EBC Rhode Island Leadership Program

New Leadership - Coastal Resources Management Council

EBC

RISEP
Rhode Island Society of Environmental Professionals

Welcome

Rick Mandile

Chair, EBC Rhode Island Chapter

Principal, SAGE Environmental

Thank you to our Program Partner

EBC

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MAYFLOWER WIND

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Program Introduction

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Introduction RI CRMC

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Coastal Resources Management Council

State of Rhode Island

Introduction RI CRMC

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Introduction RI CRMC

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Rhode Island
Coastal Resources Management Council

Environmental Business Council of New England
Rhode Island Chapter – Leadership Program
June 1, 2022

Jeffrey Willis, Executive Director

Coastal Zone Management

- **Mid-to-Late 1960s Concept**
- **Congress Believed that:**

  Coastal Environmental Management was

  - Essentially Non-existent
  - Piecemeal At-best
  - Specialized when/if Existed
- **1971: Rhode Island legislation created the CRMC (R.I.G.L. 46-23)**
- **1972: Federal CZMA was passed (16 U.S.C. §§ 1451-1465)**

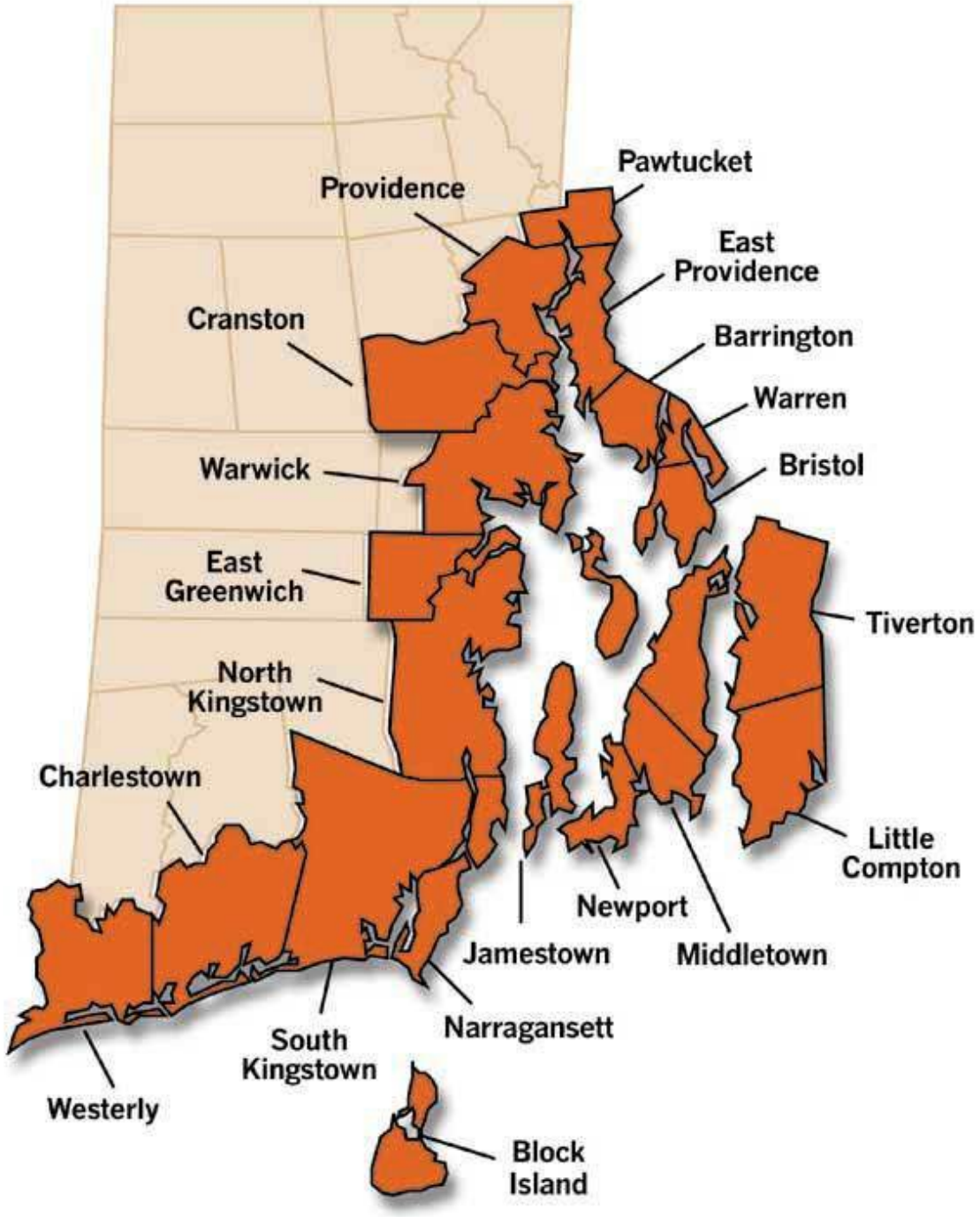
Coastal Zone Management Act of 1972

Three Primary Objectives of the CZMA:

1. ***It's a Balancing Act.*** Balance resource protection with economic, recreational and cultural needs
2. ***Emphasizes Primacy of State decisions.*** States address local issues, but must consider national interests: defense, energy, fisheries, recreation, ports, transportation
3. ***Participatory.*** Encourage participation of all levels of government, from local to federal, and the public, to carry out the purposes of the Act

What is the CRMC?

- **Management Agency**
  - Special Area Management Planning
  - ROWs Designation/Public Access
  - Dredging
  - Aquaculture
  - Federal Consistency
  - Wetland Restoration Projects
  - Harbor Management
- **Environmental Regulatory Agency**
  - Issue permits for any Activity w/in the Coastal Zone
- **Enforcement**

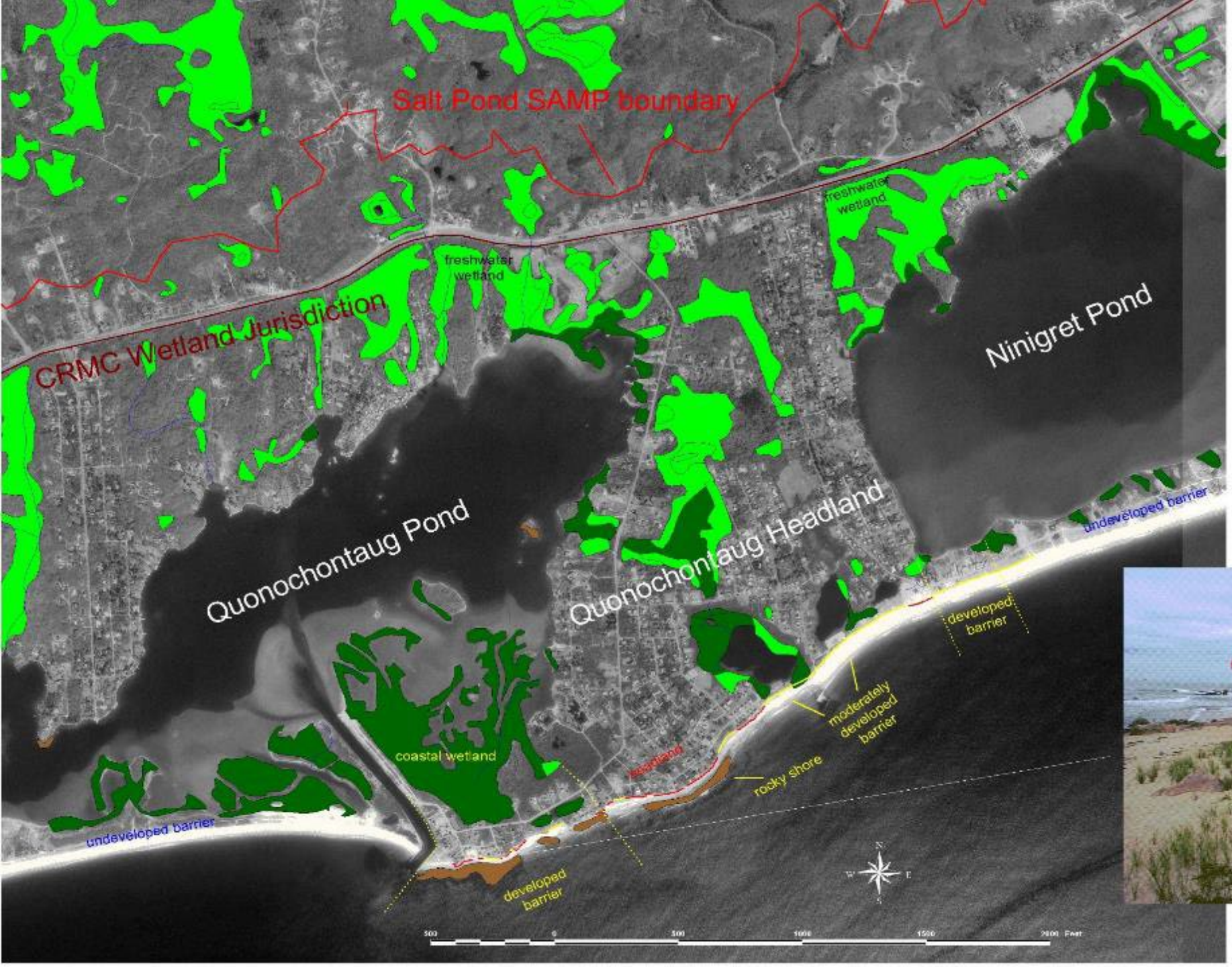


Where is the CRMC's Jurisdiction?

