The North Atlantic Coast Comprehensive Study: Through the Lens of Planning Modernization

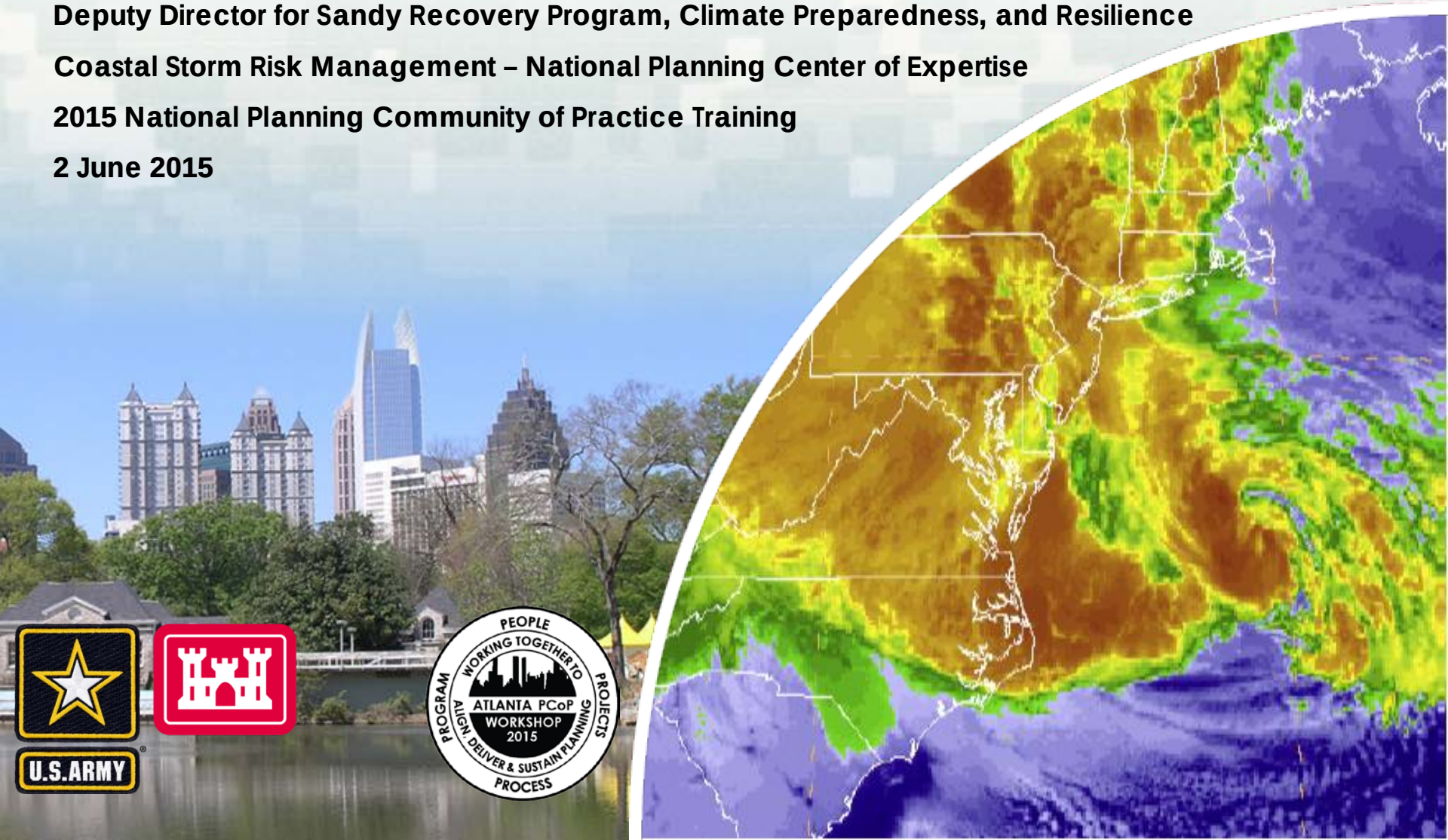
ROSELLE E. HENN

Deputy Director for Sandy Recovery Program, Climate Preparedness, and Resilience

Coastal Storm Risk Management – National Planning Center of Expertise

2015 National Planning Community of Practice Training

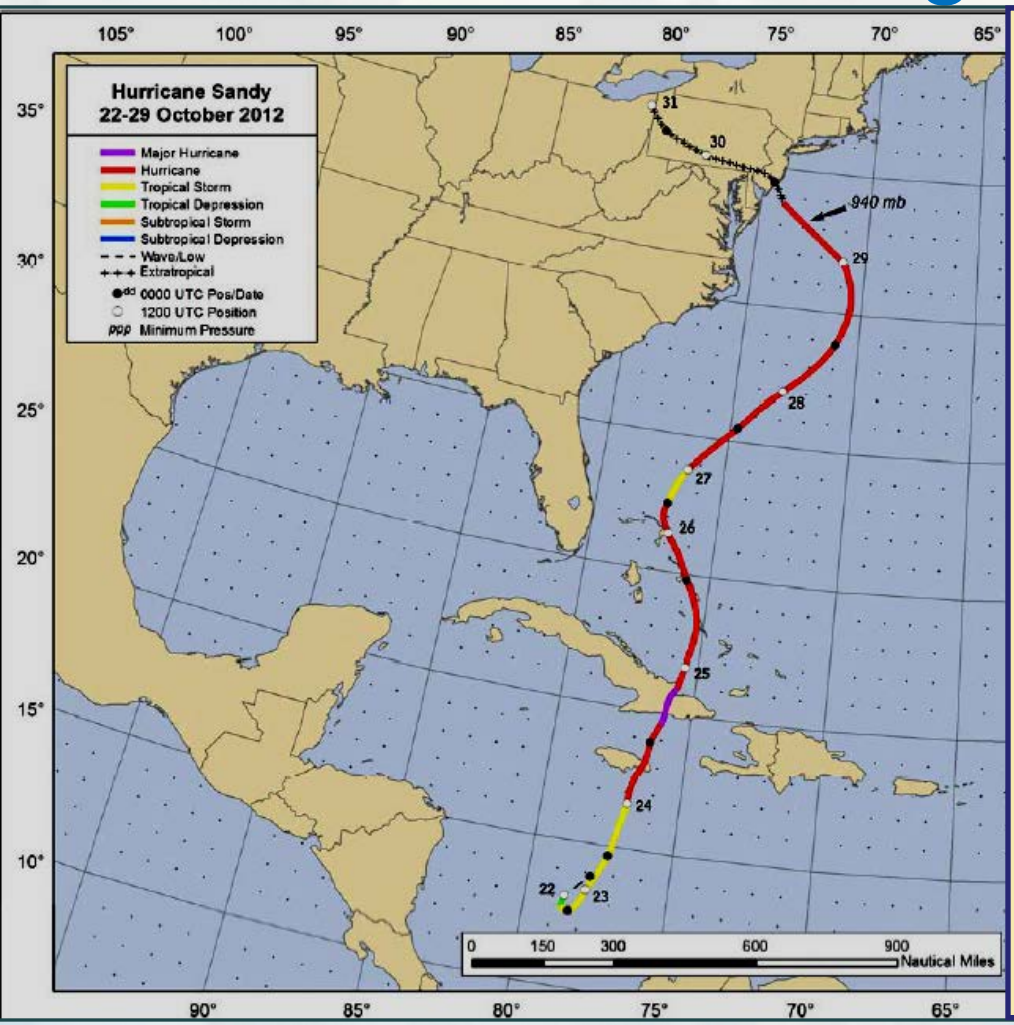
2 June 2015



Outline

- **Background**
- **Collaboration and Alignment**
- **Findings**
- **Outcomes**
  - Coastal Storm Risk Management Framework
  - Technical Products Supporting the Framework
- **Opportunities**
  - Focus Areas Warranting Additional Analysis
  - Coastal Resilience
- **NACCS: Through the Lens of Planning Modernization**

