

STORMTOOLS Design Elevation (SDE) Map Training Session

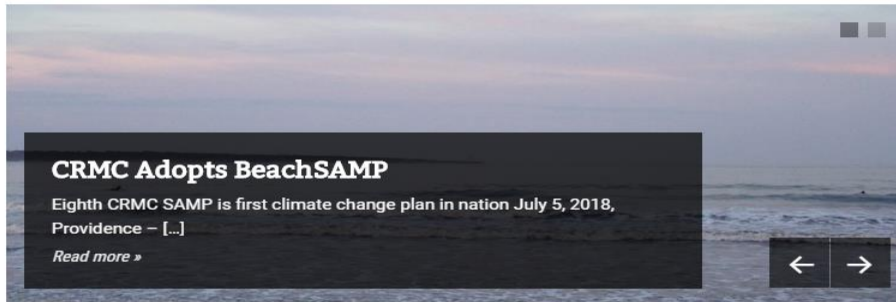


University of Rhode Island
October 24, 2018

RI Shoreline Change Special Area Management Plan



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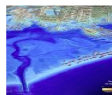
News & Updates



Video available from the Beach SAMP Stakeholder Meeting, March 29th, 6-8pm



CRMC Public Notice announced for Beach SAMP Chapters 3,4, & 5



URI Coastal Resilience Science and Engineering Workshop, Monday, December 4th, 8:30am – 5:45pm



Comment on the BeachSAMP Chapters HERE

Search

Recent Posts

- CRMC Adopts BeachSAMP July 16, 2018
- CRMC Public Notice for Beach SAMP Document April 20, 2018
- Video available from the Beach SAMP Stakeholder Meeting, March 29th, 6-8pm March 14, 2018
- CRMC Public Notice announced for Beach SAMP Chapters 3,4, & 5 February 20, 2018
- URI Coastal Resilience Science and Engineering Workshop, Monday, December 4th, 8:30am – 5:45pm November 29, 2017
- Comment on the BeachSAMP Chapters HERE October 16, 2017
- October 12th, BeachSAMP Stakeholder Meeting October 12, 2017
- Beach SAMP Stakeholder Meetings – Thursday, October 12, 2017 AND Thursday, October 26, 2017 September 13, 2017
- Crafting the SAMP Document August 3, 2017
- King Tides this Week: Help Chronicle our Changing Coast May 24, 2017

Categories

- Regional Events (31)
- Research (9)
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- Uncategorized (16)
- update (28)

“Instead of simply building to today’s coastal conditions, as virtually every other regulatory program requires, this process for development will take into account those future conditions, and allow for building to them.” Grover Fugate 7-5-18

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Legend

Structure Details

Rhode Island E911 Sites

- Miscellaneous
- Airport
- Campground
- Commercial
- Development Site
- Public Telephone
- Industrial
- Public Service
- Residential
- Utility

