StormSmart Coasts

Helping coastal communities cope with floods, storms, sea level rise, and climate change

Northeast Region Coastal Hazards Workshop

Daniella Hirschfeld

NOAA CSC Coastal Management Fellow

Massachusetts Office of Coastal Zone Management

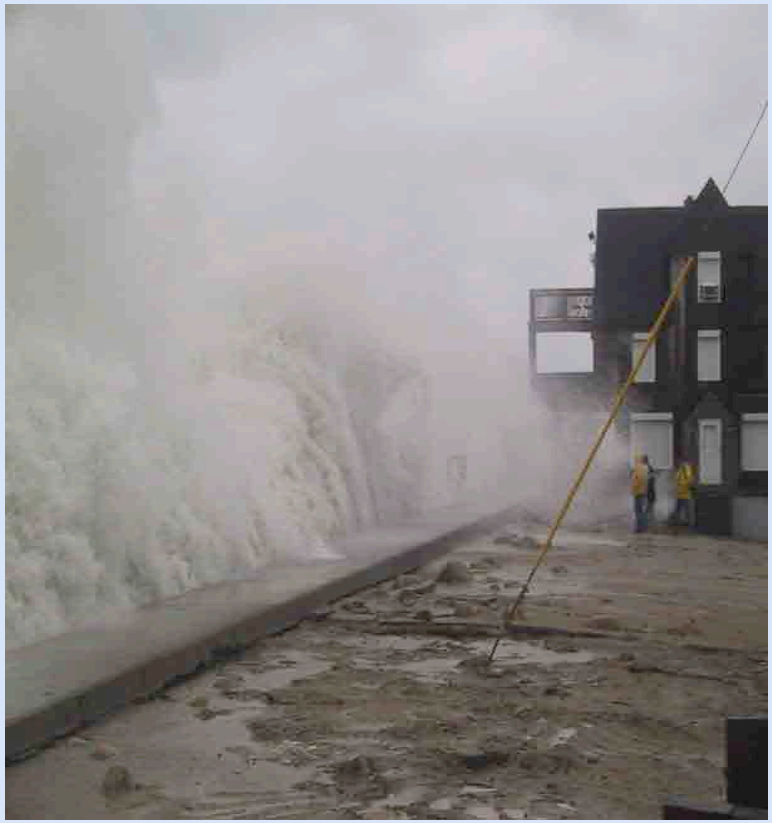
NOAA Coastal Services Center

LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

CZM

Overview

- Background
  - Goals
  - Needs
- Current Status
  - Information Hub
  - Partnerships
  - Model Tools
- Future: Increasing Resiliency



Background

The Monetary Burden

	Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
Scituate	3,071	2,752 (13%)	0	319	$49,629,842 (17.7%)
Revere	2,414	2,013 (9.5%)	3	398	$14,358,062 (5.1%)
Marshfield	1,255	1,051 (5%)	1	203	$13,487,809 (4.8%)
Hull	2,068	1741 (8.2%)	0	327	$12,148,369 (4.3%)
MA Coasts Total	21,267	17,257 (81%)	12	4002	$217,913,069 (78%)
MA Total	26,643	21,221	43	5,379	$279,663,492

Goal:
Help Communities To Better Manage And Cope With:

storms

flooding

sea level rise/climate change

Legally Defensible Actions

Protects the rights of residents, businesses, and visitors by requiring that public & private projects do not:

–pose a threat to public safety,

–increase flood or storm damage to public or private property

–strain municipal budgets by raising community expenditures for storm-damage mitigation, stormwater management, emergency services, and disaster recovery efforts.