Background

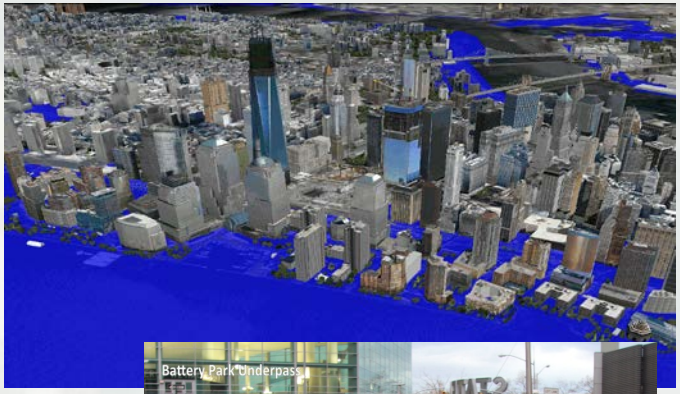


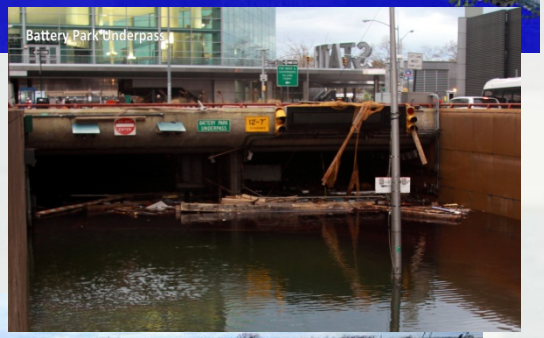
National Hurricane Center 12 Feb 2013

- Sandy originated in the Caribbean on 22 October 2012
- Severely impacted Jamaica, Cuba, Haiti, Dominican Republic, and Cuba, reaching the USA Atlantic coastline on 29 October
- In the USA, effects extended from Florida to Maine, and west to the Great Lakes
- States of New Jersey, New York, and Connecticut greatly impacted; NY-NJ Harbor devastated by catastrophic surge

Background: Sandy's Impact in the USA

- **Human**
  - 159 lives lost
  - 500,000 mandatory evacuations
  - 20,000 temporary shelter
  - Extensive community dislocations
- **Economic**
  - $65B in damages
  - 650,000 houses damaged/destroyed
- **Infrastructure: Loss off**
  - Telecommunications, transit
  - Fuel, power





Project Performance Evaluation

US Army Corps of Engineers – Partnered projects credited with an estimated $1.9B in damages prevented

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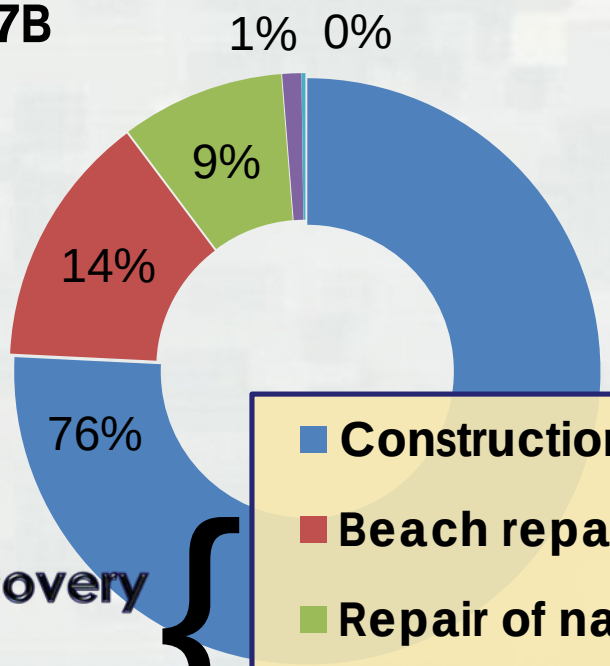
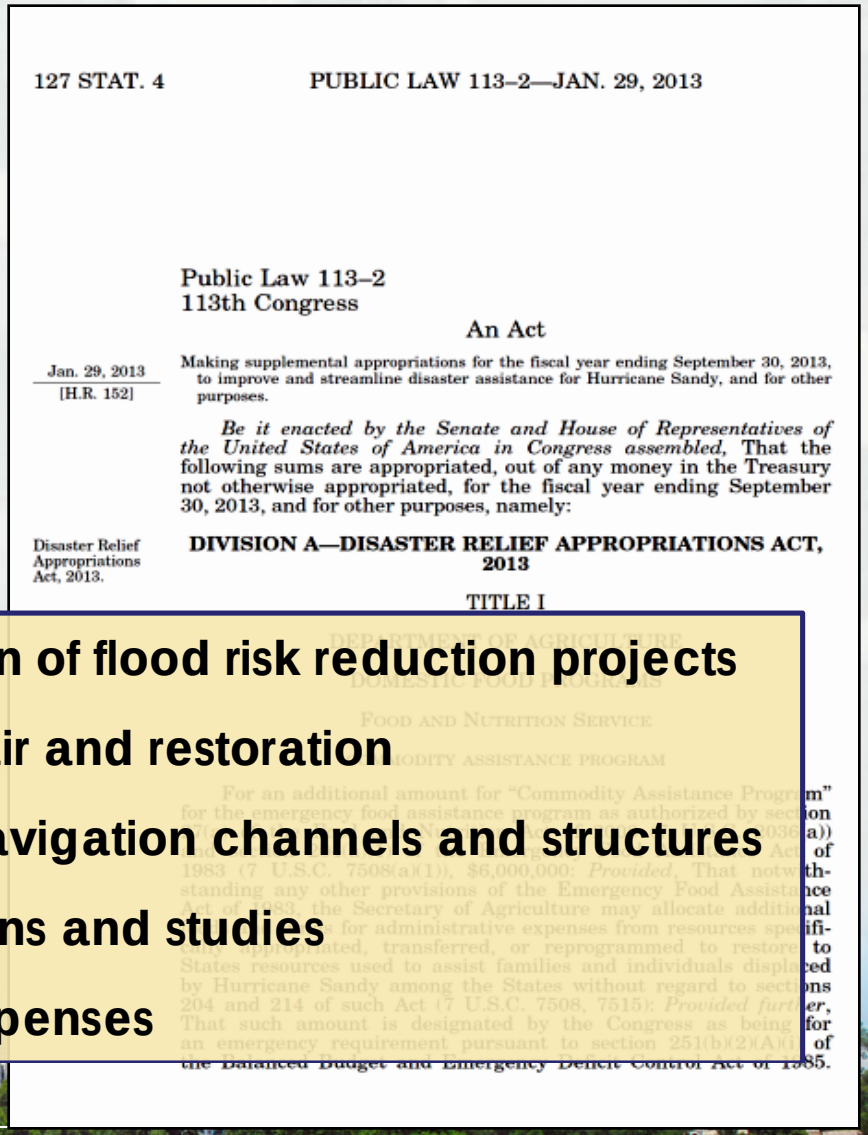
Background: Public Law 113-2
Disaster Relief Appropriations Act 2013

Total Appropriation $47.9B
HUD $15.20B
DOT $12.42B
DHS $11.47B



USACE Sandy Recovery Program $5.1B

- Construction of flood risk reduction projects
- Beach repair and restoration
- Repair of navigation channels and structures
- Investigations and studies
- General expenses



127 STAT. 4 PUBLIC LAW 113–2—JAN. 29, 2013

Public Law 113–2
113th Congress

An Act

Jan. 29, 2013
[H.R. 152]

Making supplemental appropriations for the fiscal year ending September 30, 2013, to improve and streamline disaster assistance for Hurricane Sandy, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the following sums are appropriated, out of any money in the Treasury not otherwise appropriated, for the fiscal year ending September 30, 2013, and for other purposes, namely:

Disaster Relief Appropriations Act, 2013.