- Coastal Zone
  - Tidal Waters
  - Shoreline Feature
  - 200' coastal feature contiguous area
- SAMP Watersheds
- Statewide Activities
- Freshwater Wetlands in the Vicinity of the Coast
- Federal Consistency

CRMC
Coastal Resources Management Council

CRMC Jurisdiction



EXPLANATION

- Primary dunecrest
- Escarpment
- Revetment
- Salt Pond SAMP boundary
- CRMC Wetland Jurisdiction
- Stream
- Freshwater wetland
- Coastal Wetland
- Rocky Shore

CRMC

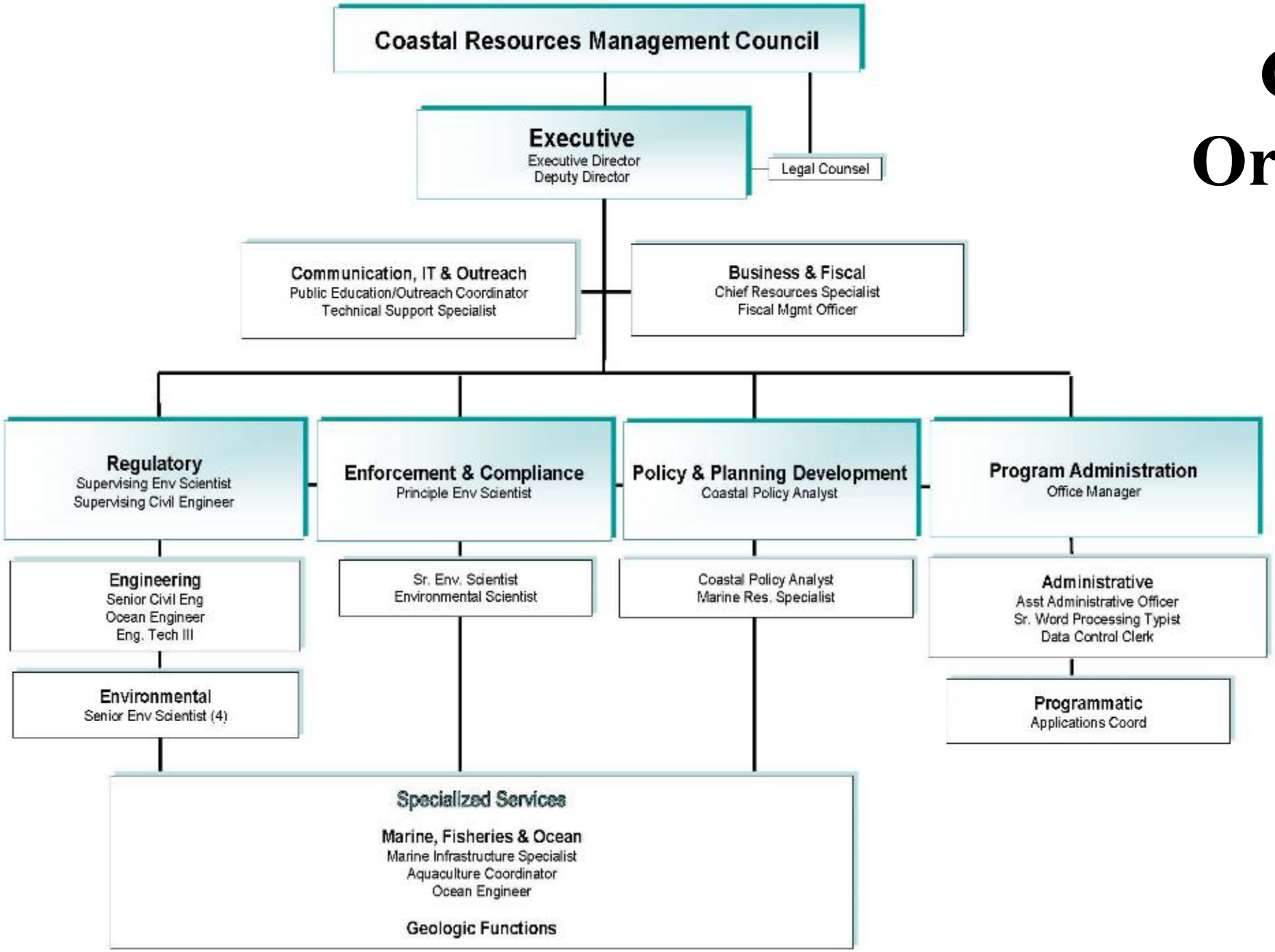
RIGIS

JHF 4-10-00

Who is the CRMC?

- Agency is Composed of:
  - 10 Member Council of Appointed Volunteers
    - Coastal Communities Representation
      - Three from >25,000 -- Three General Public*
      - Three from <25,000 -- RIDEM Director
  - Professional Staff
    - Environmental & Geophysical Scientists
    - Engineers
    - Policy Analysts
    - Support Staff

CRMC's Organization Chart



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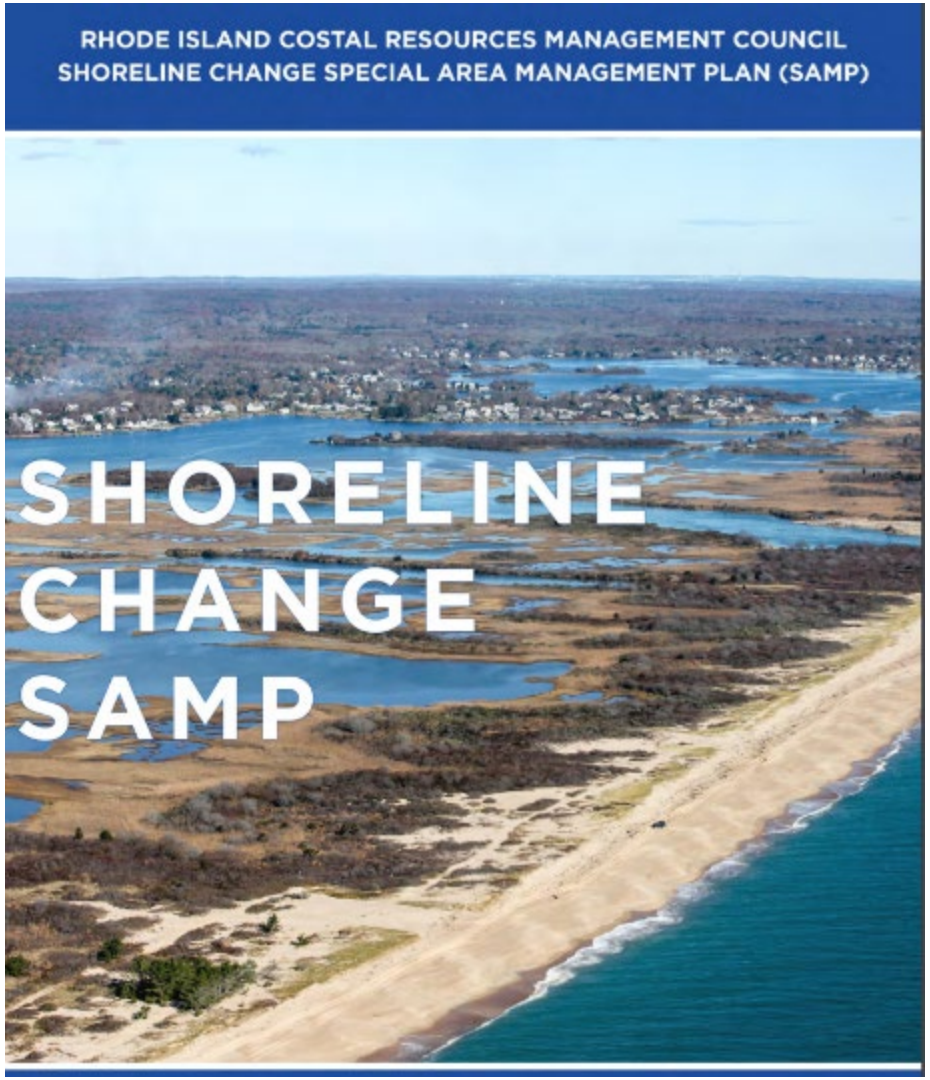
Special Area Management Planning

- Ecosystem-based management strategies
- Consistent with legislative mandate to preserve and restore ecological systems.
- CRMC coordinates with local municipalities, as well as government agencies and community organizations, to prepare the SAMPs and implement the management strategies.

CRMC
Coastal Resources Management Council

Shoreline Change 'Beach' SAMP



CRMC File Number:

RI CRMC COASTAL HAZARD APPLICATION WORKSHEET

APPLICANT NAME:

PROJECT SITE ADDRESS:

STEP 1. PROJECT DESIGN LIFE

☐ A. For properties in a FEMA-designated **A** or **X** Zone, provide the first floor elevation (FFE) of the proposed structure referenced to NAVD88, **OR**
For properties in a FEMA-designated **V** or **Coastal A** Zone, please provide the elevation of the lowest horizontal structural member (LHSM) referenced to NAVD88.

FFE ft

OR

LHSM elevation ft

☐ B. How long do you want your project to last? Identify the expected design life for the project (CRMC recommends a **minimum of 30 years**)

Design Life: yrs

☐ C. Add the number of years you identified in 1B to the current year. (For example, if you are completing this form in the year 2020, and you want your project to last 30 years, your design life year will be 2050.)

Design Life Year:

☐ D. **CHECK** beneath the sea level rise (SLR) projection that matches or comes closest to project design life year.

Year	2020	2030	2040	2050	2060	2070	2080	2090	2100
SLR	1.05	1.67	2.33	3.25	4.20	5.35	6.69	8.14	9.61
	○	○	○	○	○	○	○	○	○

Source: 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

NOTE: The STORMTOOLS sea level rise scenarios depict how high the water will be above the average height of the daily high tide over the 19-year period between 1983 and 2001. There have been between 4 and 5 inches of sea level rise in Rhode Island since then. The higher modeled water level accounts for the uncertainties in ice sheet and ocean dynamics.

STEP 2. SITE ASSESSMENT

☐ A. Open *RICRMC Coastal Hazard Mapping Tool*. Following the tutorial along the left side of the screen, enter the project site address and turn on the sea level layer closest to the number you circled in 1D.

☐ B. **ENTER** the STORMTOOLS SLR map layer closest to the SLR value you checked in Step 1D above. If the value falls between the available STORMTOOLS SLR map layers, round up to the closest of these sea level rise (SLR) numbers: 1ft, 2ft, 3ft, 5ft, 7ft, 10ft, or 12ft

ft

○YES

http://www.crmc.ri.gov/coastalhazardapp/CH_App_Worksheet_Interactive.pdf

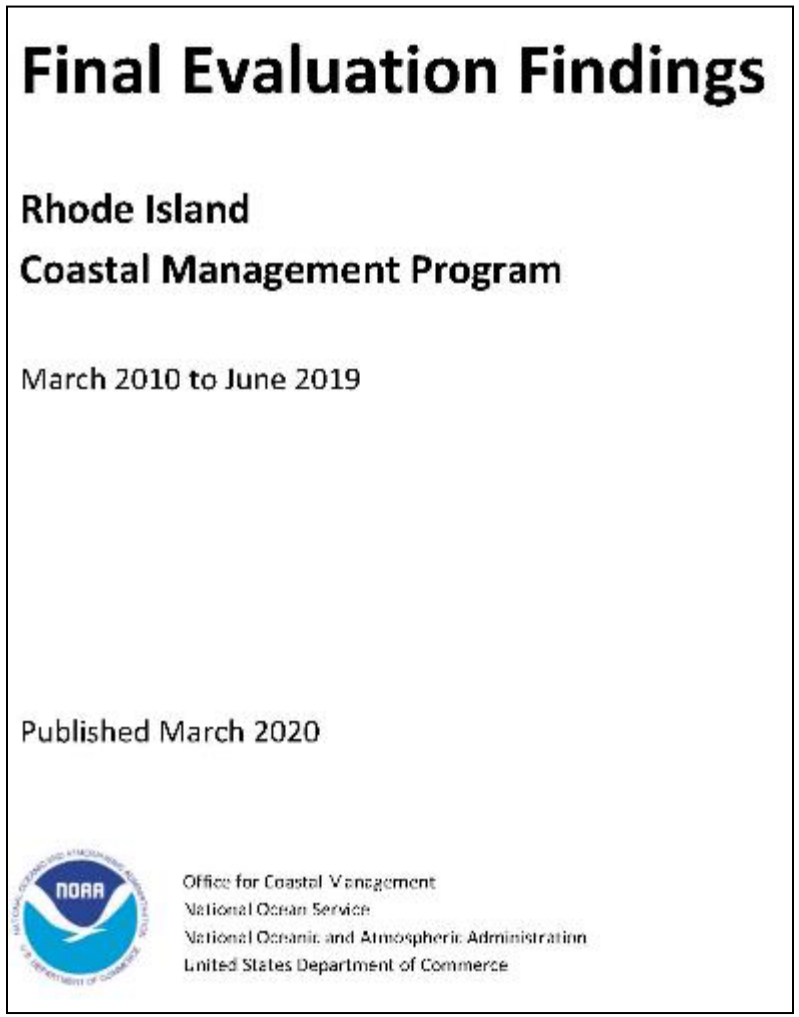
Rights-of-Way Designations

Subcommittee Process

- Initial Request/Staff Research
  - City and Town Involvement
- Hearings
- Subcommittee Decision
- Full Council Decision