Options

Poached Cod & Parsley Sauce
Poached Red Snapper & Parsley Sauce
Mixed Seafood in a Basket
Fish Cakes
Sirloin Steak
Gammon Steak
Roast Chicken & Chips
Bangers & Mash
Spaghetti Bolognese
Egg Chips & Beans
www.fishandchipsbangkok.com

Minced Beef & Onion Pie
Chicken & Mushroom Pie
Cheese, Potato & Onion Pie
Cornish Pasty
Traditional Steak & Kidney Pudding
170 Baht per set
Cottage Pie
Chips
Regular Chips
Large Chips
Onion Rings
Mashed Potato
Mushy Peas
Garden Peas
Baked Beans
Onion Gravy
Curry Sauce
Battered Cumberland Sausage
Black Pudding
Mixed Salad
Tuna Salad
Cheese Salad
Ham Salad
www.fishandchipsbangkok.com

Bacon Cheeseburger
105 Baht
Blue Cheese Burger
110 Baht
Chilli Burger
90 Baht
Fish Burger
110 Baht
Super Size Hot Dog
120 Baht
Cheese
Baked Beans
Coleslaw
Tuna & Sweetcorn
Extra Topping
Thai Green Curry with Chicken
Sweet & Sour Chicken
Pork with Chilli & Basil
Potato with Butter
www.fishandchipsbangkok.com

Is the message

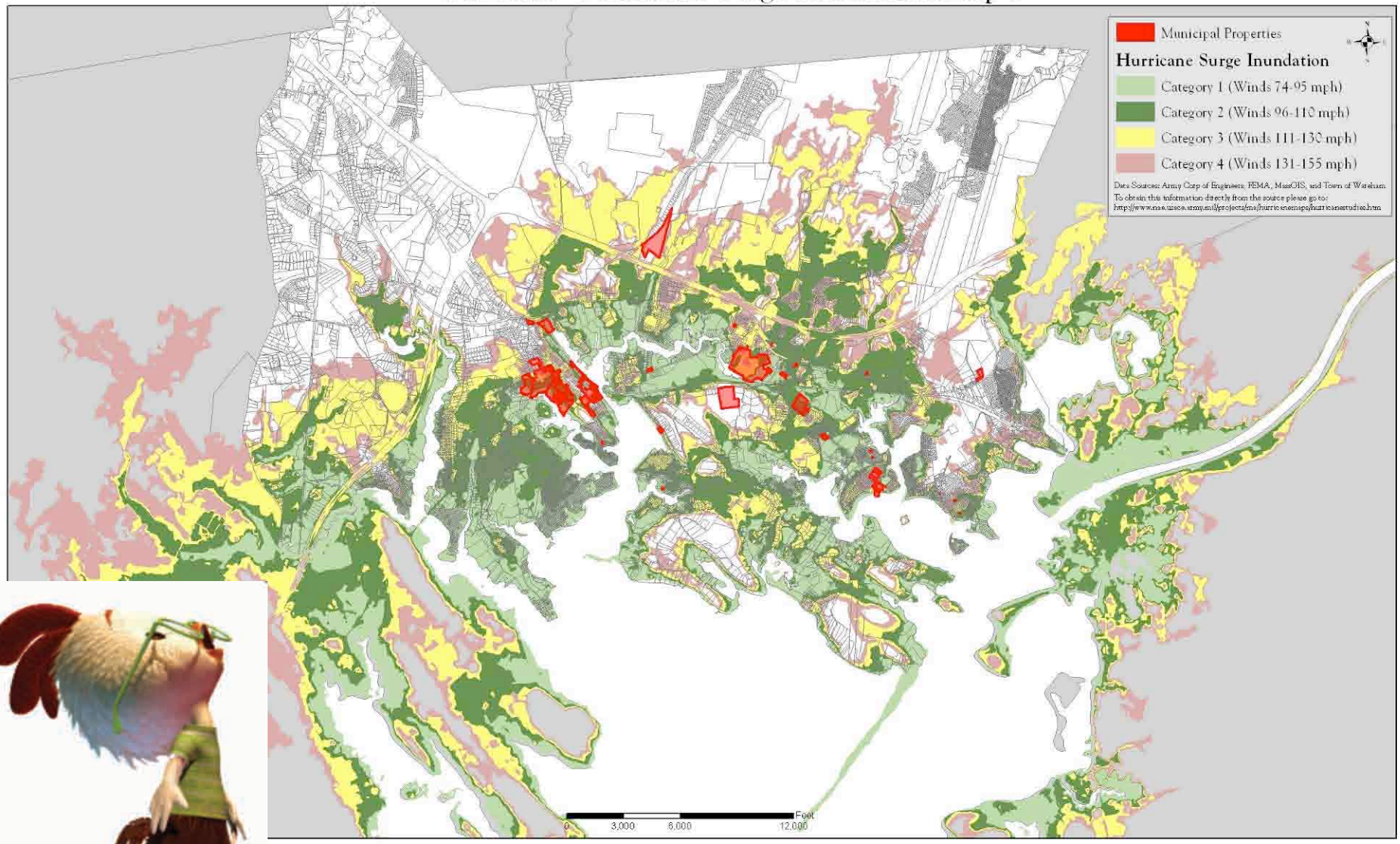
interesting?