DIVISION A—DISASTER RELIEF APPROPRIATIONS ACT, 2013

TITLE I

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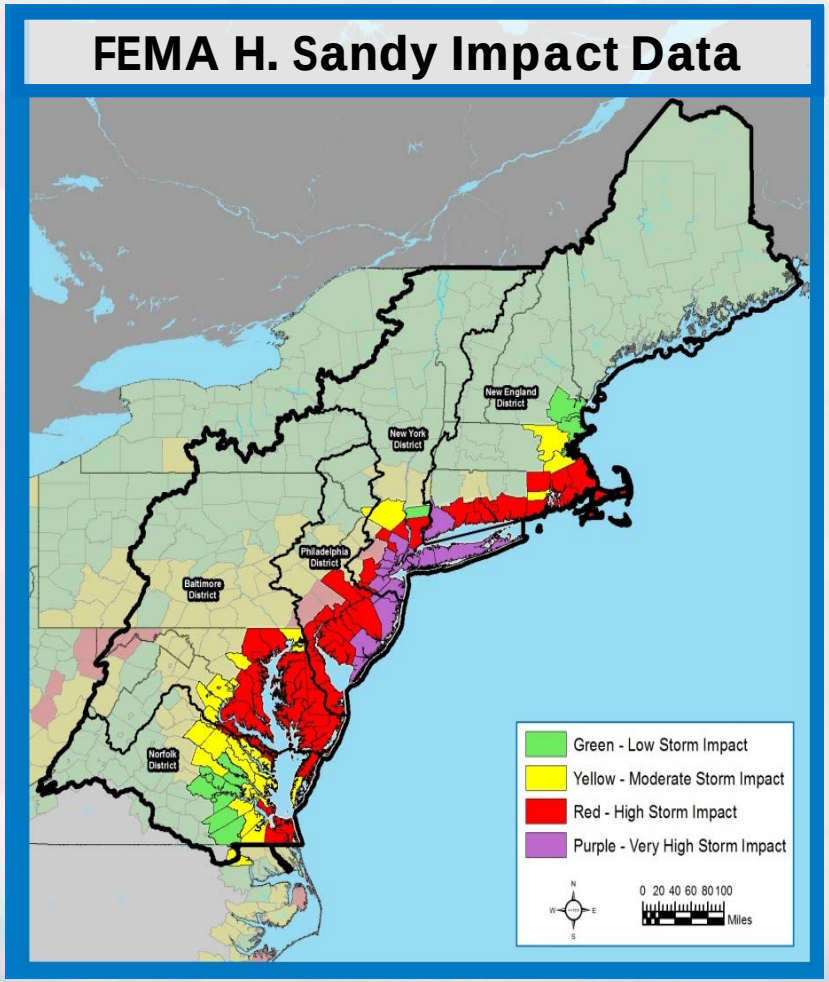
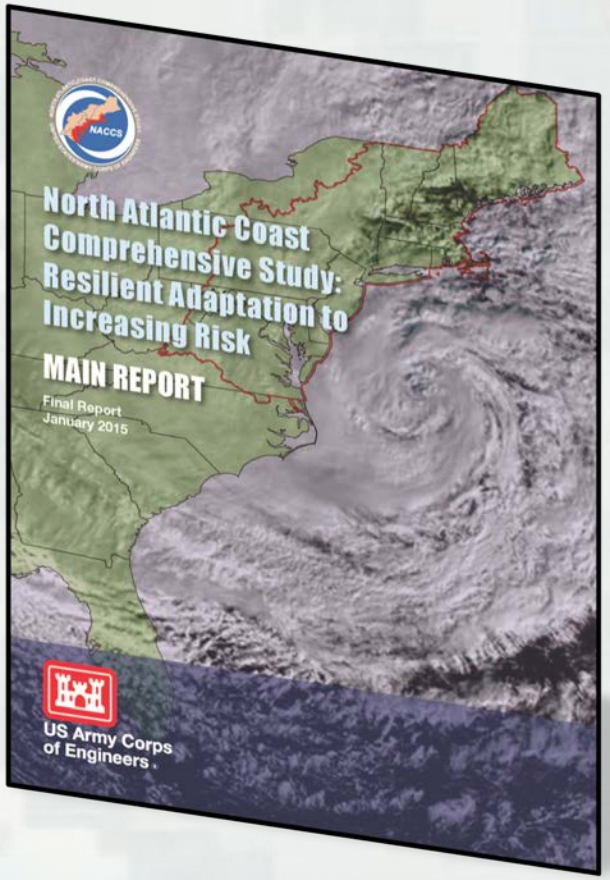
Background:
North Atlantic Coast Comprehensive Study



Status

- **Ongoing Sandy Program Implementation**
- **28 Jan 2015 Final Report publically released**
- **29 Jan 2013 PL 113-2: ... *the Secretary shall conduct a comprehensive study to address the flood risks of vulnerable coastal populations in areas that were affected by Hurricane Sandy within the boundaries of the North Atlantic Division of the Corps...***

Background: North Atlantic Coast Comprehensive Study



- Addresses the legislative direction for a comprehensive plan to address vulnerable coastal communities
- Formalized and consistent approach/framework for more detailed, site specific coastal evaluations
- Integrates state-of-the-science techniques and collaboration
- Equips and links a broad audience and all levels of government with data, tools, and other stakeholders to make INFORMED coastal risk management decisions

NACCS is *not*:

- A decision document authorizing design and construction
- A NEPA document evaluating impacts of any specific solution
- A USACE-only application

www.nad.usace.army.mil/CompStudy

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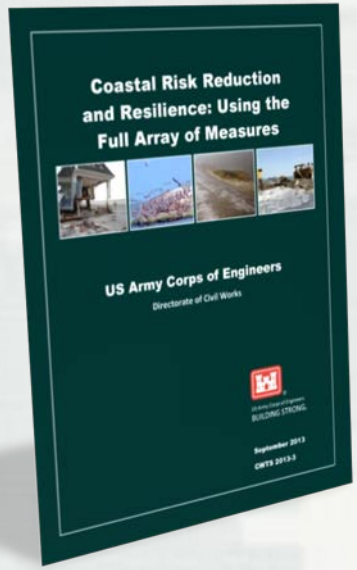
Collaboration and Alignment

- **Agency, Interagency, and Tribal Collaboration**
  - USACE High Level Senior Governance Team/Enterprise Project Delivery Team/Strong Project Management
  - Interagency correspondence/ technical working meetings/panel discussions
  - Subject Matter Experts embedded in team
  - Federal Register notices and public website
  - Interagency Webinar Collaboration Series (2013-2014)
  - Roll Out Webinars for Regional Partners (2 & 9 Feb 2015)
- **Alignment**
  - President's Climate Action Plan
  - Sandy Task Force "Hurricane Sandy Rebuilding Strategy"
  - OMB Legislative Review Memorandum with Federal Agencies
  - Sandy Regional Infrastructure Resilience Coordination