Total Number of Sites Reviewed	360
Sites Designated as Public	230
Sites w/Insufficient Evidence	71
Sites Not Resolved	34
Sites under Review	9

NOAA Partnership & Oversight



Final Evaluation Findings

Rhode Island
Coastal Management Program

March 2010 to June 2019

Published March 2020

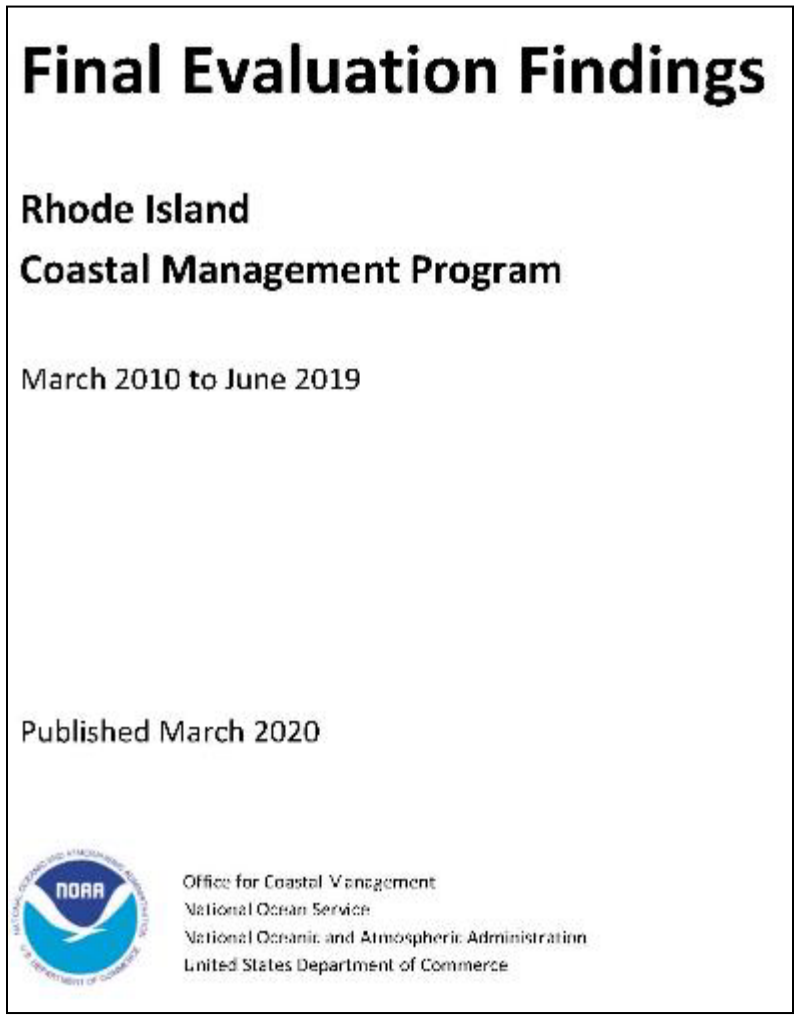
Office for Coastal Management
National Ocean Service
National Oceanic and Atmospheric Administration
United States Department of Commerce

- ***NOAA is required to conduct periodic evaluations*** *of the performance of states and territories with federally approved coastal management programs, 16 U.S.C. § 1458(a).*

- *The evaluation examines the operation & management of the* ***Coastal Resources Management Council****, the designated lead agency,* ***for the period from March 2010 to June 2019****.*

- ***The evaluation focused on <u>three</u> target areas****:*
  - *Program administration*
  - *Ocean planning*
  - *Coastal hazards and climate resilience.*

NOAA Partnership & Oversight


Final Evaluation Findings

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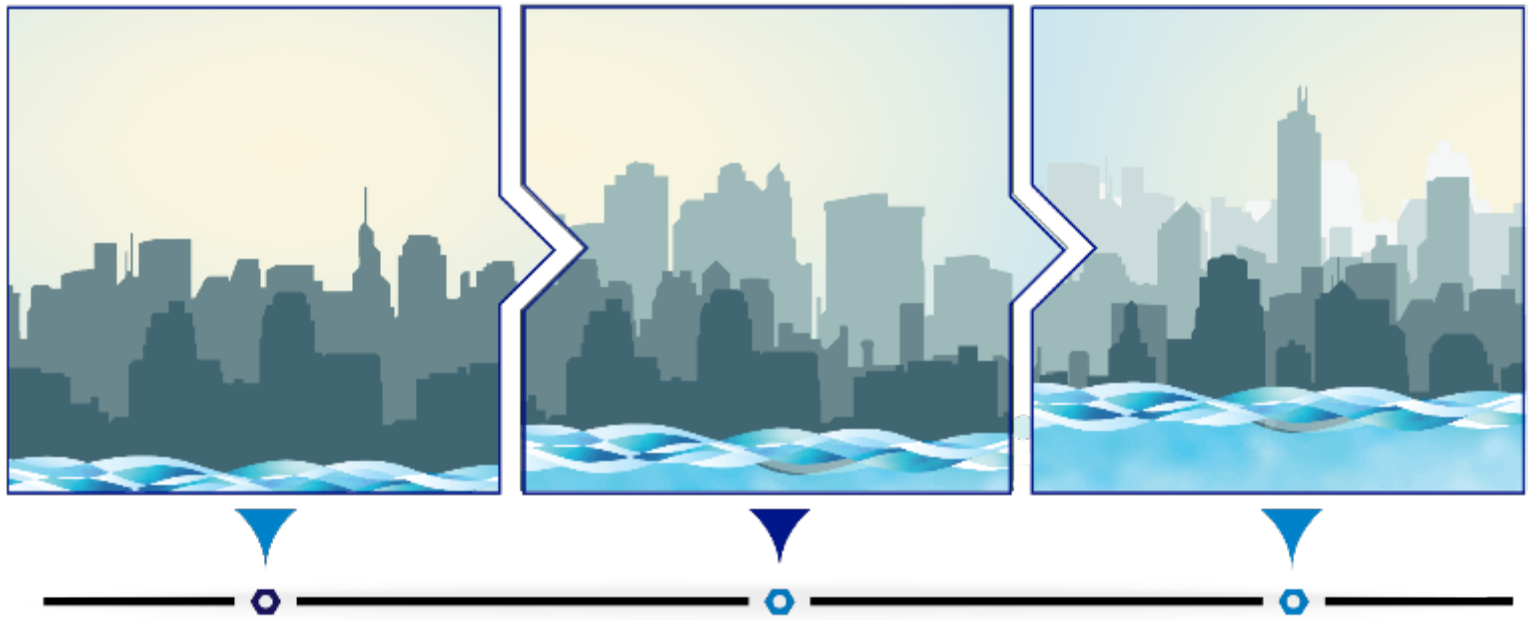
- **Accomplishments**
- **Recommendations**
- **Necessary Actions**

- ***Necessary Action:*** *The Rhode Island Coastal Program must develop a new permit database and web interface that can process permit applications and online payments, serve as a platform for interagency review, and track enforcement issues by March 31, 2024.*

Federal Consistency

Is a provision in the **Coastal Zone Management Act** (16 U.S.C. § 1456) that requires the Federal government to comply with a State's federally approved Coastal Management Program when taking actions (direct federal action or issuing federal licenses and permits) that are likely to affect a State’s coastal resources.

Rhode Island Sea Level Rise



Then	2020 (Now)	2050 (Future)
1930	12 inches higher	additional 12+ inches

Adapted from NOAA, based on US Interagency Report (2022)
Water level data from Newport, RI station 8452660

Rhode Island

- 12 inch rise since 1930; additional 12+ inches of sea level rise projected in next 30 years.
- Results: Significantly more coastal flooding over next 30 years.
- Results: damaging floods projected to be 10+ times more often than present.

Rhode Island STORMTOOLS

STORMTOOLS for Beginners | Advanced STORMTOOLS | RI CRMC Coastal Hazard Application | STORMTOOLS Design Elevation (SDE) | Coastal Environmental Risk Index (CERI) | e911 Exposure Assessment

STORMTOOLS

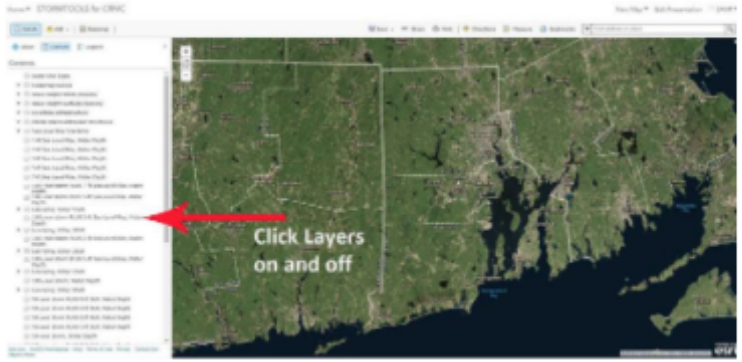
RI Shoreline Change Special Area Manangement Plan

STORMTOOLS is a method to illustrate and display storm inundation, with and without sea level rise, for different types of storms that could occur along Rhode Island's coast line.

What is STORMTOOLS?