Floodplain Mapping Information

Coastal A Zone

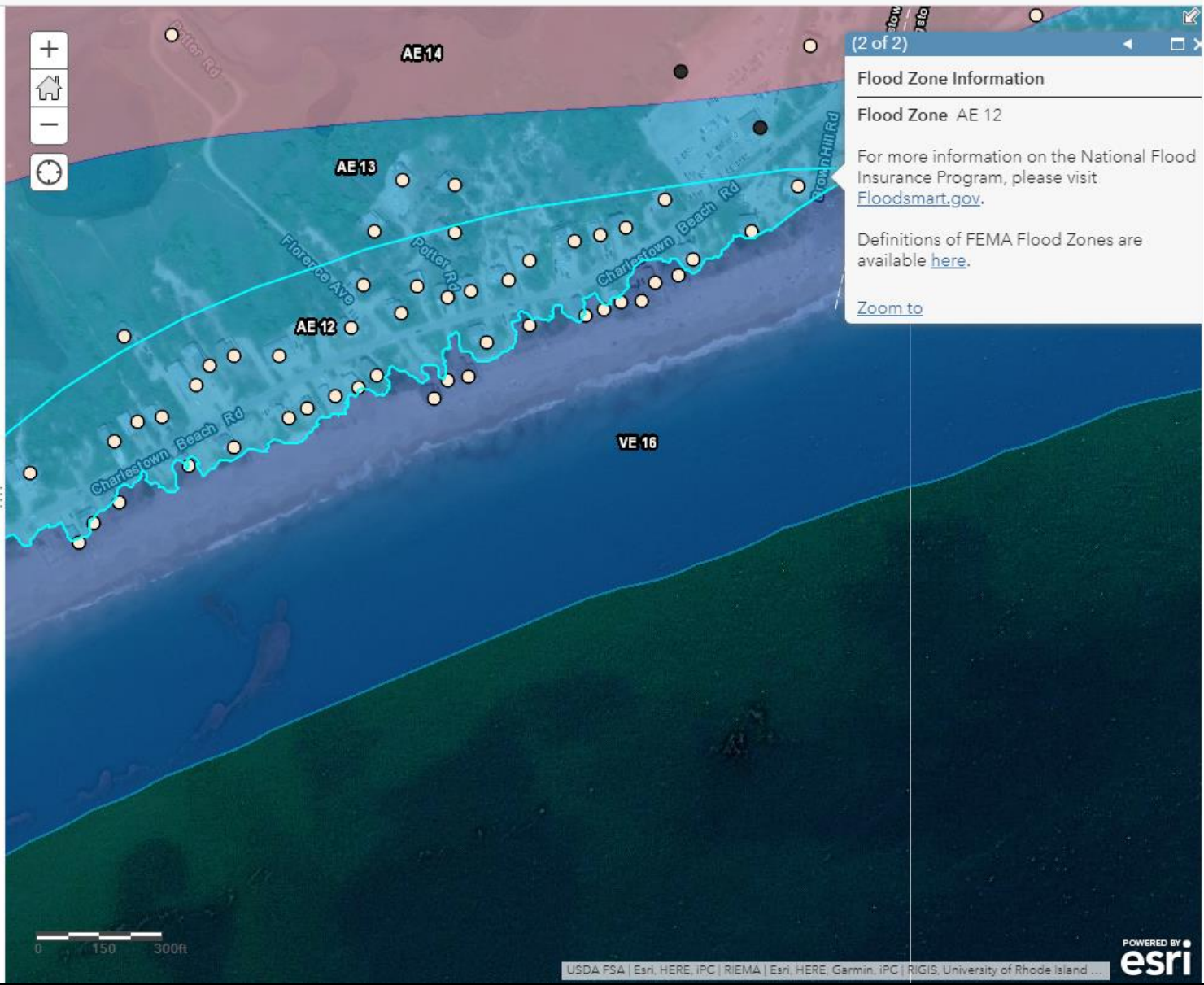


Riverine Reference



Effective Flood Zones

- A, 1% Annual Chance Flood
- AE, 1% Annual Chance Flood
- Floodway
- AH
- AO
- VE
- X, 0.2% Annual Chance Flood
- X, Area With Reduced Flood Risk Due To Levee



(2 of 2)

Flood Zone Information

Flood Zone AE 12

For more information on the National Flood Insurance Program, please visit Floodsmart.gov.

Definitions of FEMA Flood Zones are available [here](#).

[Zoom to](#)





Superstorm Sandy ~25 year recurrence interval storm in Charlestown, RI



Quonochontaug Headland

Ninigret Pond

Block Island Sound

**East Beach Barrier
after Hurricane Carol (1954)**

Risk Assessment Tools

- STORMTOOLS (sea level rise and storm surge inundation maps)
- SDE maps (STORMTOOLS Design Elevation)
- CERI (coastal environmental risk index)
- Historic and Projected Coastal Erosion Maps



Overview of RI Coastal Resource Management Risk Based Permitting System

RI CRMC Coastal Hazard Application Guidance

5.1 Overview of Process

The steps presented below provide guidance for applicants to address Coastal Hazards for selected projects in the design and permitting process for the Rhode Island Coastal Resources Management Council (CRMC).

STEP 1: PROJECT DESIGN LIFE

In this step, the applicant will choose an appropriate design life, or lifespan, for the project, and identify a projected sea level for the project site based on the selected design life.

STEP 2: SITE ASSESSMENT & BASE FLOOD ELEVATION

In this step the applicant will review specified maps and tools to assess the exposure and potential risk from coastal hazards at the project site.

STEP 3: LARGE PROJECTS

This step is for Large Projects and Subdivisions only. If not such a project, this step may be skipped.

STEP 4: DESIGN EVALUATION

The applicant will identify, document, and assess the feasibility of design techniques that could serve to avoid or minimize risk of losses.

STEP 5: SUBMIT AN APPLICATION

The applicant will submit the permit application and include the assessment from the previous steps in the application package to the CRMC.

STORMTOOLS

Home - STORMTOOLS for Beginners

Modify Map Sign In

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Legend

- Will 1-FOOT of SEA LEVEL RISE affect my property?

- Will 2-FEET of SEA LEVEL RISE affect my property?