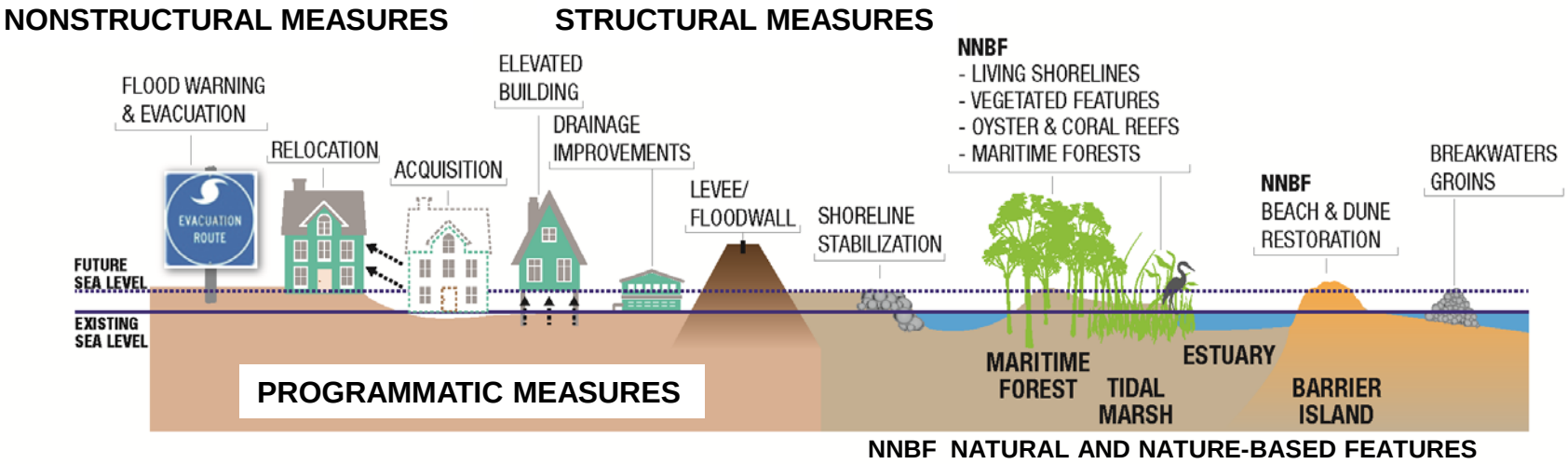
Findings

- **Shared** responsibility of all levels of Government and partnerships
- Rethink approaches to **adapting to risk**
- Resilience and sustainability must consider a **combination and blend** of measures



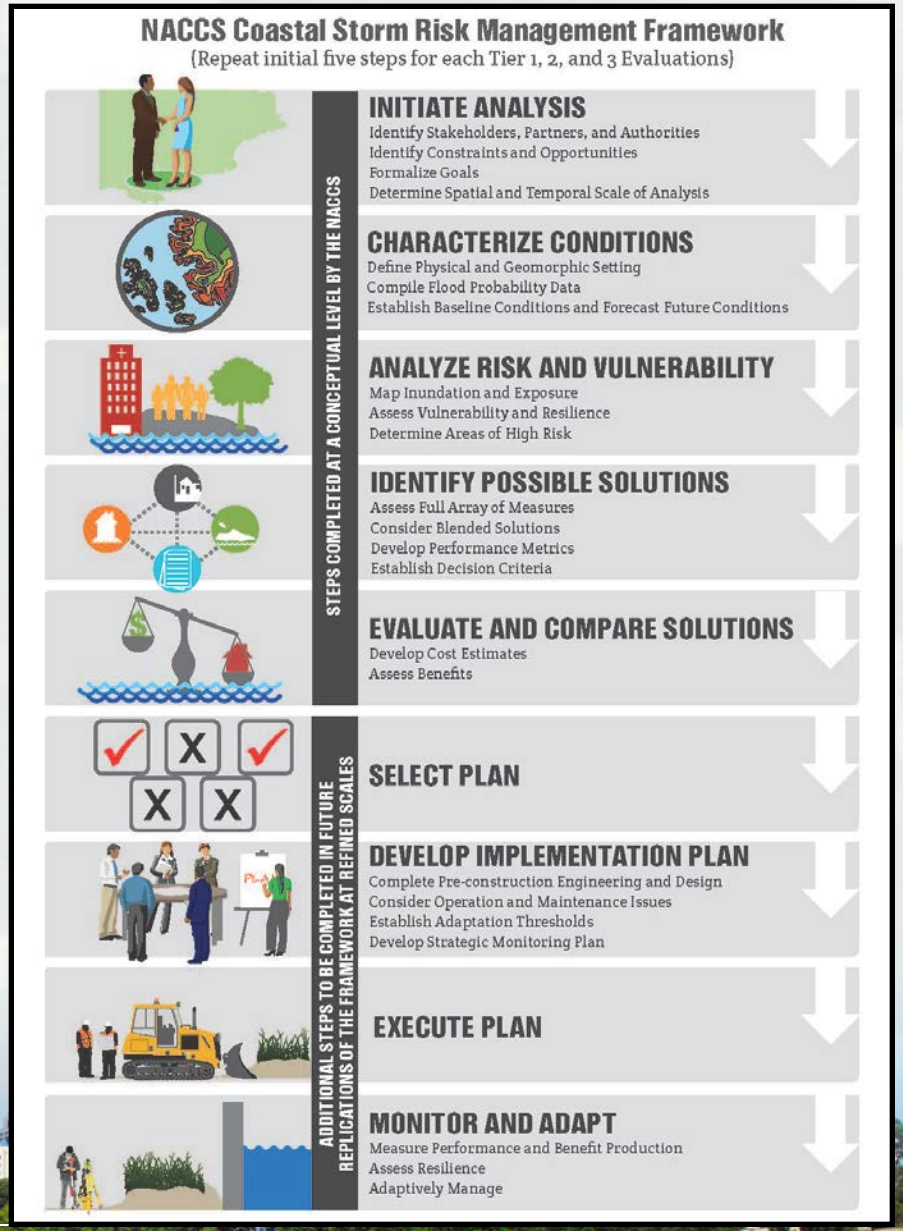
http://www.corpsclimate.us/ccacrrr.cfm

Full Array of Coastal Storm Risk Management Measures



Outcomes: Coastal Storm Risk Management Framework

- **Managing coastal storm risk is a shared responsibility**
- **The Framework is:**
  - A 9-step process
  - Customizable for any coastal area or watershed and other regions
  - Repeatable at state and local scales
- **Who/what is exposed to flood risk?**
- **Where is the flood risk?**
- **What are the appropriate strategies and measures to reduce flood risk?**
- **What is the relative cost of a particular strategy compared to the anticipated risk reduction?**
- **What data are available to make risk informed decisions?**
- **What is the residual risk?**