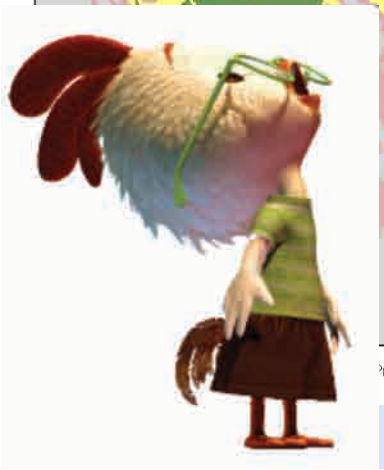
relevant?

actionable?

☒ Interesting? ☒ Relevant? ? Actionable?

Wareham - Hurricane Surge Inundation Map 1





Program, 2870 Cranberry Highway, East Wareham, MA 02538. www.buzzardsbay.org. May 2008.

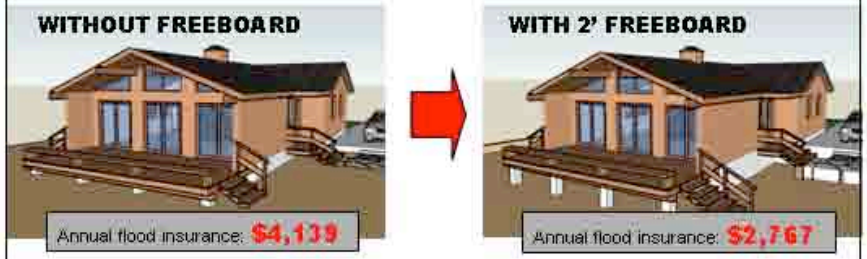
Interesting? Relevant? Actionable?

stormsmart coasts
supporting community efforts to manage coastal floodplains

RAISE YOUR HOME, LOWER YOUR PAYMENTS

Protect buildings and reduce mortgage and insurance payments with freeboard

WHAT IS FREEBOARD?



FREEBOARD - Elevating the foundation of a building above predicted flood elevations by a small additional height (generally 1-3 feet above National Flood Insurance Program height requirements). While relatively inexpensive to add height during construction or reconstruction, the benefits are substantial—improved storm protection and in drastic reductions in flood insurance premiums (and in many situations, lower mortgage payments too).

WHAT ARE THE BENEFITS OF FREEBOARD?

By elevating a building above National Flood Insurance Program (NFIP) height requirements (typically by 1-3 feet), you can realize these substantial benefits:

- **Increased protection from floods and storms**. Storm waters can and do get higher than those shown on Flood Insurance Rate Maps (FIRMs). Freeboard helps to protect structures against these larger storms, and allows for flood modeling and mapping uncertainties associated with FIRMs.
- **Better preparation for on-going sea level rise**. Sea level has risen in Massachusetts approximately 0.8 feet in the past 100 years. Since elevations on FIRMs do not include sea level rise, freeboard will help keep structures above flood waters as storm surge elevations increase.
- **Greatly reduced flood insurance premiums**. Because the Federal Emergency Management Agency (FEMA, which administers the NFIP) recognizes that freeboard reduces flood risk, it provides substantial (sometimes more than 50%) reductions in flood insurance premiums for structures incorporating freeboard. These savings can rapidly accumulate, especially over the life of a normal mortgage.