STORMTOOLS is a method to map storm inundation, with and without sea level rise, for varying return period storms that covers all of Rhode Island's coastal waters. Predictions are provided that show water extent and depth at any given point for nuisance floods (1, 3, 5, and 10 year recurrence intervals) and 25, 50, 100, and 500 year storm scenarios at a 95% confidence interval. Sea level rise of 1, 2, 3, 5, and 7 feet on their own on their own as well as combined with each storm scenario are also modeled. Flood maps are also provided for historical hurricanes to include 1938, 1954 (Carol), 1991 (Bob), and 2012 (Sandy).

STORMTOOLS is accessed online through ArcGIS.com and can be used by anyone - there is no need to download any software or go through extensive training. The maps are high resolution (1 m, 3 3.3 ft horizontal) and the user can type in an address of zoom to an area of interest and toggle on and off the different storm and sea level rise scenarios in order to better understand their risks.



https://stormtools-mainpage-crc-uri.hub.arcgis.com

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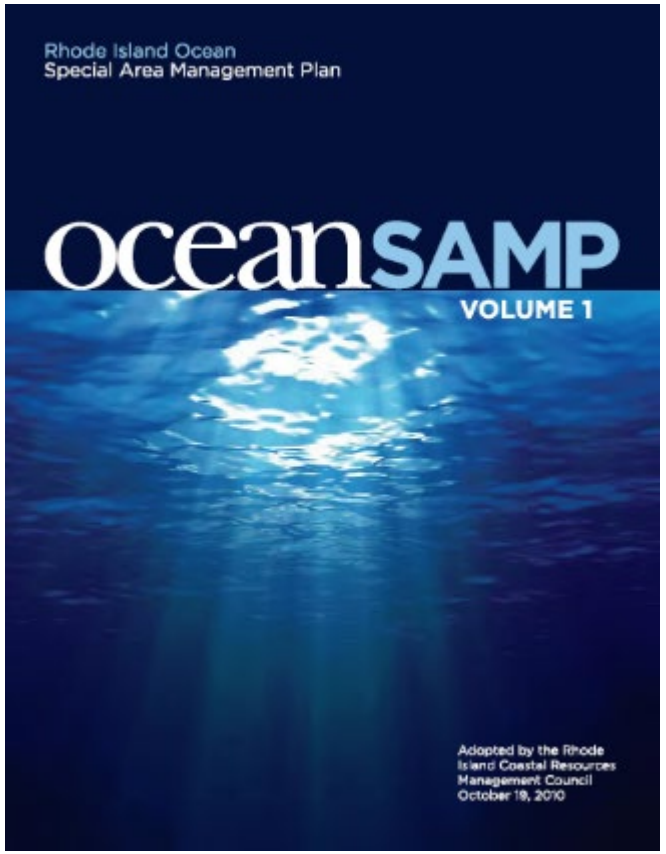
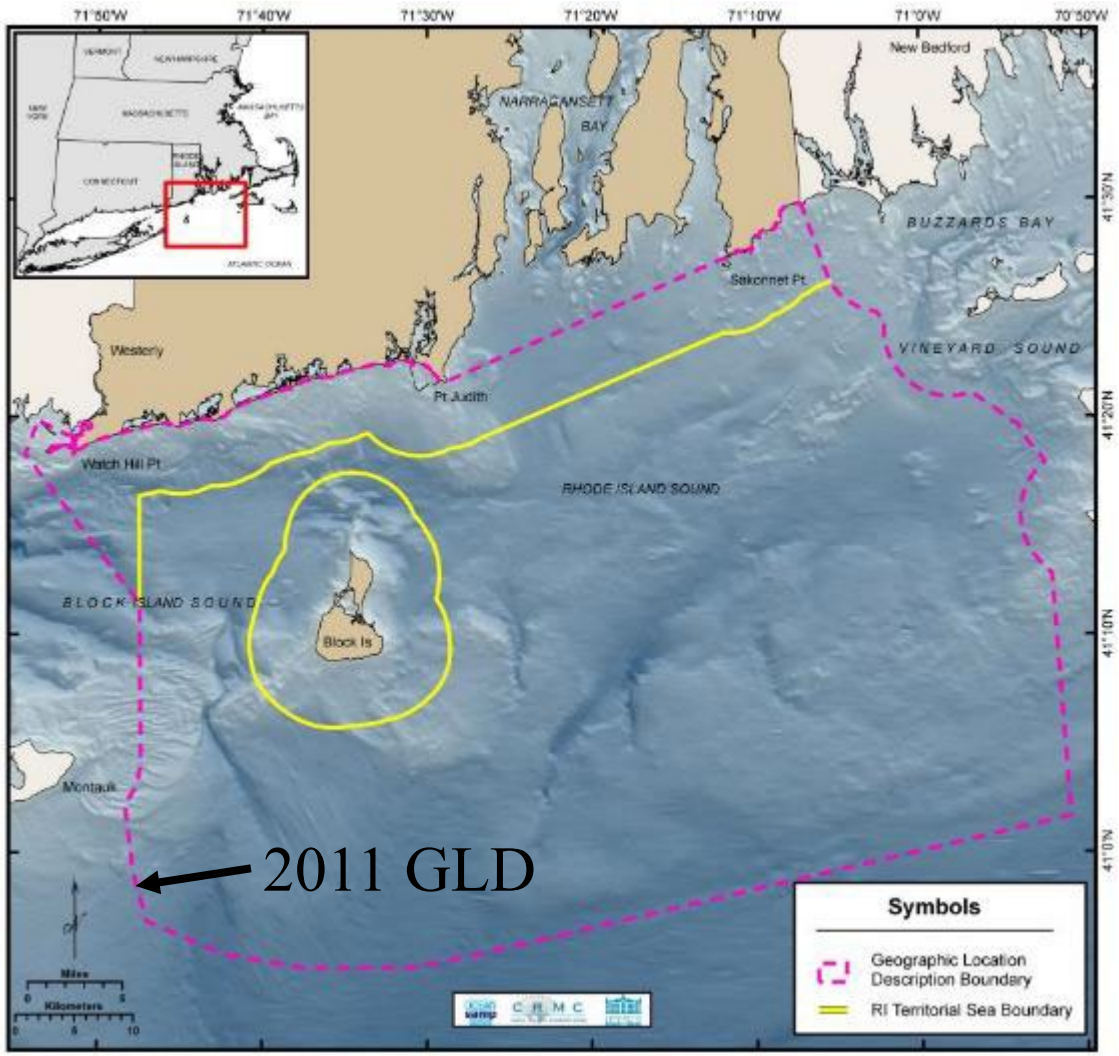
December 12, 2016
The Ocean State makes waves:
the U.S.'s first offshore wind farm up and running

The Nation's 1st Federally Approved Offshore Special Area Management Plan – The RI Ocean SAMP





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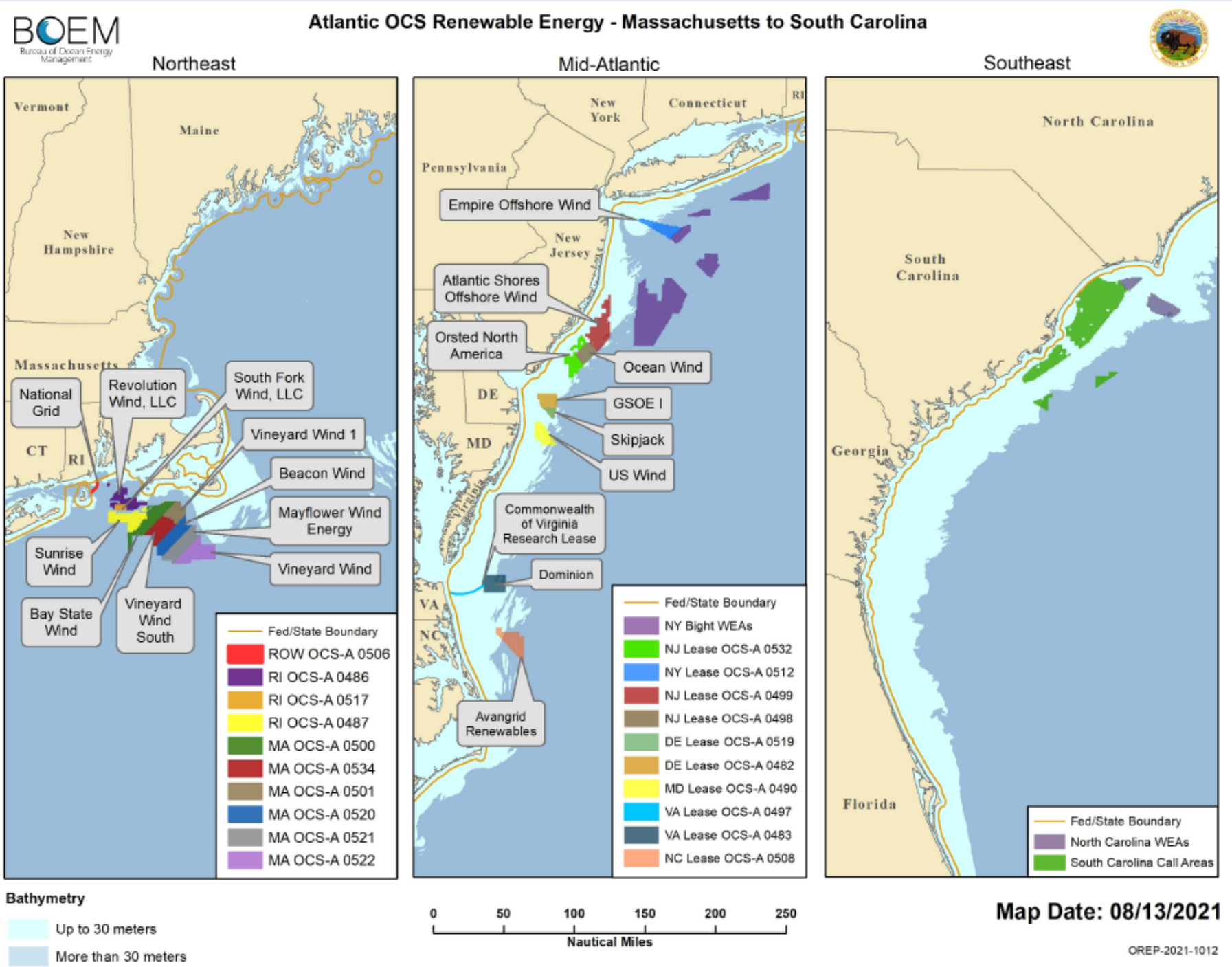
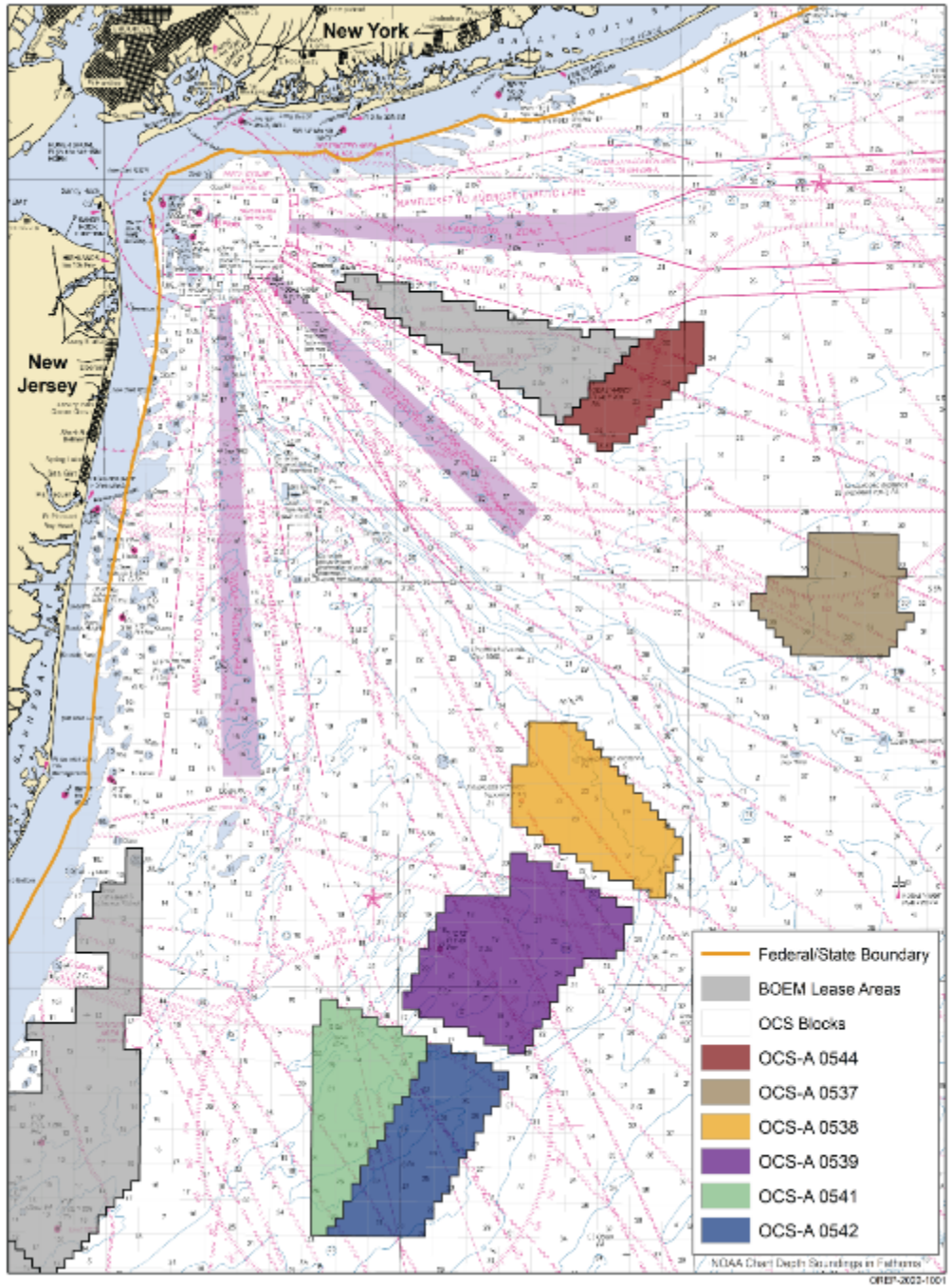