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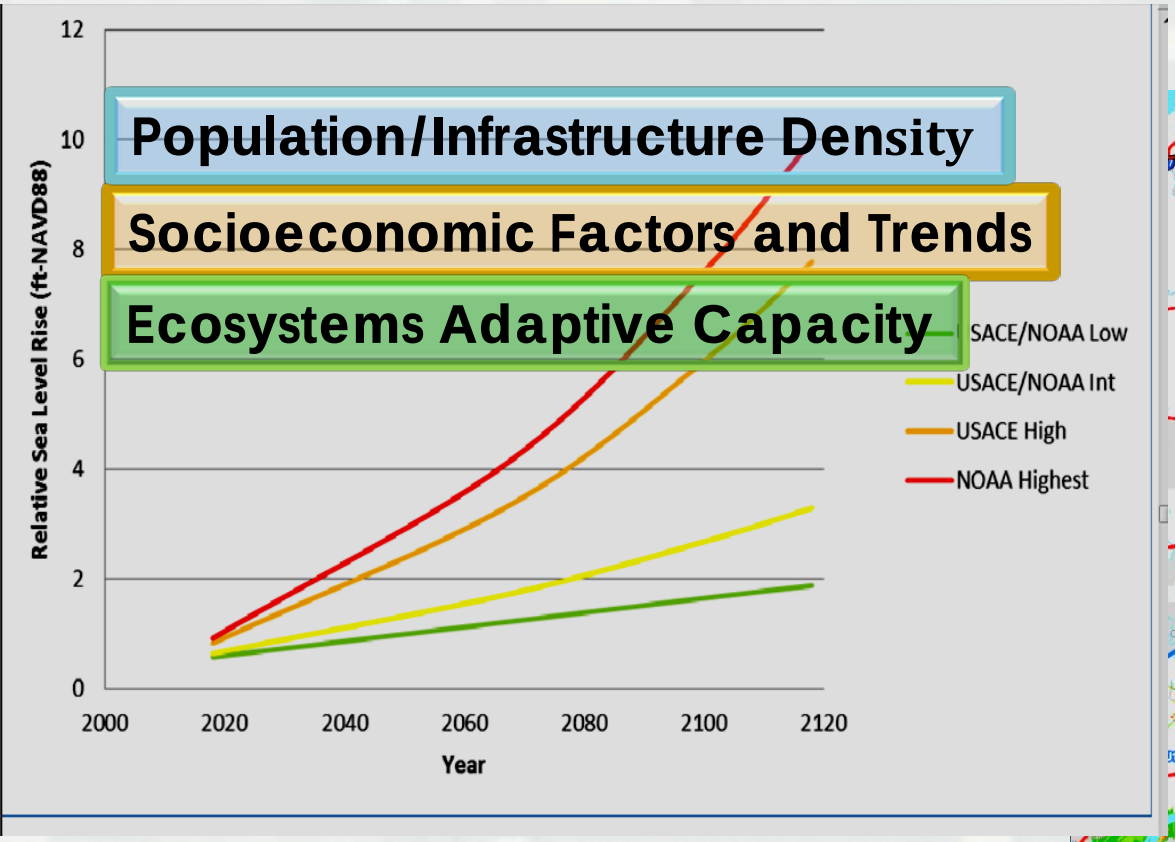
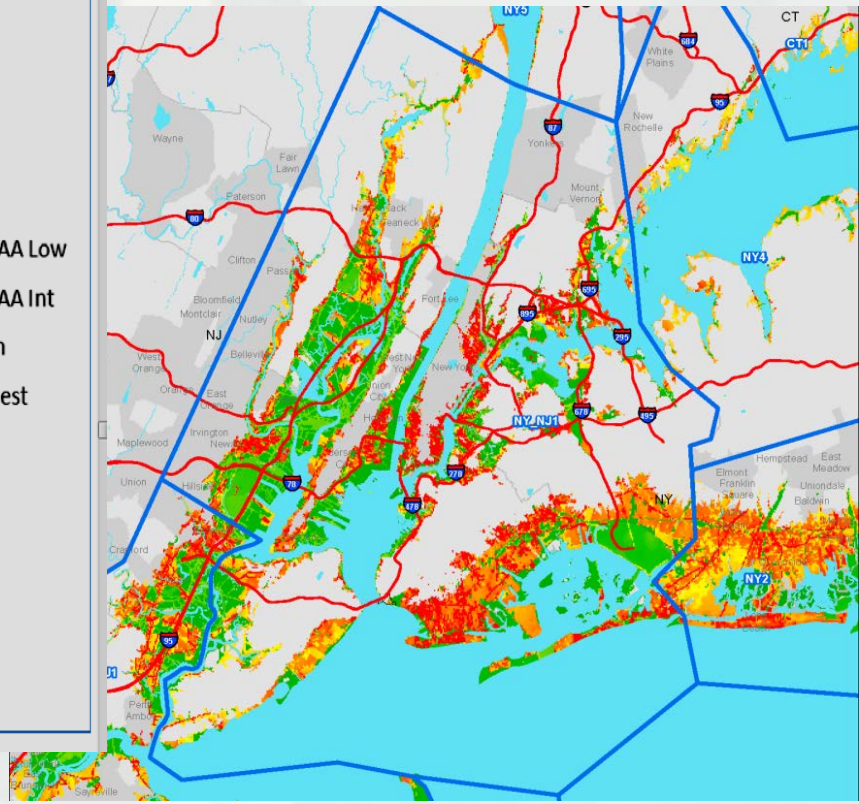
Outcomes: CSRM Framework
Future Scenarios and Flooding Exposure





Sea level change* evaluated for the years 2018, 2068, 2100 and 2118**

*** USACE Engineer Circular (EC) 1165-2-212** **** Intergovernmental Panel on Climate Change scenario**

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Outcomes: Technical Products

Multiple products, planning tools, and models were developed to assist decision makers as they implement the Coastal Storm Risk Management Framework

tic Coast ×

www.nad.usace.army.mil/CompStudy

Quick Clicks: North Atlantic Coast Comprehensive Study Report and Related Documents

- NACCS Main Report
- Appendix A
- Appendix B
- Appendix C
- Appendix D (State appendices)
- Study Synopsis, January 2015
- NACCS Stakeholder Webinar | Audio file (.mp3 format)
- Press Release
- Physical Depth Damage Summary
- Use of Natural and Nature-Based Features
- Conceptual Regional Sediment Budget for North Atlantic Division
- Planning Reach Mapbook
- Numerical Modeling Simulations
- Institutional and Other Barriers Report
- Environmental and Cultural Resources Conditions Report
- Barrier Island Sea Level Rise Inundation Assessment Report

A full listing of NACCS files can be found in the left column below, under "Report and Products."

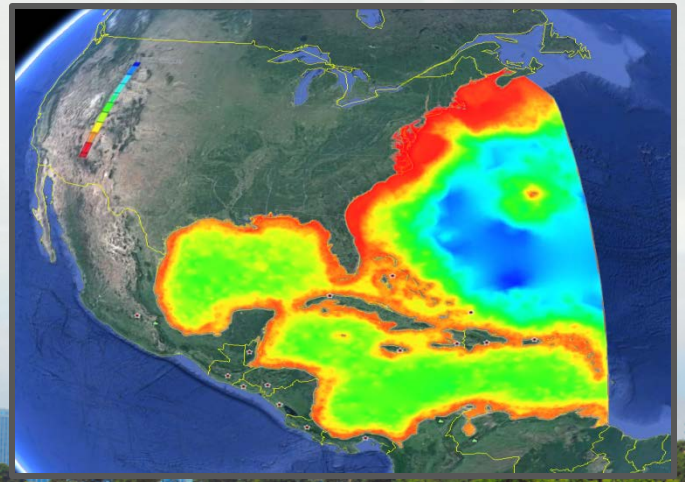
Risk Management Strategies for Coastal Communities

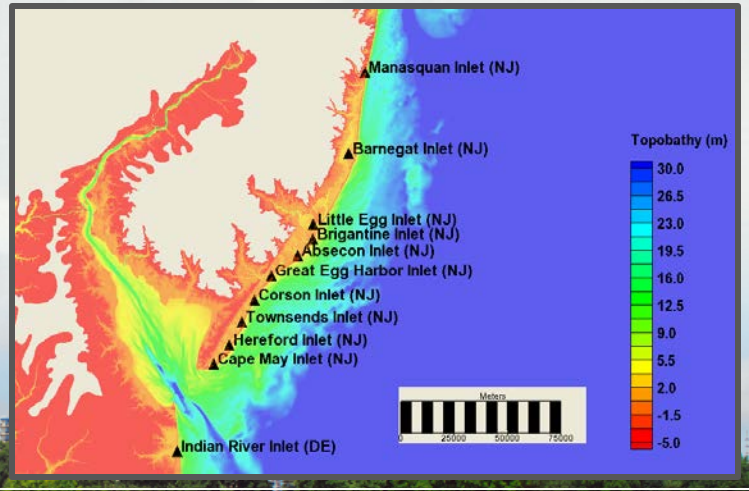
1. ACQUISITION & RELOCATION
2. BUILDING RETROFIT
3. ENHANCED FLOOD WARNING & EVACUATION PLANNING
4. LAND USE MANAGEMENT/ZONING & FLOOD INSURANCE
5. DEPLOYABLE FLOODWALLS
6. FLOODWALLS
7. LEVEES
8. SEAWALLS
9. REVETMENTS
10. BULKHEADS
11. STORM SURGE BARRIERS
12. BEACH RESTORATION
13. BEACH RESTORATION & BREAKWATERS
14. BEACH RESTORATION & GROINS
15. DRAINAGE IMPROVEMENTS
16. LIVING SHORELINES
17. OVERWASH FANS
18. REEFS
19. SUBMERGED AQUATIC VEGETATION
20. WETLANDS

Technical Products Supporting the Framework

Regional Storm Suite Modeling

- Joint probability of Hurricane Sandy and historical coastal storm forcing parameters for the east coast region from Maine to Virginia as a primary requirement for project performance evaluation
- Focus on storm winds, waves and water levels for both tropical and extra-tropical storm events
- Application of high-resolution numerical models in a tightly integrated modeling system with user friendly interfaces
- Provides for a robust, standardized approach to establishing the risk of coastal communities to future occurrences of storm events