Example of savings on NFIP premiums with freeboard

	A Zone		V Zone	
	Annual savings in NFIP premiums	Savings over 30-year mortgage	Annual savings in NFIP premiums	Savings over 30-year mortgage
1' freeboard	$502 (**41%**)	$15,060	$1,360 (**62%**)	$40,800
2' freeboard	$678 (**55%**)	$20,340	$2,730 (**50%**)	$81,900
3' freeboard	$743 (**60%**)	$22,290	$3,415 (**62%**)	$102,450

*NFIP premiums based on May 2007 rates for a one-floor residential structure with no basement. $500 deductible/ $250,000 coverage for the building/$100,000 for contents.

WHAT ARE THE COSTS OF FREEBOARD?

The expense of incorporating freeboard into new structures is surprisingly low, **generally adding only about a ¾% to 1 ½% per foot of freeboard to the total construction costs** according to a 2006 FEMA-commissioned study (*Evaluation of the National Flood Insurance Program's Building Standards*). This often means that each foot of freeboard adds less than $10 to a monthly mortgage payment, but can save homeowners over a $100 a month on their NFIP premiums.

Consider, for example, a proposed one-storey building in the V zone that will cost $250,000 to build at minimum legal standards (the NFIP requires that all homes in the floodplain be elevated to at least to the base flood elevation [BFE], mapped on FIRMs). According to the study cited above, adding each foot of freeboard to a home on piles or piers adds about 0.4% to total construction costs (about $1,000 a foot in this example). If the owner takes out a mortgage at 6.5% APR for the total construction costs, he or she will actually pay less each month for the home after adding 3' of freeboard, even though the home, on paper, costs more to build.

Home at BFE			**Home with 3' of freeboard**		
Monthly mortgage payments (at 6.5%)		$1580.17	Monthly mortgage payments (6.5%)		$1599.13 (+$18.96)
Monthly flood insurance		$458.25	Monthly flood insurance		$173.67 (-$284.58)
Total monthly cost	=	**$2038.42**	**Total monthly cost**	=	**$1772.80 (-$265.62)**

In this example, adding 3' of freeboard saves homeowners $265.62 per month, or $95,623.67 over the life of a mortgage, and this doesn't include the potentially avoided flood damage (which could easily be tens of thousands of dollars more). Benefits in A Zones are generally less dramatic, but still substantial. To determine NFIP premiums for a specific property, see a licensed insurance agent.

WHO CAN BENEFIT FROM FREEBOARD?

Everybody building in floodplains can protect themselves and their property and save on flood insurance by including freeboard into their construction and reconstruction projects. Additional benefits include:

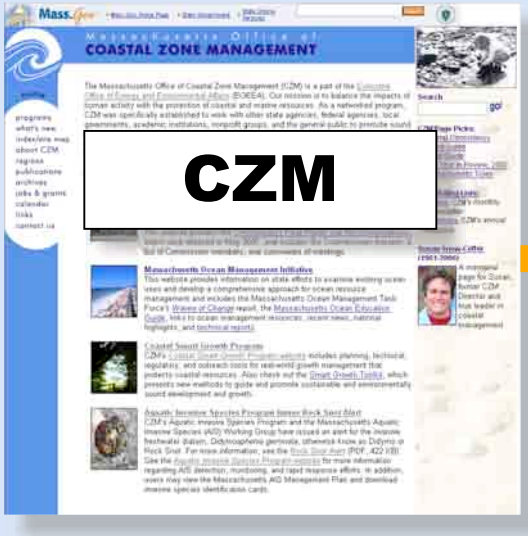
- **For new homeowners** - Whether or not you live in the house year-round, having it elevated increases the chances that it will weather storms safely, decreasing your worry and protecting your investment. If you're building a new home, or doing a renovation, ask your builder/ designer about incorporating freeboard.
- **For builders/contractors** - Freeboard provides a competitive edge over other builders, allowing you to market the benefits of reduced flood insurance and flood risk to potential buyers. When doing retrofits (especially those requiring bringing structures up to current NFIP standards) explain the benefits of freeboard to your clients.
- **For municipalities** - When constructing new municipal buildings (schools, fire stations, etc.) use freeboard as a means of saving tax-dollars. Encourage all new construction in your community to include freeboard. (NOTE: the Massachusetts Attorney General's office has recently rejected bylaws *requiring* freeboard, but municipalities may promote its use).
- **For businesses** - Protect your buildings, important records, and inventory from flooding. Drastically decrease your recovery/clean-up time after storms, or better yet, stay open during the storm. The Institute for Business and Home Safety reports that more than 25% of businesses that close due to storm damage never reopen.