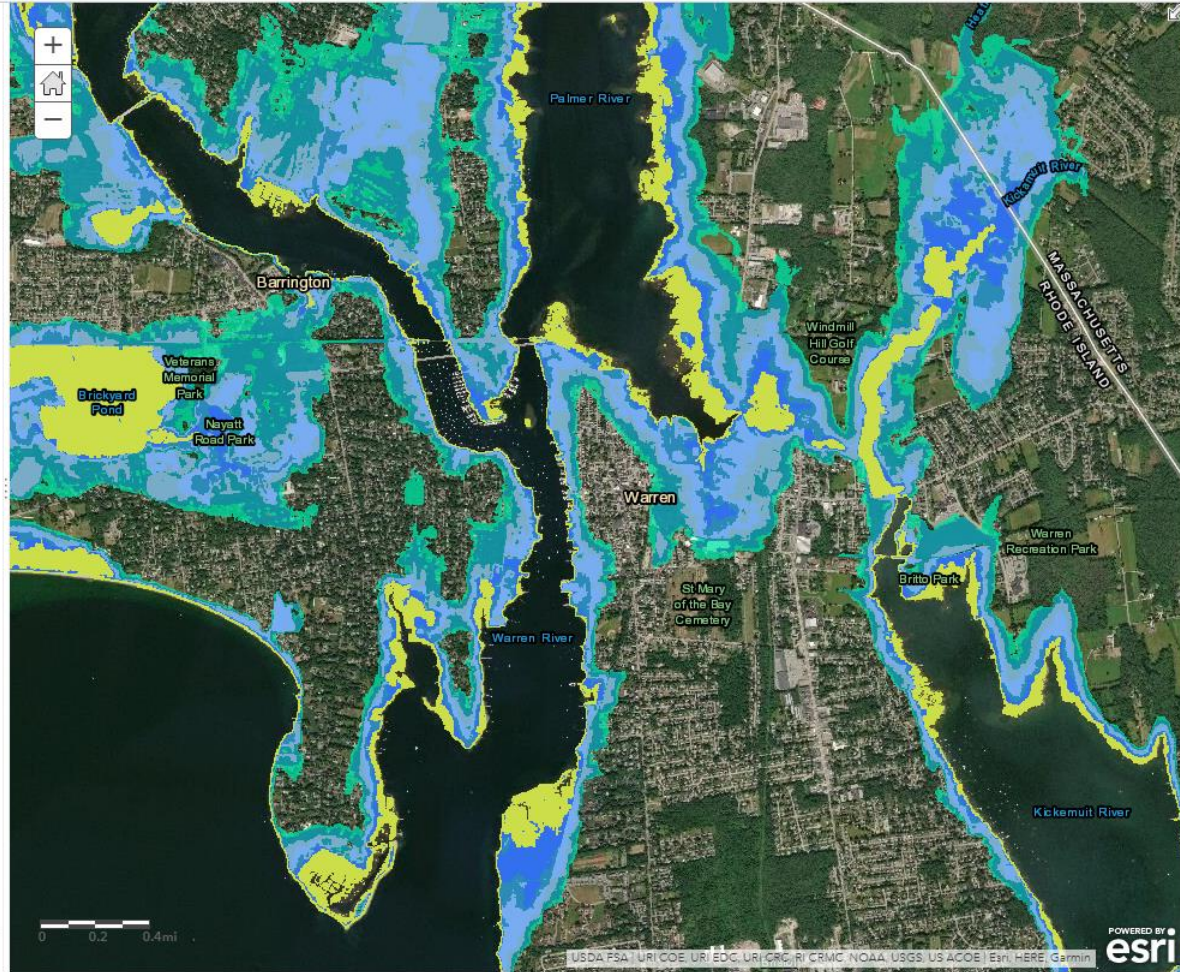
- Will 3-FEET of SEA LEVEL RISE affect my property?

- Will 5-FEET of SEA LEVEL RISE affect my property?

- Will 7-FEET of SEA LEVEL RISE affect my property?

- Will 10-FEET of SEA LEVEL RISE affect my property?

- Will 12-FEET of SEA LEVEL RISE affect my property?

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Legend

Will 1-FOOT of SEA LEVEL RISE affect my property?



Will 2-FEET of SEA LEVEL RISE affect my property?