BOEM
Bureau of Ocean Energy Management
Atlantic OCS Renewable Energy - Massachusetts to South Carolina
Northeast
Mid-Atlantic
Southeast
Vermont
Maine
New Hampshire
Massachusetts
CT
RI
National Grid
Revolution Wind, LLC
South Fork Wind, LLC
Vineyard Wind 1
Beacon Wind
Mayflower Wind Energy
Vineyard Wind
Sunrise Wind
Bay State Wind
Vineyard Wind South
Fed/State Boundary
ROW OCS-A 0506
RI OCS-A 0486
RI OCS-A 0517
RI OCS-A 0487
MA OCS-A 0500
MA OCS-A 0534
MA OCS-A 0501
MA OCS-A 0520
MA OCS-A 0521
MA OCS-A 0522
New York
Connecticut
RI
Pennsylvania
New Jersey
DE
MD
VA
NC
Empire Offshore Wind
Atlantic Shores Offshore Wind
Orsted North America
Ocean Wind
GSOE I
Skipjack
US Wind
Commonwealth of Virginia Research Lease
Dominion
Avangrid Renewables
Fed/State Boundary
NY Bight WEAs
NJ Lease OCS-A 0532
NY Lease OCS-A 0512
NJ Lease OCS-A 0499
NJ Lease OCS-A 0498
DE Lease OCS-A 0519
DE Lease OCS-A 0482
MD Lease OCS-A 0490
VA Lease OCS-A 0497
VA Lease OCS-A 0483
NC Lease OCS-A 0508
North Carolina
South Carolina
Georgia
Florida
Fed/State Boundary
North Carolina WEAs
South Carolina Call Areas
Bathymetry
Up to 30 meters
More than 30 meters
0
50
100
150
200
250
Nautical Miles
Map Date: 08/13/2021
OREP-2021-1012



Winners of the New York Bight Lease Areas, $4.37 Billion in High Bids

OCS-A 0544	Vineyard Mid-Atlantic LLC, $285,000,000
OCS-A 0537	OW Ocean Winds East, LLC, $765,000,000
OCS-A 0538	Attentive Energy LLC, $795,000,000
OCS-A 0539	Bight Wind Holdings, LLC, $1,100,000,000
OCS-A 0541	Atlantic Shores Offshore Wind Bight, LLC, $780,000,000
OCS-A 0542	Invenergy Wind Offshore LLC, $645,000,000

BOEM
Bureau of Ocean Energy Management

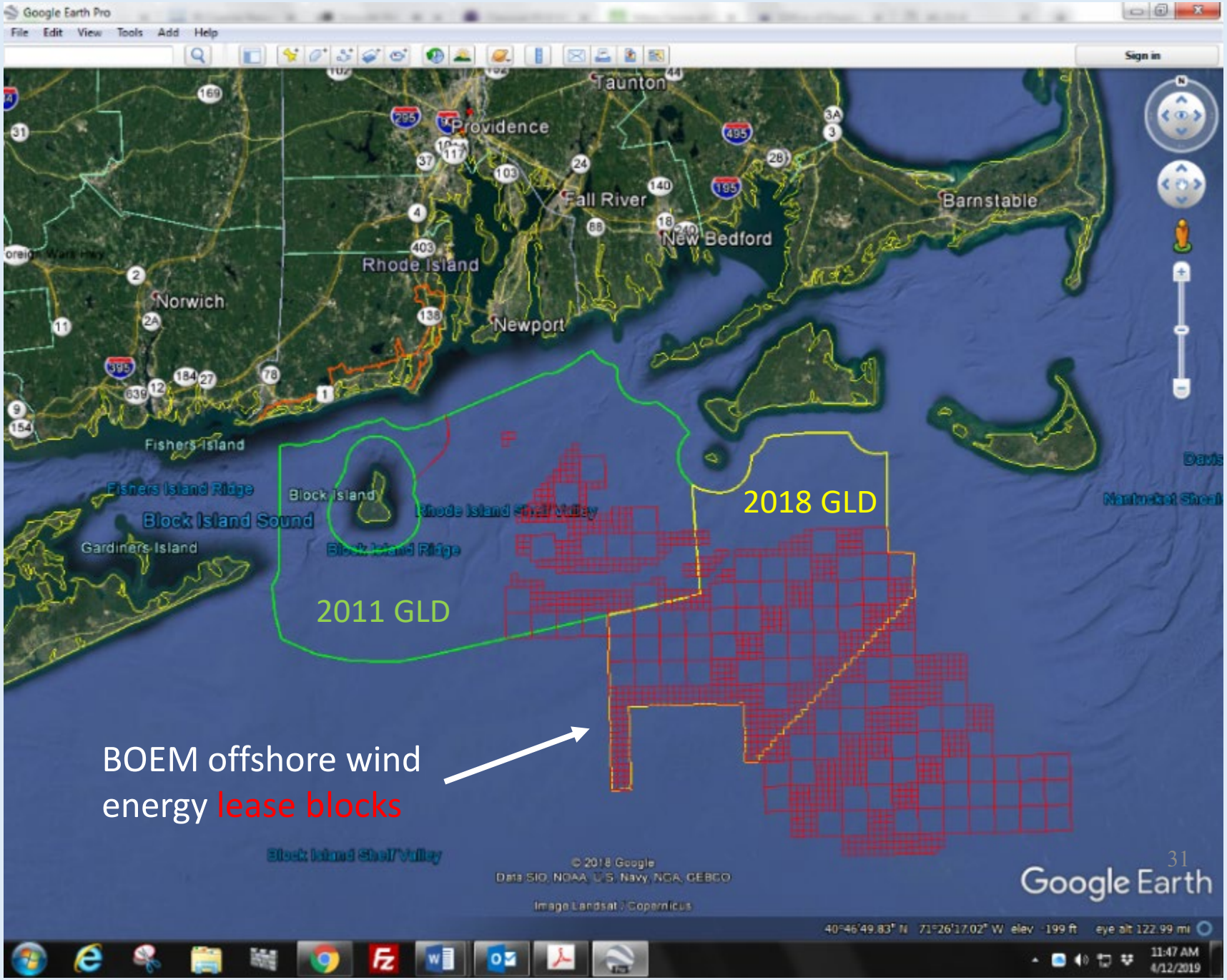
CRMC Review Authority

Geographic Location Descriptions 2011 & 2018

Listed activities pursuant to 15 CFR § 930.34(b) common to both GLDs:

i. Any offshore wind facilities of a permanent nature, regardless of size*; and
ii. Underwater cables*