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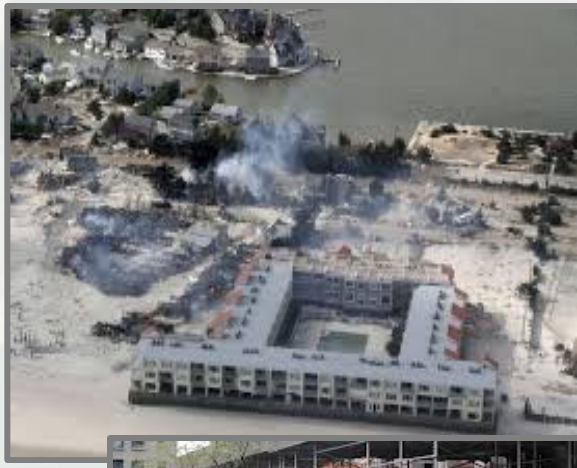
Technical Products Supporting the Framework

Economic Depth-Damage Estimation Tool

- Measurement of direct physical effects of Hurricane Sandy and their economic consequences to create depth-damage functions to better estimate the effects of coastal storms
- Assessment of loss of life from Sandy to modify Corps flood impact model to estimate depth-fatality relationships for coastal storms
- Development of depth-emergency cost and infrastructure damage relationships and estimation and description of emergency costs incurred
- Estimation of second and third order effects (e.g., loss of labor, economic losses from of power/fuel shortages, mental and physical health effects)



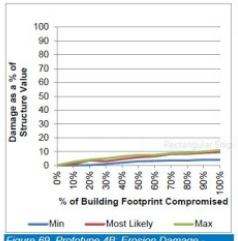


Table 45. Prototype 4B: Erosion Damage - Structure

Percent Comp-romised	Min	Most Likely	Max
0%	0	0	0
10%	0.05	1.025	2.5
20%	0.15	3.5	4
30%	1	3	5
40%	2	4.5	6.5
50%	3	5.8	7.5
60%	3.25	6.5	7.5
70%	3.5	8.1	8.7
80%	3.5	8.3	9
90%	4	9	10
100%	4	9.5	11

Figure 69. Prototype 4B: Erosion Damage - Structure

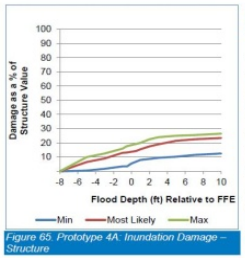


Table 40. Prototype 4A: Inundation Damage – Structure

Flood Depth	Min	Most Likely	Max
-8	0	0	0
-5	0.5	6.5	10
-3	1.75	9	12.5
-1	3.5	13	16
-0.5	3.5	13.25	17.75
0	5.5	13.75	18.5
0.5	6.75	14.25	19.25
1	8	15.5	20
2	8.75	17.5	22.5
3	9.5	19	24
5	10.25	21.5	25
7	11.5	22.5	25.5
10	12.5	23.5	26.5

Figure 65. Prototype 4A: Inundation Damage – Structure

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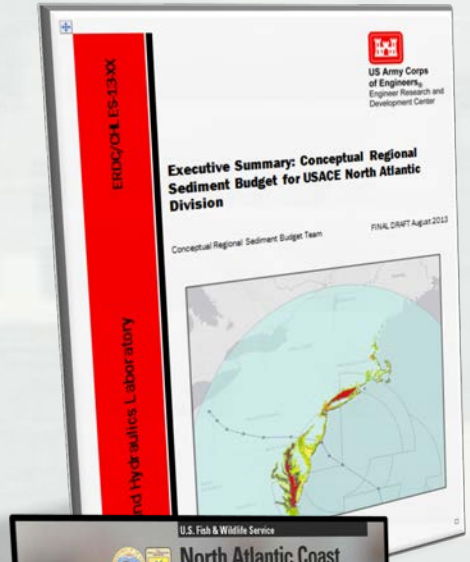
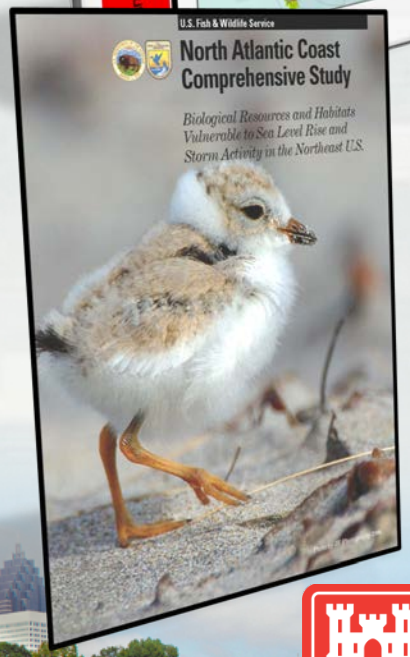
Technical Products Supporting the Framework

- Conceptual Regional Sediment Budget
  - Patterns and rates of sediment transport
  - Engineering activities (dredging/ placement) and volumetric change for coastal and estuarine regions
  - Web-based and identifies opportunities for projects/strategic placements
- Coastal Geographic Information System Geo-database
  - All non-sensitive NACCS data layers
  - Boundary files, inundation mapping, etc.
- US Fish and Wildlife Service Planning Aid Report
  - Species and Habitat vulnerability





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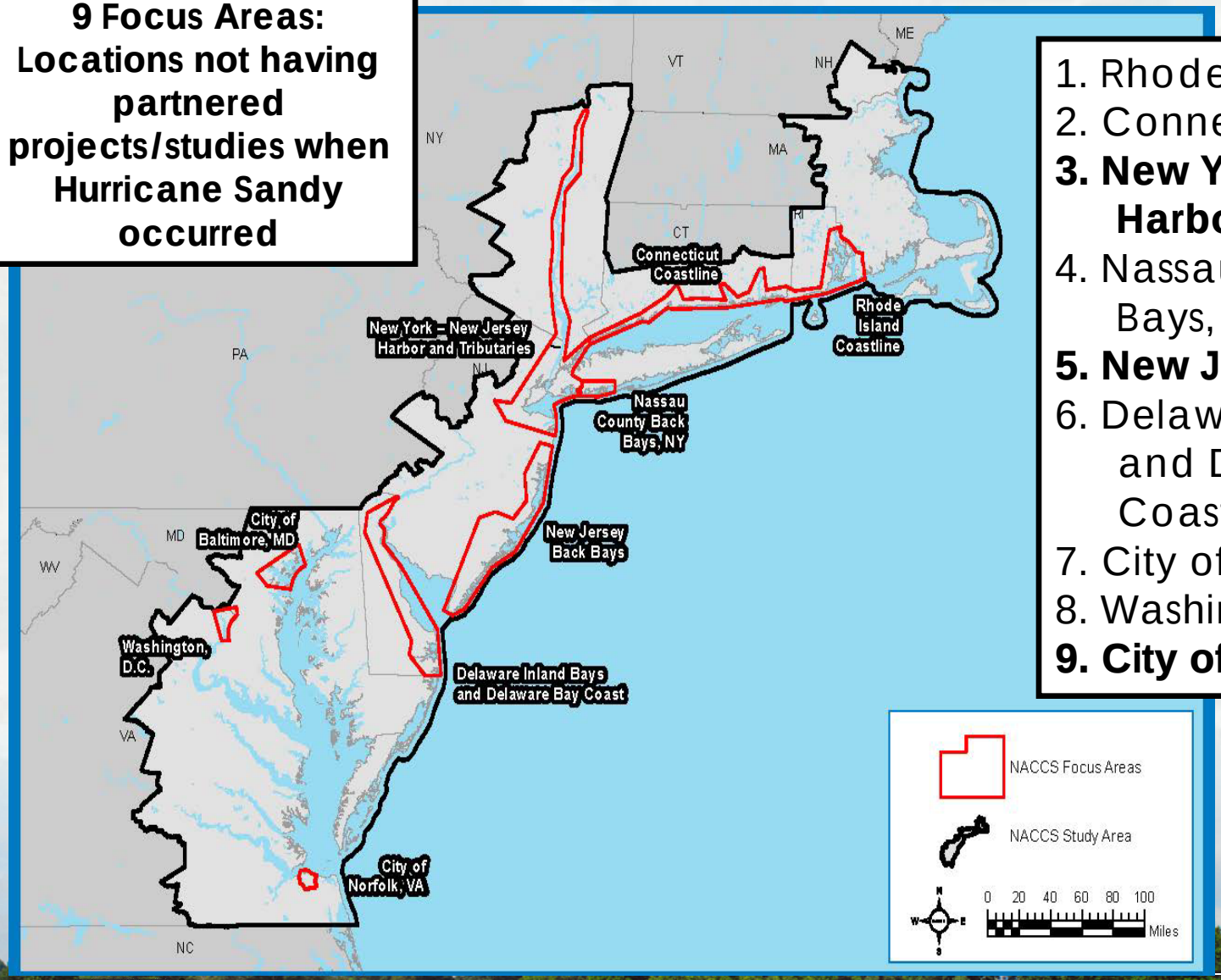
Opportunities: FY16 PresBud NACCS Focus Areas