Water level 2 feet above MHHW

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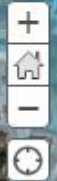
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Contents

- Addressed Structures (E911)
- Critical Infrastructure
- 3-ft Sea Level Rise (High Tide) (flooding in feet)
- 1 Year Coastal Storm with 3-ft Sea Level Rise (flooding in feet)
- 3 Year Coastal Storm with 3-ft Sea Level Rise (flooding in feet)
- 5 Year Coastal Storm with 3-ft Sea Level Rise (flooding in feet)
- 10 Year Coastal Storm with 3-ft Sea Level Rise (flooding in feet)
- Imagery with Labels



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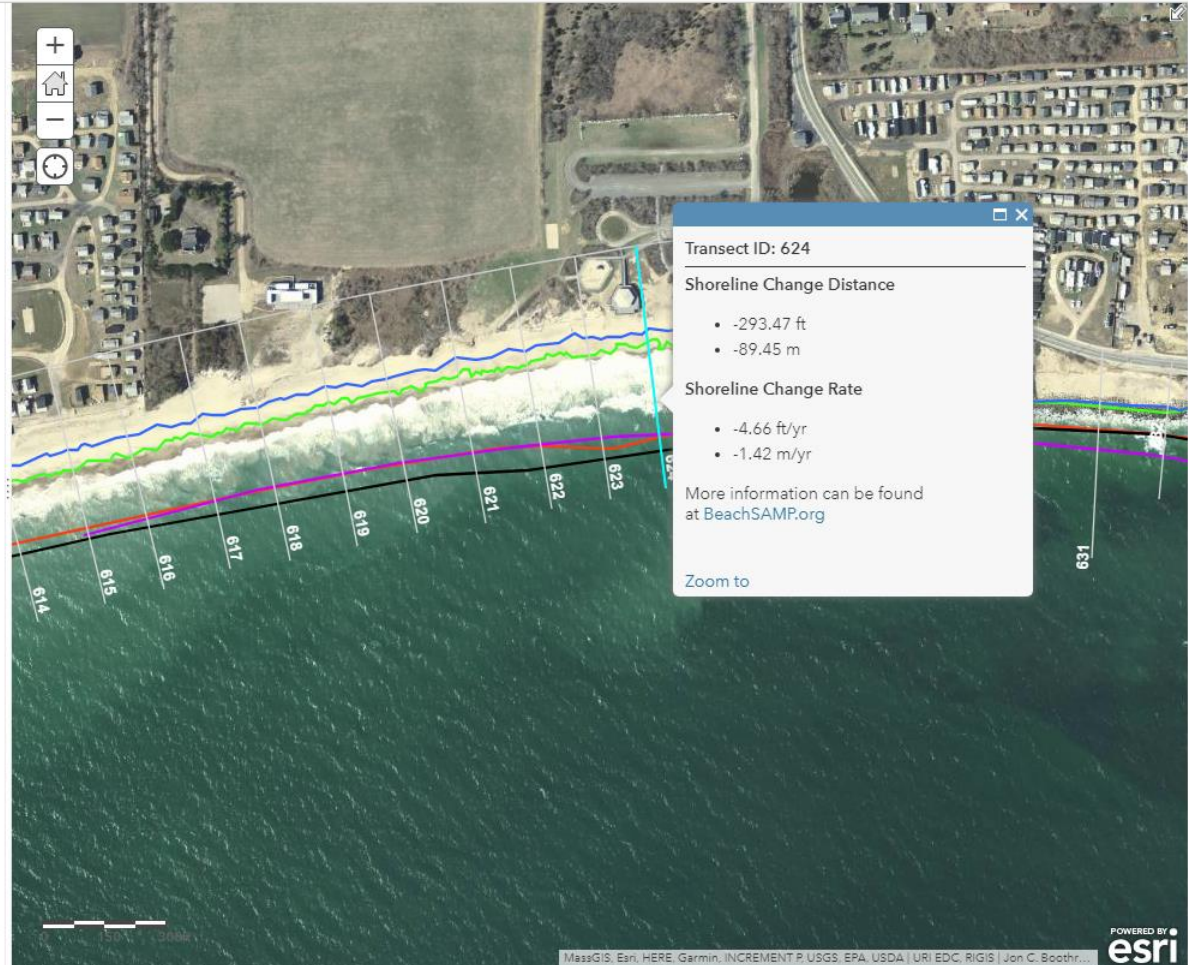


Legend

Transects

Shorelines (Last High Tide Swash) - year

- 1939
- 1951
- 1952
- 1963
- 2012
- 2014



Year	2020	2030	2040	2050	2060	2070	2080	2090	2100
Projected Future Erosion Multiplier	1.05	1.14	1.23	1.34	1.45	1.57	1.70	1.84	2.00

Step 2A: What does SLR do to my site (plus access roads)?