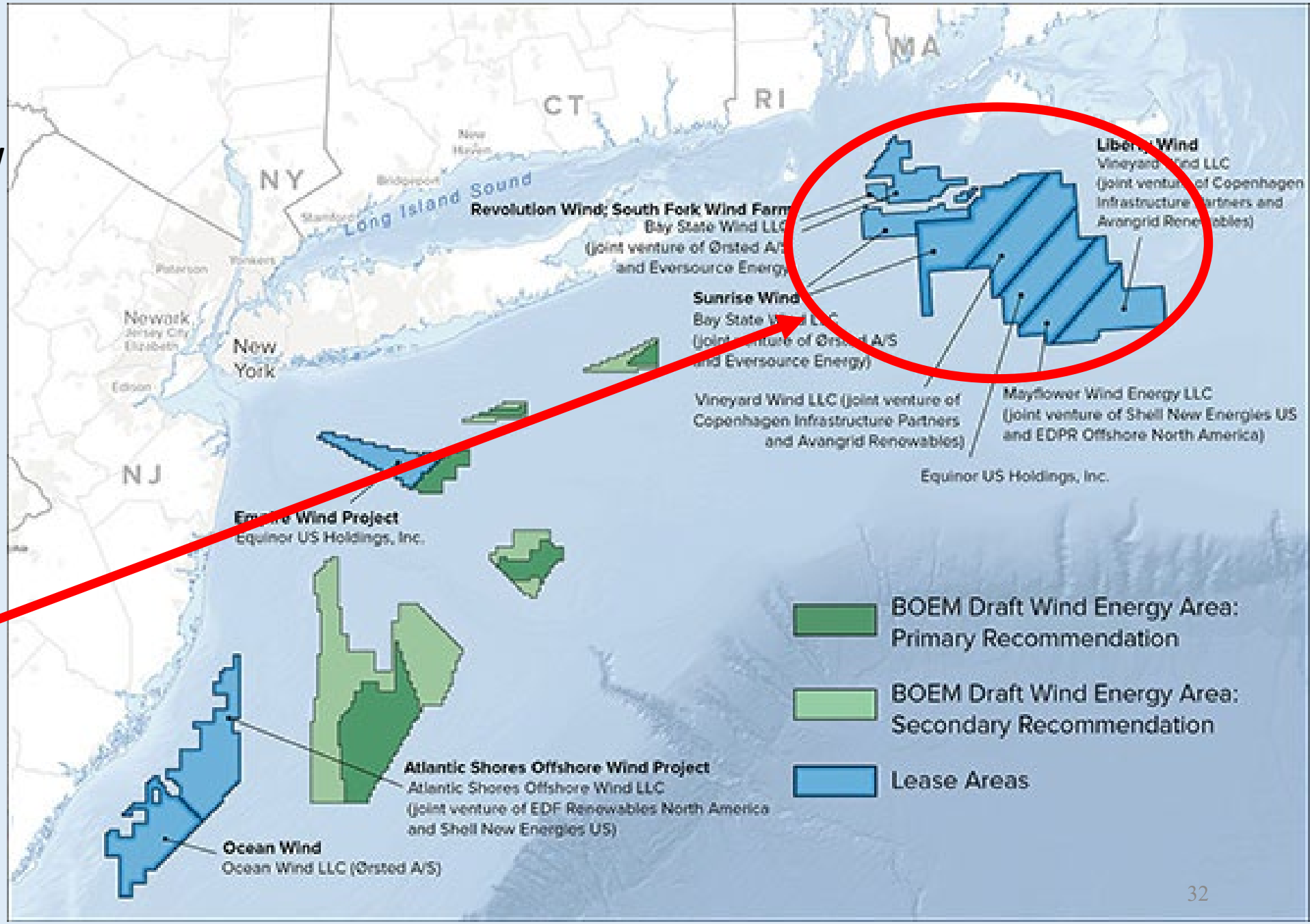
***A Consistency Certification is required for these activities proposed within the GLDs as approved in 2011 and 2018.**



Block Island = 30 MW
South Fork Wind = 130 MW
Sunrise Wind = 924-1122 MW
Revolution Wind = 704-880 MW
Bay State Wind= 1200 MW
Vineyard 1 = 800 MW
New England = 2000-2300 MW
Equinor = 2000 MW
Mayflower = 1600-2400 MW
Vineyard Liberty = 2500 MW

TOTAL: 13,362 MW

Current state awards for wind energy procurement (PPAs): 7396 MW (529 – 673 WTGs)



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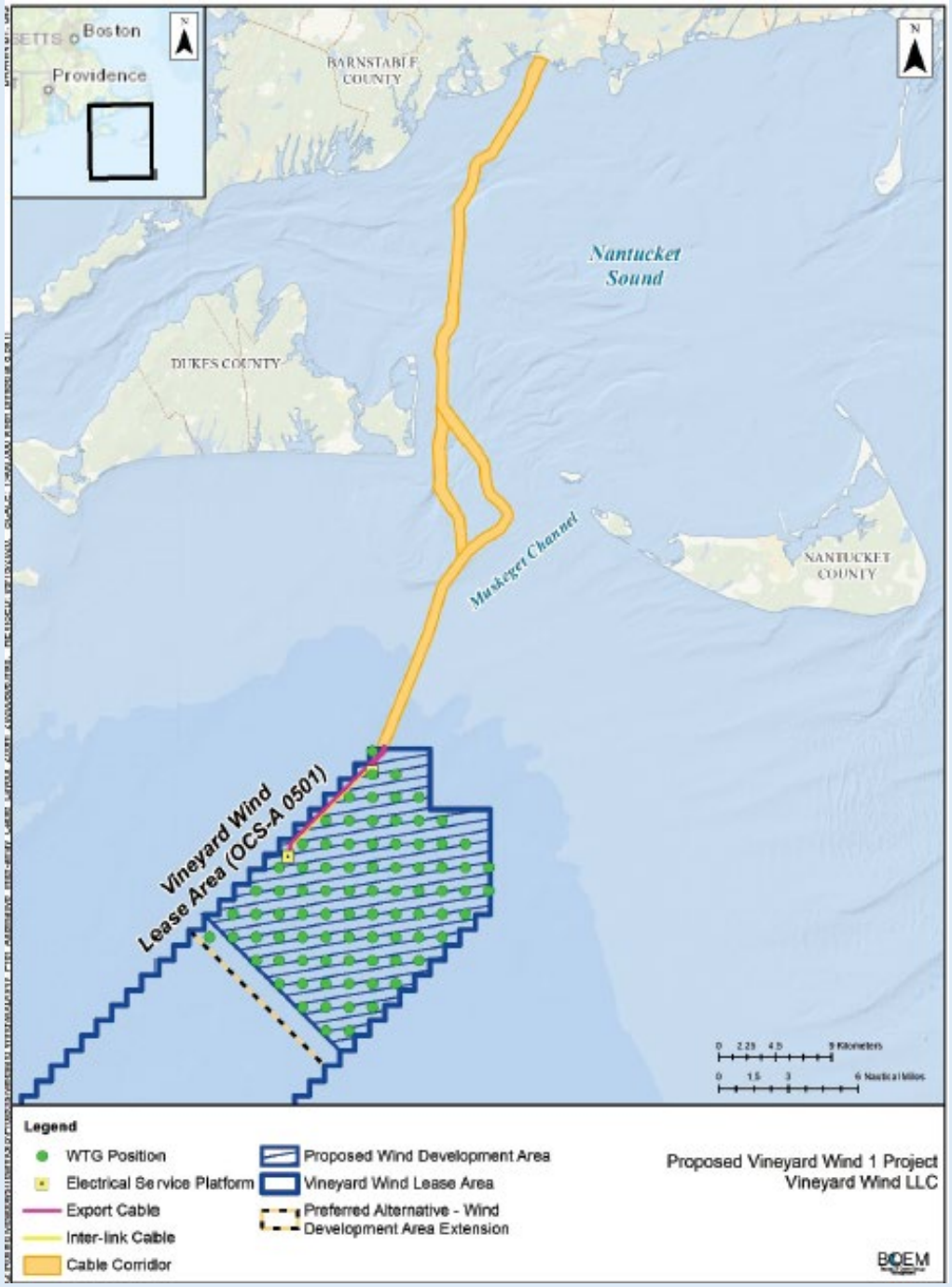
Vineyard Wind 1
800 MW (MA)

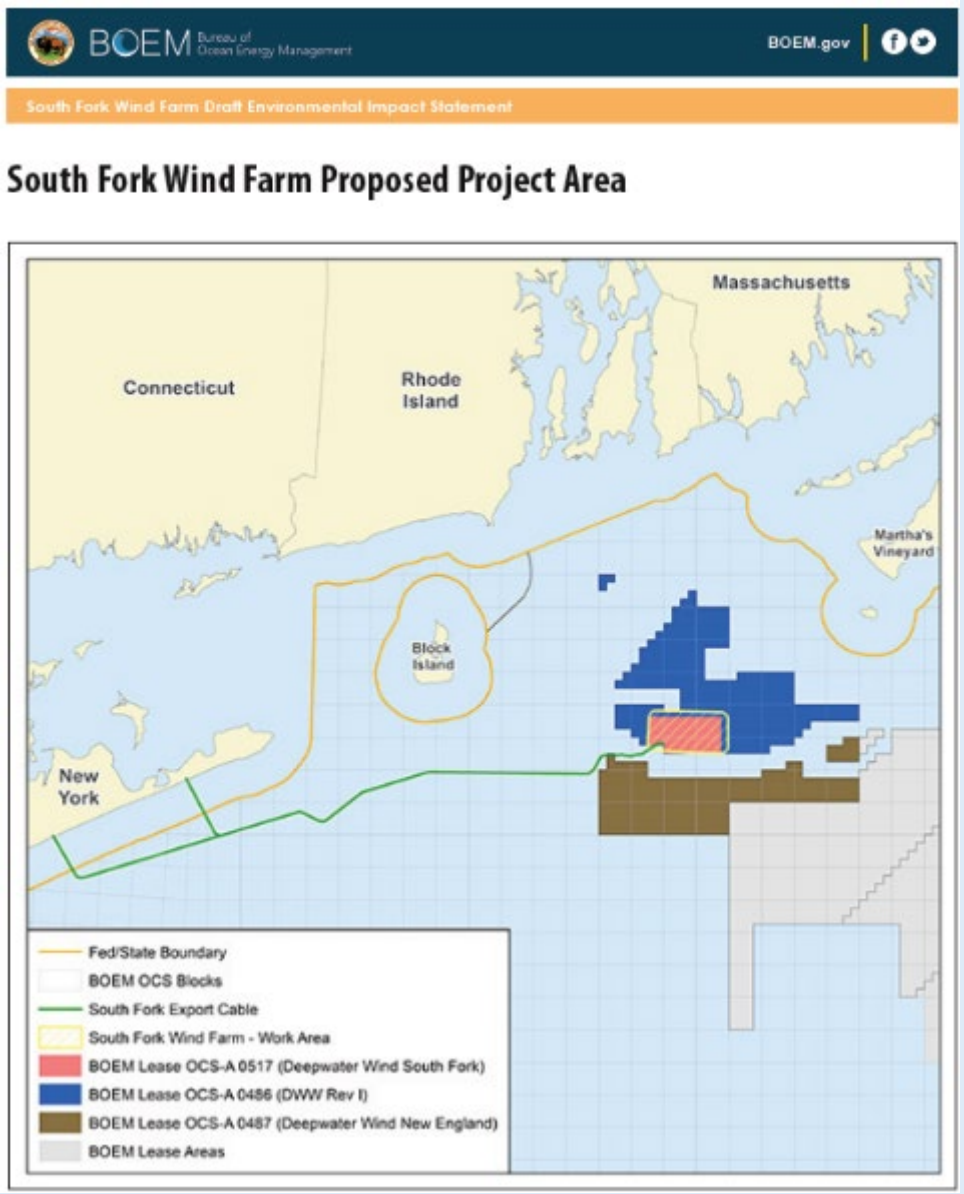
RICRMC Concurrence issued February 28, 2019