FOR MORE INFORMATION . . .

- For technical information on the costs of incorporating different flood-resistant building techniques (including freeboard), see the American Institutes for Research's 2006 *Evaluation of the National Flood Insurance Program's Building Standards* study at www.fema.gov/library/viewRecord.do?id=2592.
- For general information on the National Flood Insurance Program, see www.FloodSmart.gov.
- For specific questions on flood insurance rates, see a licensed insurance agent.

Current Status

Information Hub



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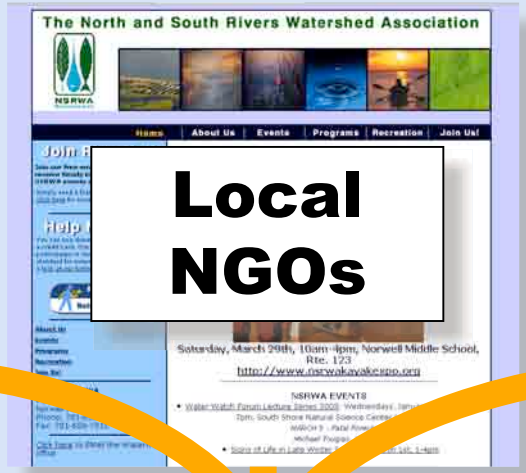
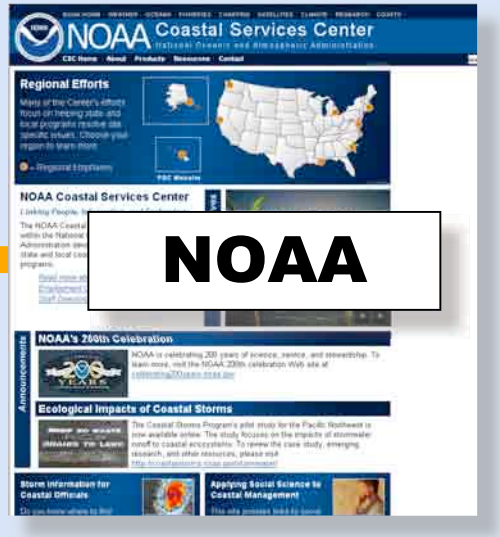
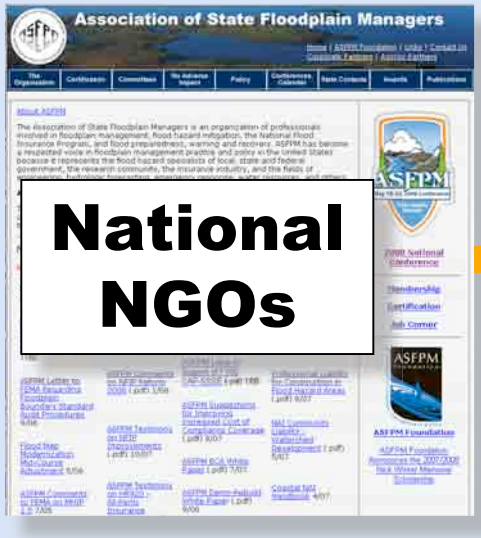