- Go to STORMTOOLS for CRMC Permit Applicants. This online Map Journal will provide interactive maps that assist applicants in addressing the requirements of this Step.
- Select the SLR Map Layer that comes closest to the SLR value you derived from STEP 1 to see how SLR impacts your project site and access roads. If your SLR value is between two values, round up to the higher SLR Map Layer.
- Type in or Zoom to your project site address in the address field.
- Identify the roads that connect to your project site and if they show exposure to SLR.

Step 2B: STORMTOOLS Design Elevation (SDE)

- Determine your recommended STORMTOOLS Design Elevation (SDE) using ([xxx.xxxx.xxx](#))
NOTE: SDE maps are currently under development and are expected to be online and available for the entire Rhode Island coastline by mid-2018.
- Reference State Law Elevation Allowances. **NOTE: 1-foot of freeboard (elevation) is required, above BFE is required but up to 5-feet of additional freeboard may be provided voluntarily.**
- Applicant should coordinate with the design engineer on this issue.

Step 2C: Erosion

- See Erosion Maps in RICRMP and meet the Regulatory setbacks (Section 140).
- To calculate projected erosion at the project site, select the multiplier in the Table 2 below that corresponds to the design life year you selected in STEP 1. Multiply the historic erosion rate you identified in STEP 1.2 by the multiplier in the Table 2 to determine projected future erosion for the project site.

Year	2020	2030	2040	2050	2060	2070	2080	2090	2100
Projected Future Erosion Multiplier	1.05	1.14	1.23	1.34	1.45	1.57	1.70	1.84	2.00

Table 2 – Projected Erosion Rate multipliers. (Oakley et al., 20161)

RICRMC Coastal Hazard Application Guidance WORKSHEET

Applicant Name: [] Proposed Project Site Address: []

Step 1. Project Design Life (See Step 1, page 5-5 of Beach SAMP Chapter 5, for details)

___ Open RICRMC Coastal Hazard Application Guidance Mapping Tool (https://arcg.is/OWaGu), enter project site address (or zoom in to project site)

___ Choose an expected design life for your project. (CRMC recommends a minimum of 30 years) []

___ Circle the sea level rise (SLR) projection from the table below that match or come closest to your selected project design life.

Table with 10 columns: Year (2020, 2030, 2040, 2050, 2060, 2070, 2080, 2090, 2100) and SLR (1.05, 1.67, 2.33, 3.25, 4.20, 5.35, 6.69, 8.14, 9.61)

Table 1 – Sea Level Rise (SLR) Projections (Feb. 2017). NOAA High Curve, 83% Confidence Interval. Newport, RI Tide Gauge. All values are expressed in feet relative to NAVD88. http://www.corpsclimate.us/ccaceslcurves.cfm

Step 2. Site Assessment and Base Flood Elevation (See Step 2, page 5-6 of Beach SAMP Chapter 5, for details)

___ Indicate base flood elevation (BFE) for your project location from FEMA FIRM (Step 2B) []

___ Select the STORMTOOLS SLR map layer that comes closest to the SLR value you circled in the table above. If the value falls between the available STORMTOOLS SLR map layers, round up to the next higher level. []

___ Indicate your STORMTOOLS Design Elevation (SDE) from the pop up box by clicking on the project location. Consider adding 1.5 to 2 feet to account for astronomical high tides (Step 2B). []

___ Determine historic CRMC erosion rate for the project site here: http://www.crmc.ri.gov/maps/maps_shorechange.html (Step 2C) []

___ Using the CRMC Projected Erosion Rates map that shows the "Exponential Low" rate of change, identify if your property intersects with any erosion or setback layers and list them. []

___ List any roads or access routes identified in Step 1 that are potentially inundated from SLR and storms. For example, find and list your nearest coastal evacuation route using the maps available at RIEMA's website: []

http://www.riema.ri.gov/resources/business/prepare/evacuation.php

___ Consider and discuss with your design consultant other forces or factors that might impact the development, such as coastal habitats, shoreline features, public access, wastewater, storm water, depth to water table/groundwater dynamics, saltwater intrusion, or other issues not listed above. In addition, pressure from rising sea levels will result in rising subsurface groundwater levels ultimately effecting wells and septic systems. []

NEXT STEP: Investigate mitigation options for the exposure identified above and include that in the final application.

This design sheet must accompany the application.

Owners' Signature: _____ Date: _____

Coastal hazard analysis application requirements (650-RICR-20-00-1-1.1.6.I)

- Amendments to the Red Book – Council approval on September 25, 2018
- Filed with the Office of Regulatory Reform (ORR) for post-adoption review on October 4, 2018
- The effective date will depend on ORR review and final filing with Secretary of State, but should be by December of this year