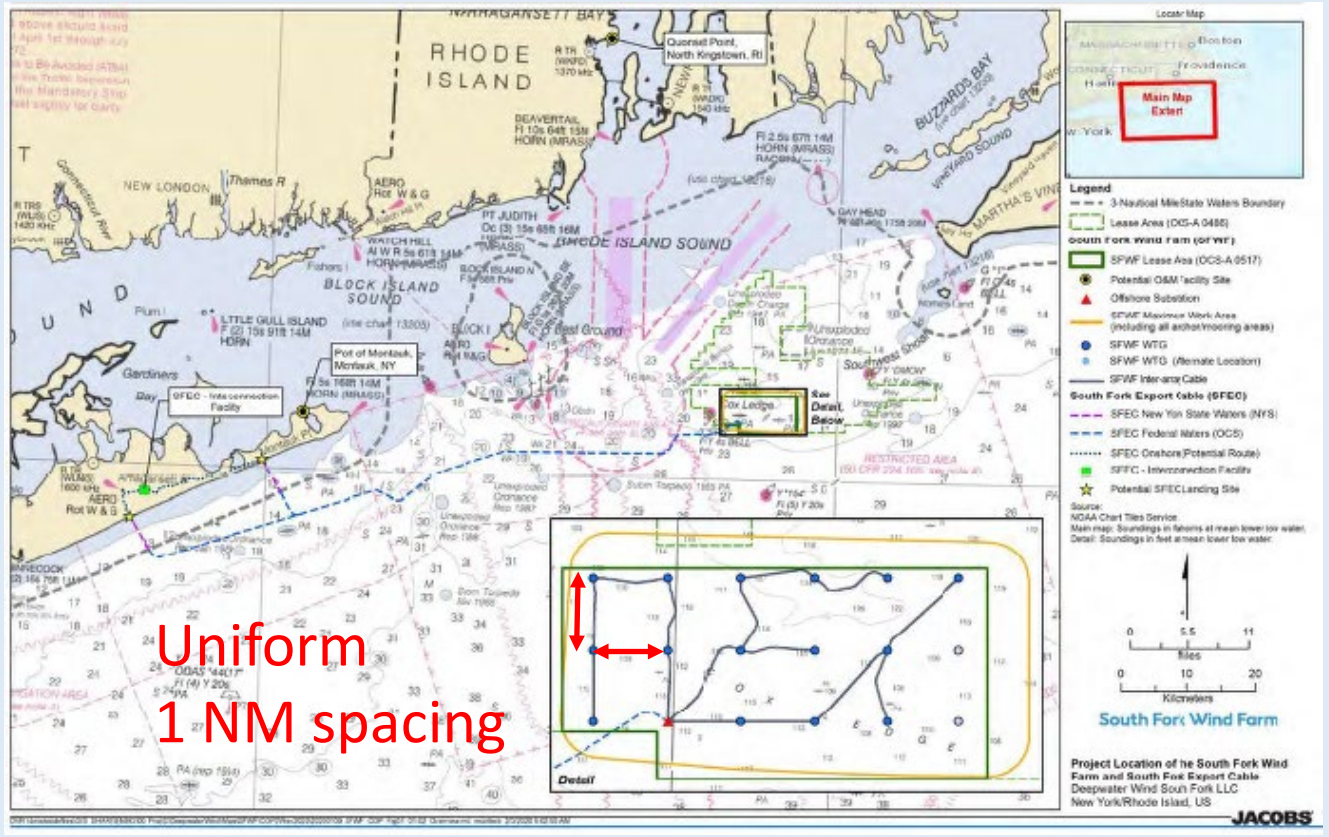
BOEM Record of Decision issued May 10, 2021

Vineyard Wind has commenced <u>onshore</u> construction activity; commencement of <u>offshore</u> construction anticipated in 2022.
A maximum of 84 WTGs are permitted by BOEM.



South Fork Wind - 130 MW (NY)

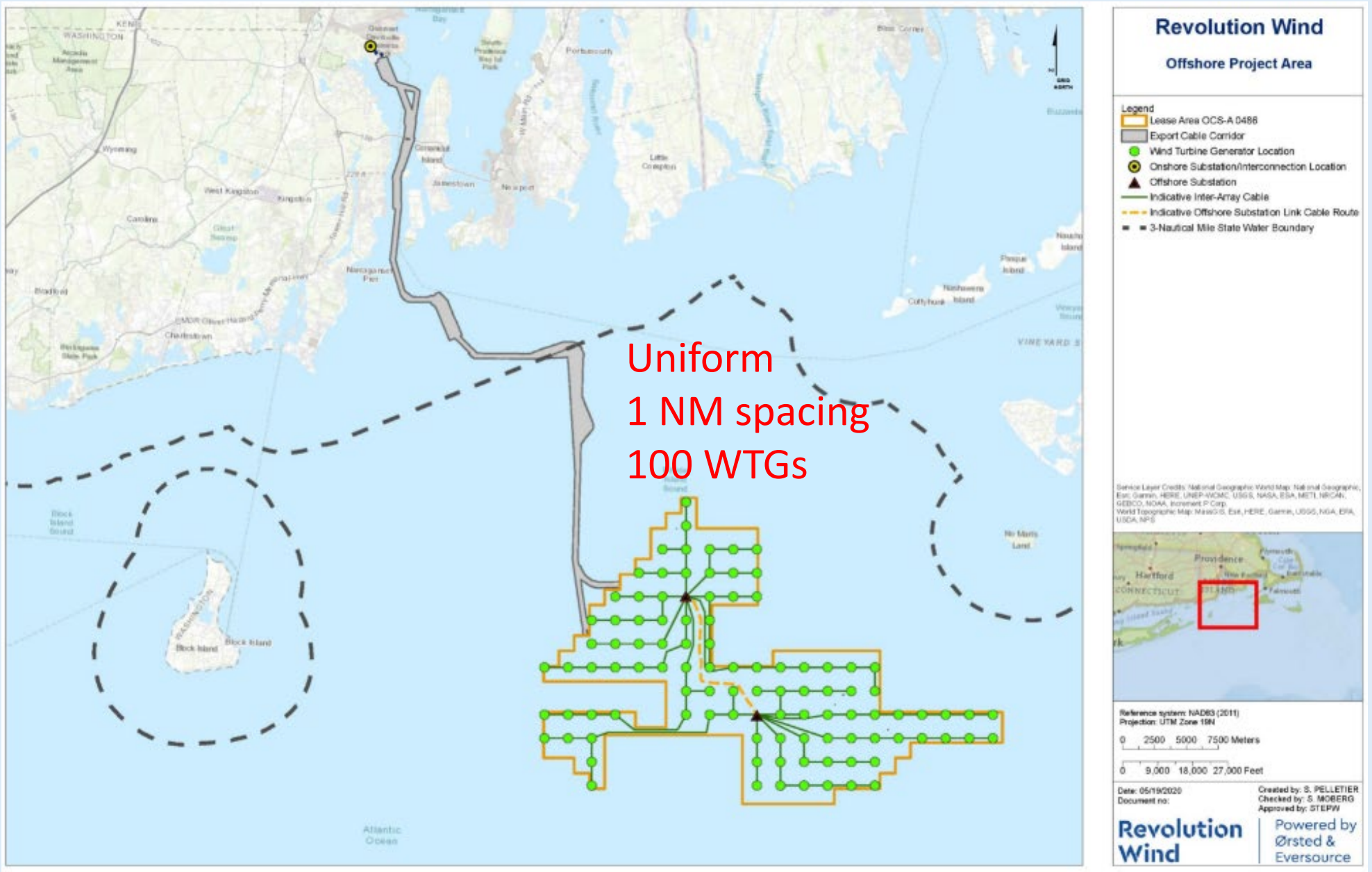




RICRMC Conditional Concurrence issued July 1, 2021 (maximum of 12 WTGs)

BOEM Record of Decision issued November 24, 2021

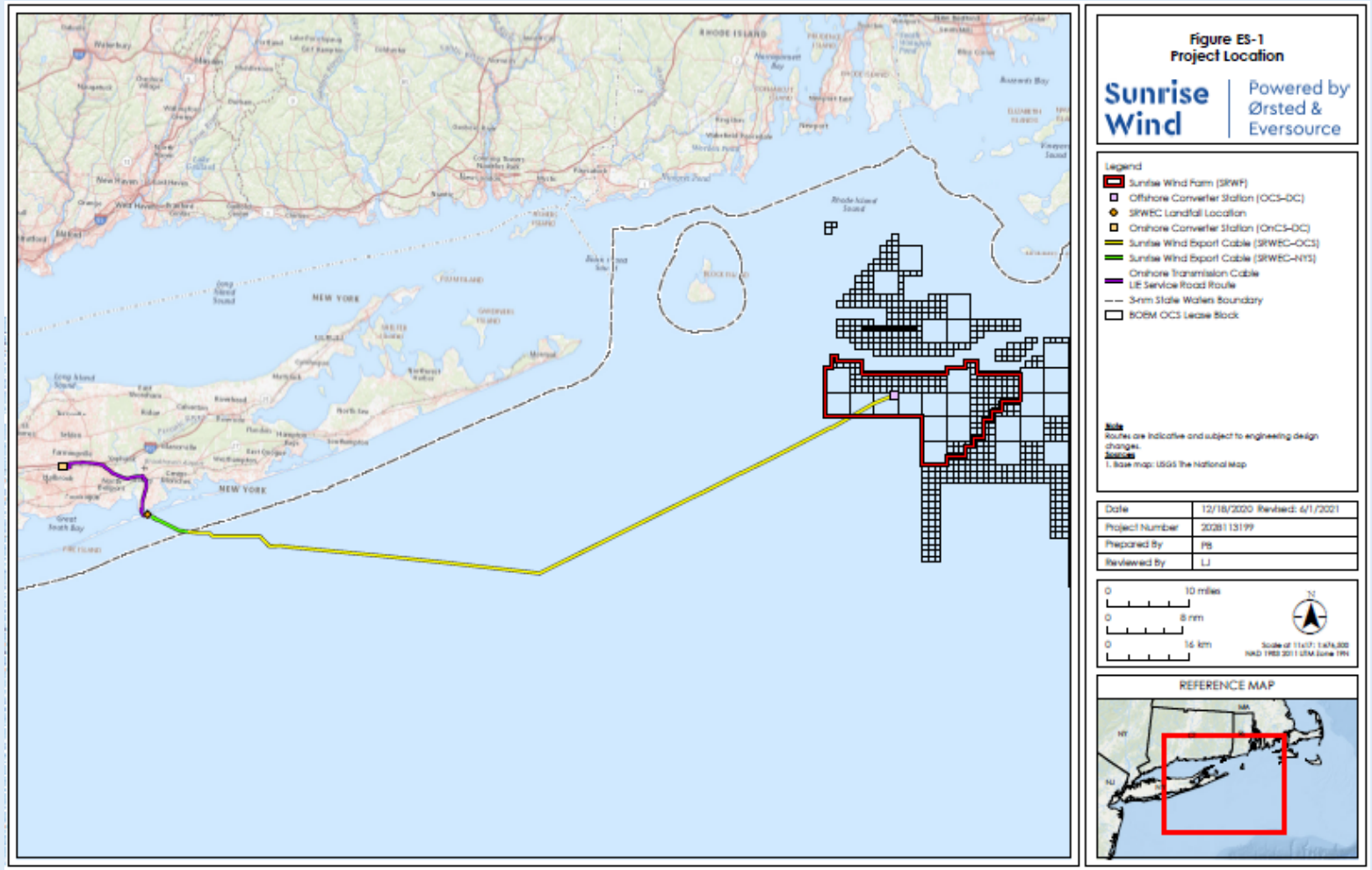
Revolution Wind – 400 MW (RI) & 304 MW (CT)