Local NGOs



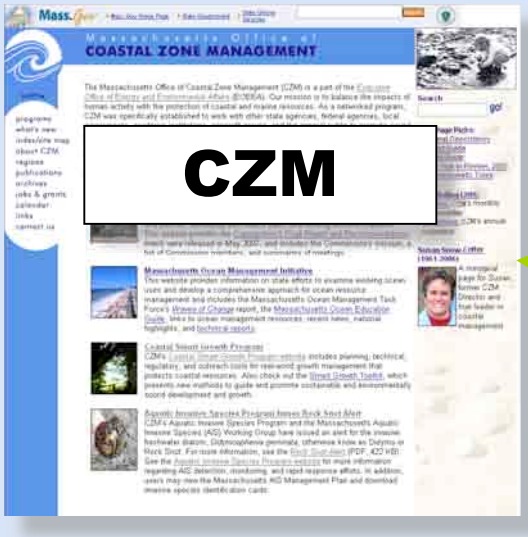
NOAA



National NGOs

FEMA

Information Hub



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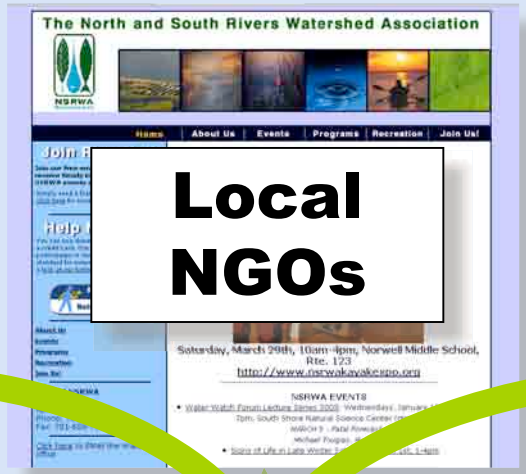

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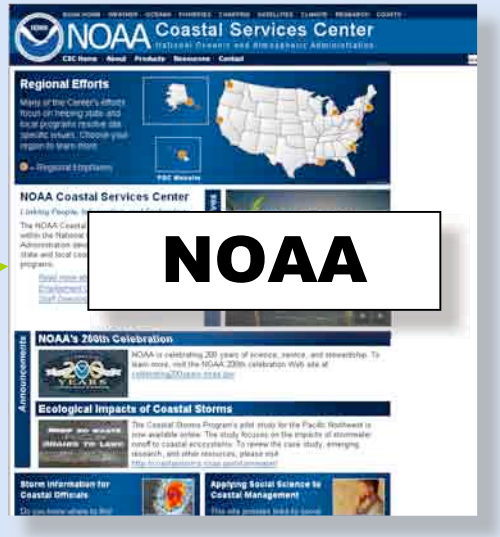