9 Focus Areas: Locations not having partnered projects/studies when Hurricane Sandy occurred



1. Rhode Island Coastline
2. Connecticut Coastline
3. **New York - New Jersey Harbor and Tributaries**
4. Nassau County Back Bays, NY
5. **New Jersey Back Bays**
6. Delaware Inland Bays and Delaware Bay Coast
7. City of Baltimore, MD
8. Washington, D.C.
9. **City of Norfolk, VA**

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Opportunities: Coastal Resilience Integration

9 Focus Areas Integrated Strategies

FY16 President's Budget Request: NACCS Focus Areas New Start
USACE-Sponsor Feasibility Studies and/or Comprehensive Plans; Technical Assistance

USACE-Sponsor Design and Construction

NACCS Products: Geospatial Database; Numerical Modeling of Extreme Water Levels; Economic Depth-Damage Functions; Environmental and Cultural Resources Conditions Report; Conceptual Regional Sediment Budget; Vulnerability, Resilience, Natural and Nature-Based Features Assessment and Metric Development

Ongoing USACE Activities

*Vulnerability Assessments, Resilience and Climate Change Adaptation Planning

*Technical Assistance to States and installations; Public-Private Partnership initiatives

*Limited & General Reevaluation Reports

*Continuing Authorities Program and Operation & Maintenance activities

*Flood Control and Coastal Emergency projects

*National Hurricane Program

Regional Partnerships & Collaboration

Housing and Urban Development (HUD)

Northeast Regional Ocean Council (NROC)

Sandy Regional Infrastructure Resilience Coordination (SRIRC)

Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS)

Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)

Department of Interior – NFWF Grants

Chesapeake Bay Resilience Co-Lead

Rebuild By Design **and more…**

Integration of Strategic Coastal Investments

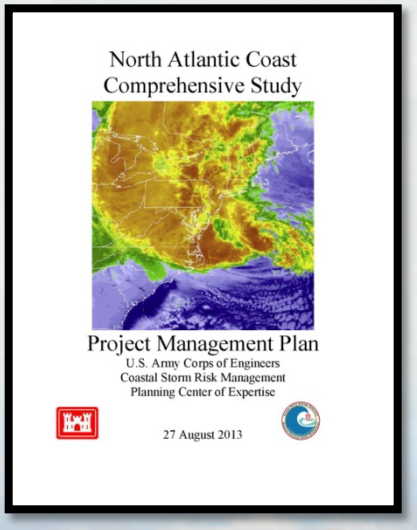
State Implementation of Ongoing & Planned Risk Reduction

2013 **2015** **2020** **2025**

North Atlantic Coast Comprehensive Study

Through the Lens of Planning Modernization

- Coastal Storm Risk Management - National Planning Center of Expertise
- Established Command Center in NAB
  - Project Delivery Team Leadership
  - Project Management Functions
- Project Delivery Team (PDT) selected across USACE Enterprise with Coastal Working Group Subject Matter Experts (SME)



- PDT included SMEs from Federal Agencies
- Draft Project Management Plan/Scope of Work coordinated with Federal Agencies and Regional Partners following HQUSACE concurrence

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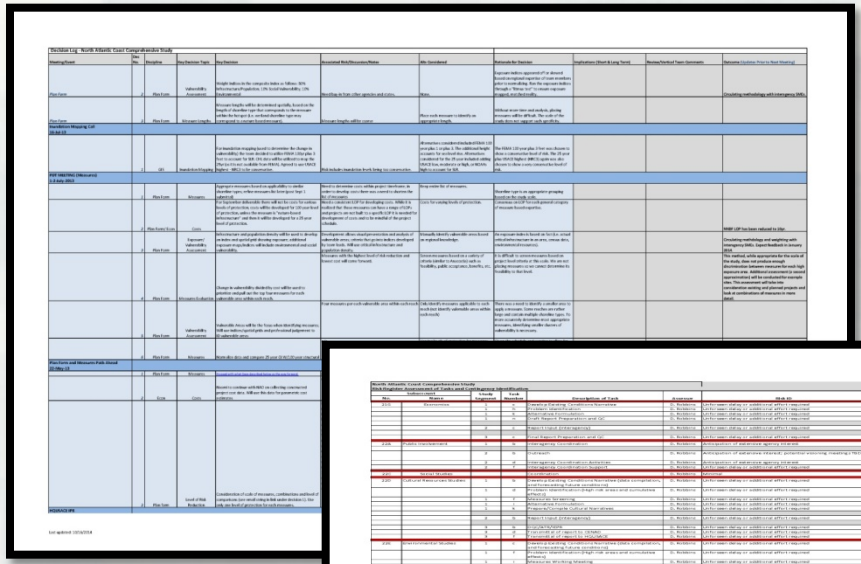
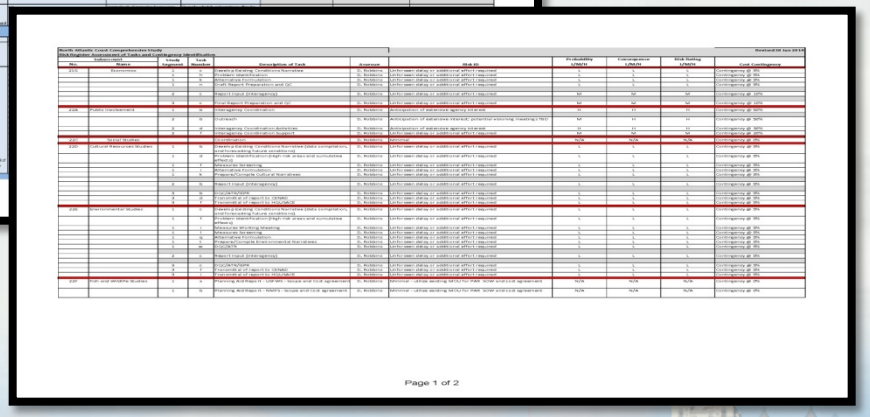
North Atlantic Coast Comprehensive Study

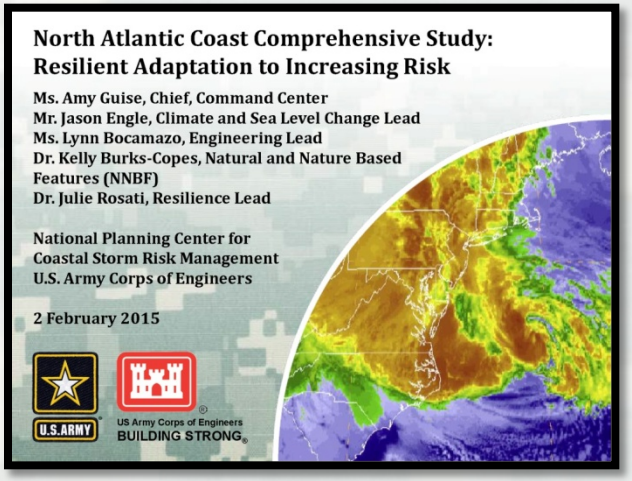
Through the Lens of Planning Modernization

