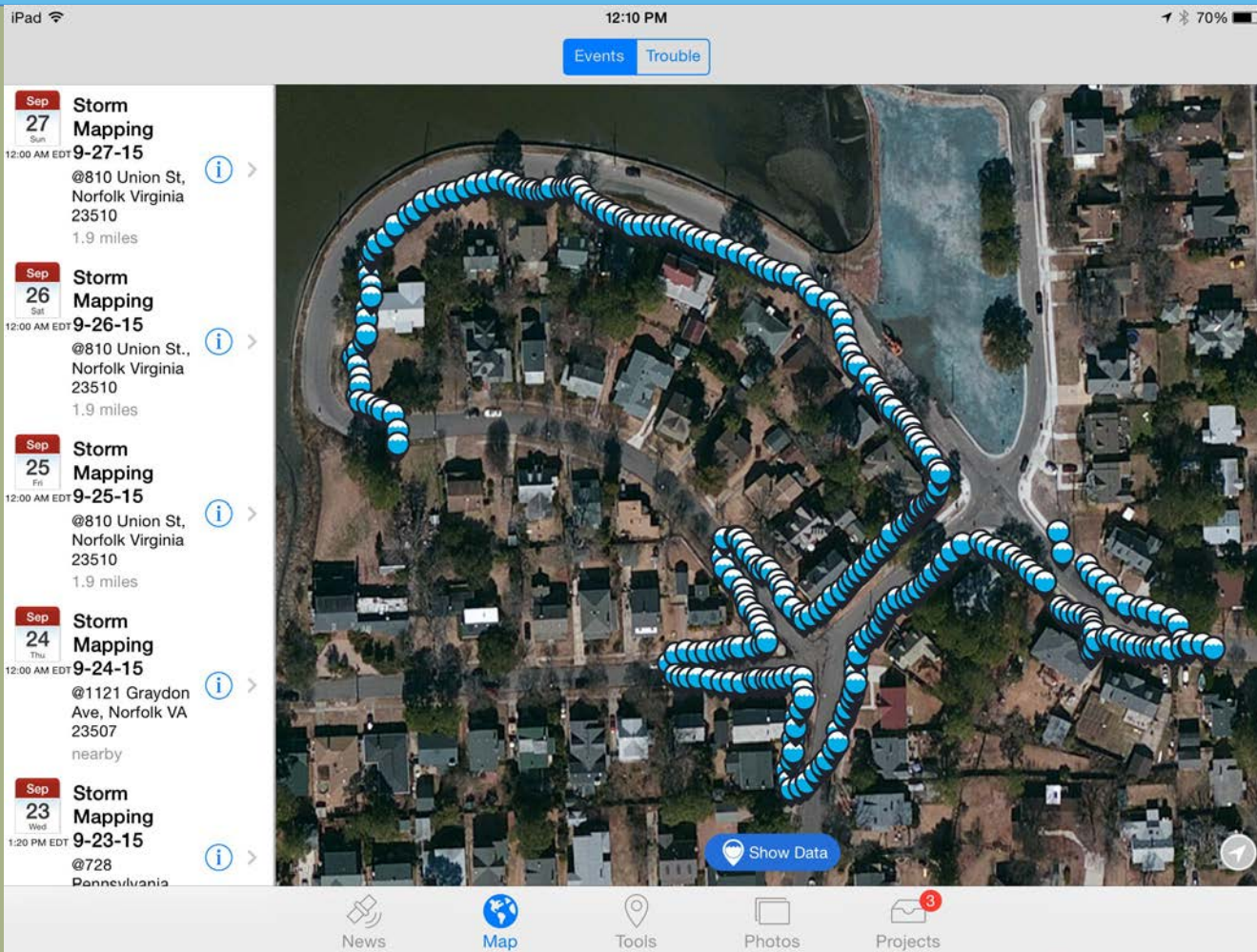
FIND PROBLEMS/BARRIERS AND SEEK SOLUTIONS

Little actual data on the extent of inundation. Water level monitors are expensive (~\$3,000/yr). People in communities know where it floods but we do not have that information.

Develop “Sea Level Rise” smartphone app to crowdsource flooding information. With partners, develop SOL’s for public schools to participate in mapping – “Catch the King Tide.”



DATA MAPPING IMPROVES FUTURE PREDICTIONS



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



FIND PROBLEMS/BARRIERS AND SEEK SOLUTIONS



CHESAPEAKE BAY
Landscape Professional





QUESTIONS?



Virginia Coastal Zone
MANAGEMENT PROGRAM



WETLANDS
WATCH

WWW.WETLANDSWATCH.ORG



Skip Stiles
skip.stiles@wetlandswatch.org