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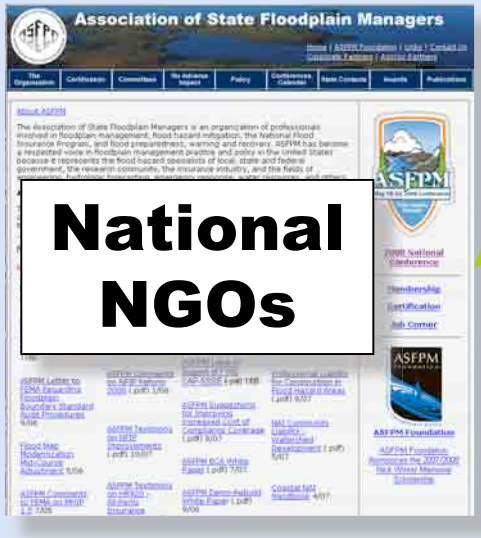
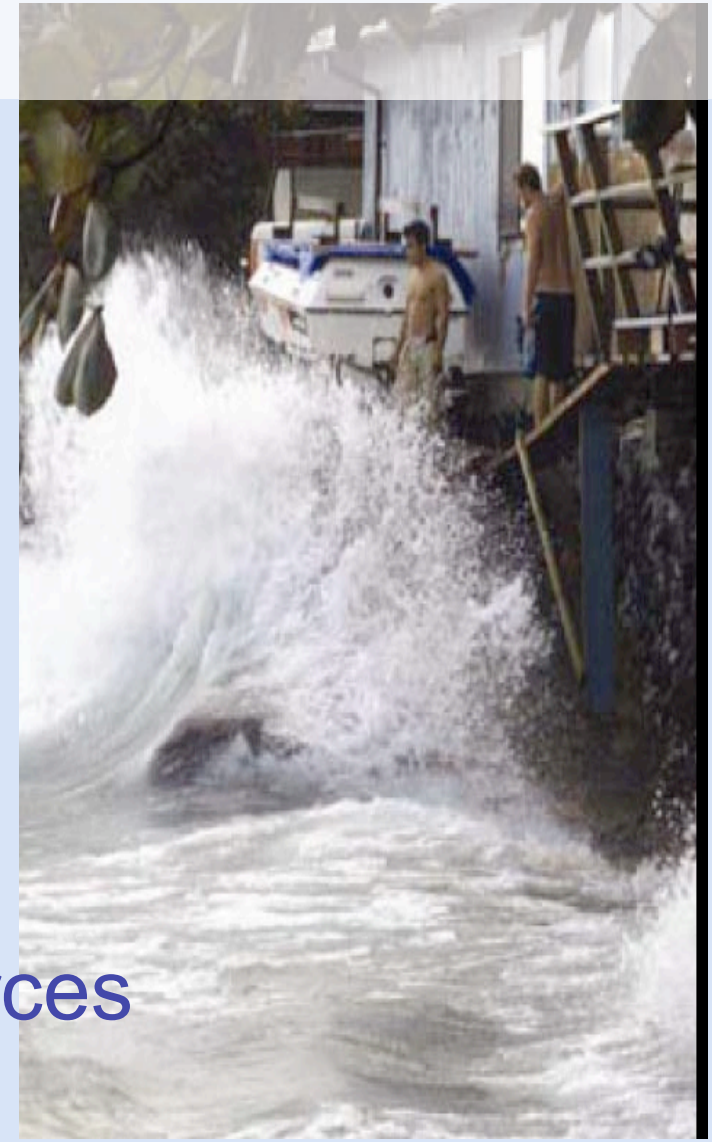


National NGOs

FEMA

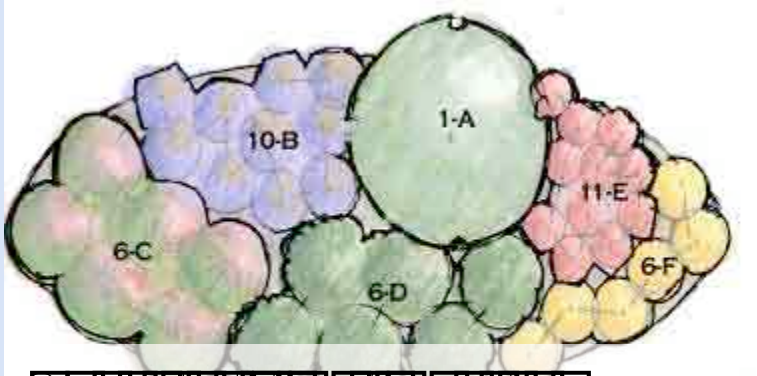
Partnerships

- Pilot Communities
- Coastal Advisory Group
- Ongoing Transference
- Enhancing Current Resources



Pilot Communities – Example Assistance

- Develop technical guidance and regulatory guidelines for coastal LID approaches, specific to coastal floodplains,
- Draft performance standards for new development and/or re-development.
- Draft suggested revisions to existing floodplain management bylaws and/or regulations to reflect the NAI approach.
- Evaluate mitigation measures for developed areas.
- Develop education and outreach strategies and materials, assisting in raising public awareness and acceptance of each tool and technique pursued