Planning Toolbox

- Risk Register and Decision Log maintained throughout Study
- Webinars used extensively as collaborative tool







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North Atlantic Coast Comprehensive Study

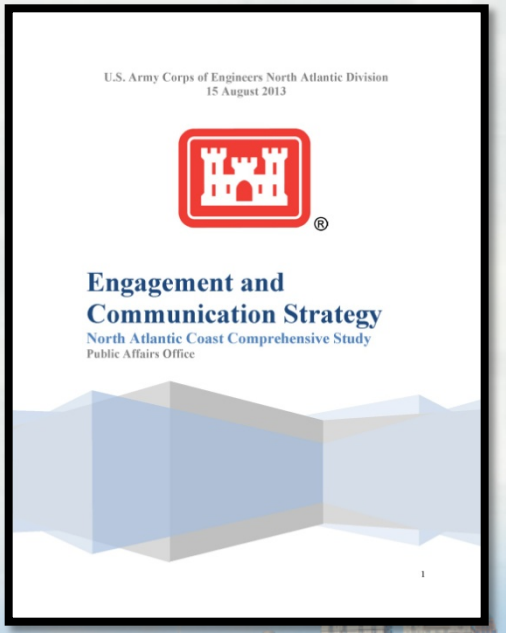
Through the Lens of Planning Modernization

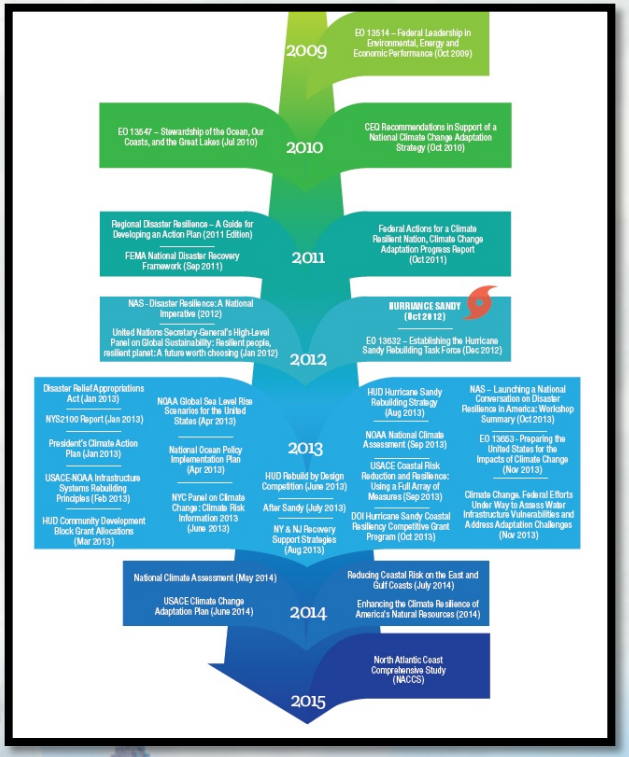
$19M in dedicated funding

- Funds available from outset to accomplish PMP/SOW Tasks
- All expenditures tracked by Command Center Project Manager

Communication Plan and Collaboration

- Strong foundation in in Collaborative Planning
- Built on prior partnerships and initiatives
- All engagements and their outcomes documented





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North Atlantic Coast Comprehensive Study

Through the Lens of Planning Modernization

Review process conducted in parallel

- Federal and Regional Partners
- Agency Technical Review,
- HQUSACE - Office of Water Project Review,
- OASA(CW)
- OMB, and CEQ
- Culminated in Legislative Review Memorandum Process

Post- NACCS Assessment and Feedback

- After Action Report
- Stakeholder Feedback

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North Atlantic Coast Comprehensive Study

Through the Lens of Planning Modernization

Vertical Team Integration

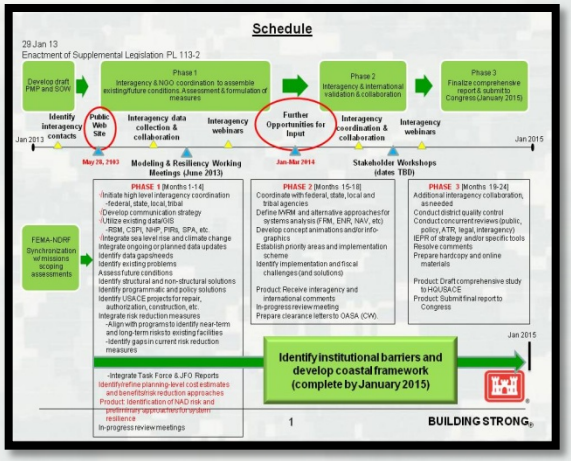
- HQUSACE, NAD, and Five Districts Engaged from Study outset through Roll Out
- HQUSACE and NAD Senior Leader Governance Team (SLGT) established during development of Project Management Plan and Scope of Work
- HQUSACE Regional Integration Team member dedicated to Study
- SLGT In-Progress Review (IPR) Meetings held quarterly for two -thirds of the 2-year schedule; monthly in last third
- IPRs also held monthly with ASA(CW) and OMB/CEQ
- SLGT IPRs expedited decision-making process and ensured unified direction
- High of commitment of Leadership enable PDT to confidently move forward

North Atlantic Coast Comprehensive Study

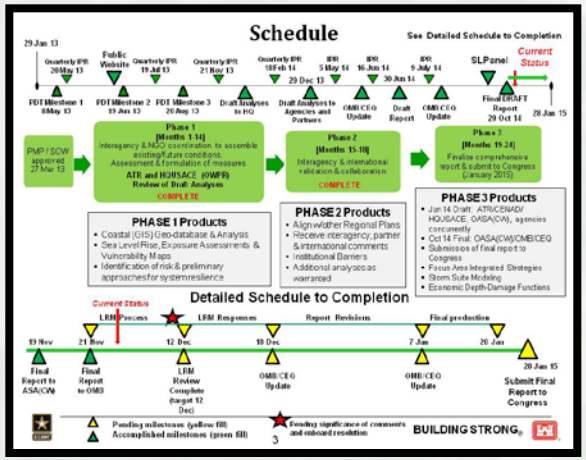
Through the Lens of Planning Modernization

Schedule

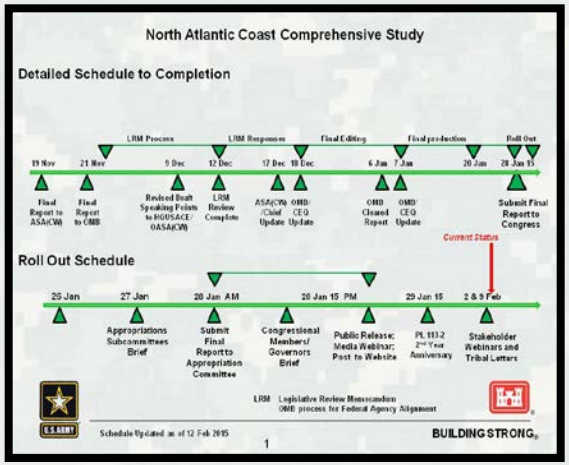
- Study completed in 2 years as specified in Sandy Legislation, PL 113-2 Disaster Relief Appropriations Act of 2013



12 Feb 2013



2 Dec 2014



12 Feb 2015

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Summary

"The North Atlantic Coast Comprehensive Study is an unprecedented effort by the U.S. Army Corps of Engineers in collaboration with our partners to develop a coastal plan that considers future sea levels and climate change. The report provides a framework for communities that will arm them for the reality of future extreme weather."

Jo-Ellen Darcy
Assistant Secretary of the Army for Civil Works

"Hurricane Sandy brought to light the reality that coastal storms are intensifying and that sea-level and climate change will only heighten the vulnerability of coastal communities. Coastal storm risk management is a shared responsibility, and we believe there should be shared tools used by all decision makers to assess risk and identify solutions. This report provides those tools."

Brig. Gen. Kent D. Savre
Commanding General
U.S. Army Corps of Engineers
North Atlantic Division

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