Coastal plain rain garden

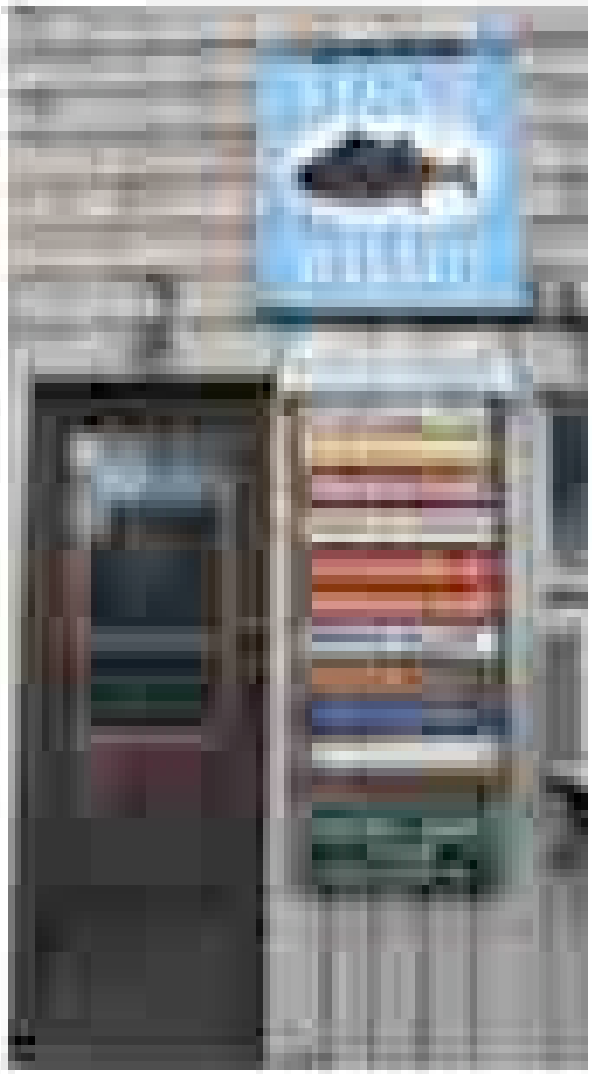
Tools Offered

1. Hazard Identification and Mapping
2. Planning
3. Regulations and Development Standards
4. Infrastructure
5. Mitigation and Shore Protections
6. Emergency Services
7. Education and Outreach

StormSmart Coasts Building Blocks

- Hazard Identification & Mapping
- Planning
- Regulations & Development Standards
- Mitigation & Shore Protection
- Infrastructure
- Emergency Services
- Education & Outreach

StormSmart Coasts Building Blocks



- Hazard Identification & Mapping
- Planning
- Regulations & Development Standards
- Mitigation & Shore Protection
- Infrastructure
- Emergency Services
- Education & Outreach

freeboard?

~$1,000 per foot of freeboard

(+~$18/month)

WITHOUT FREEBOARD

Annual flood insurance: $5499

WITH 3' FREEBOARD

Annual flood insurance: $2084

(- $284/month)

Homeowner savings

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Future:

Increasing Resiliency

		Benchmarks			
		Policy and Planning	**Physical and Natural Capacity**	**Social and Cultural Capacity**	**Technical and Financial Capacity**
Outcome Areas	**Governance**	Community development policies, plans and programs are implemented and monitored in a participatory and transparent manner.	Basic Services (i.e. water, transportation, security, etc.) are accessible to all sectors of society.	Participatory collaboration mechanisms among different sectors and various levels of government are established and used to manage for resilience.	Technical and financial support mechanisms are transparent accountable and available to support planned community actions.
	Land Use and Structural Design	Land use policies and building standards that incorporate measures to reduce risks from hazards and protect sensitive habitats are established monitored and enforced.	Critical infrastructure are located outside high risk areas and constructed to address risk from priority hazards.	Developers and communities incorporate risk reduction into the location and design of structures.	Education, outreach and training programs are established to improve compliance with land use policies and building standards.

Governance

Metric	StormSmart
Community development policies, plans and programs are implemented and monitored in a participatory and transparent manner.	goal
Basic Services (i.e. water, transportation, security, etc.) are accessible to all sectors of society.	goal
Participatory collaboration mechanisms among different sectors and various levels of government are established and used to manage for resilience.	must
Technical and financial support mechanisms are transparent accountable and available to support planned community actions.	?

Land Use and Structural Design

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