Sunrise Wind
880 MW (NY)

Phase 1 (880 MW) offshore export cable corridor to Brookhaven, Long Island, NY

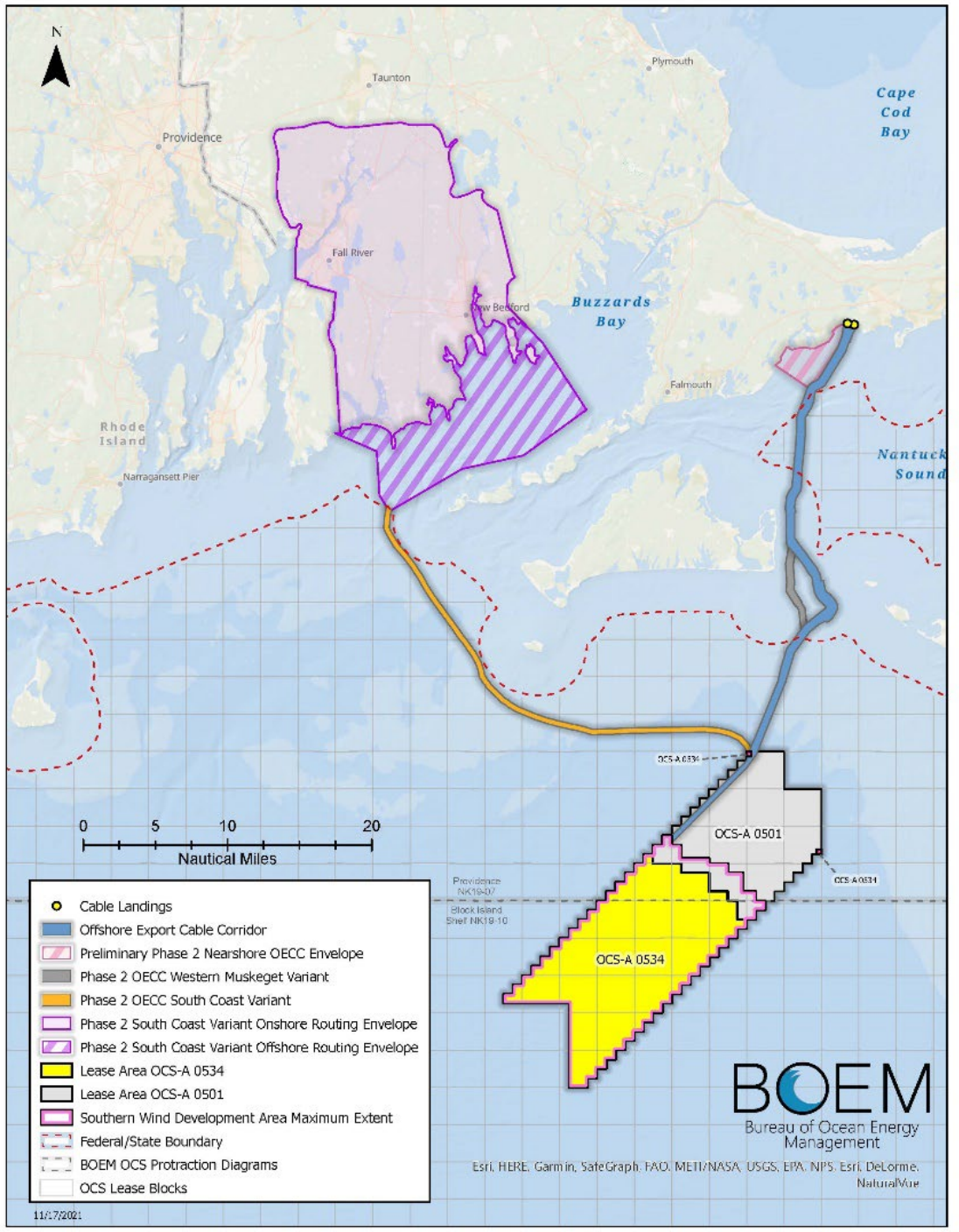
Remaining capacity (420 MW)



New England Wind
804 MW (CT*)

Phase 1 (804 MW) offshore export cable corridor to Barnstable, MA (* contractual obligation via PPA with Connecticut)

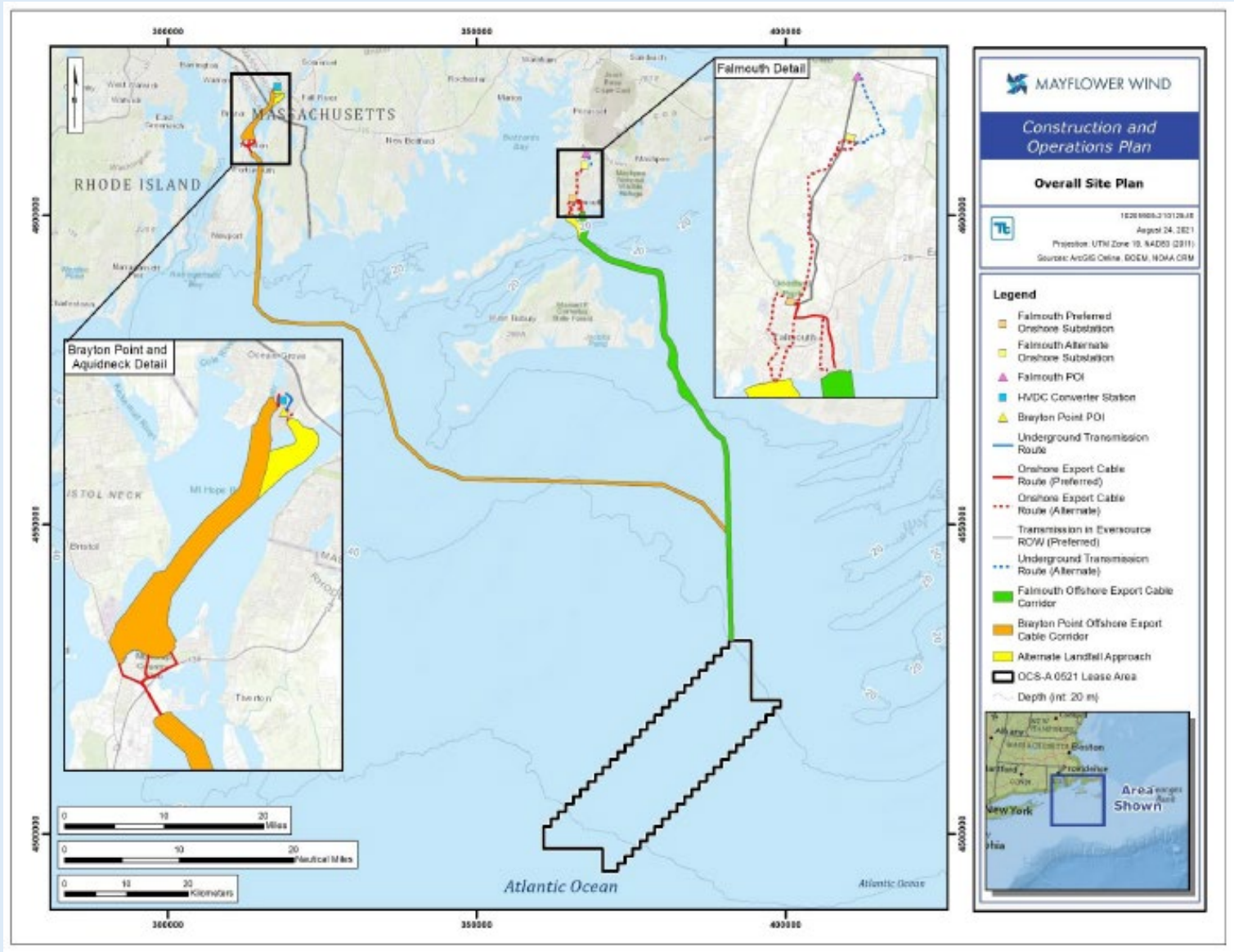
Phase 2 (1200-1500 MW) offshore export cable corridor to Massachusetts South Coast (Westport – Fairhaven)



Mayflower Wind
804 MW (MA)

Phase 1 (804 MW) offshore export cable corridor to Falmouth, MA

Phase 2 (800-1600 MW) offshore export cable corridor to Brayton Point, Somerset, MA via Rhode Island state waters: Sakonnet River and Mount Hope Bay



CRMC Regulations

- 650-RICR-10-00-1: Management Procedures
- 650-RICR-20-00-1: Red Book
- 650-RICR-20-00-2: Freshwater Wetlands in the Vicinity of the Coast (repeal 7/1/22)
- 650-RICR-20-00-3: Salt Pond Region SAMP
- 650-RICR-20-00-4: Narrow River SAMP
- 650-RICR-20-00-5: Metro Bay SAMP
- 650-RICR-20-00-6: Greenwich Bay SAMP
- 650-RICR-20-00-7: Aquidneck Island SAMP
- 650-RICR-20-00-9: Freshwater Wetlands in the Vicinity of the Coast (effective 7/1/22)
- 650-RICR-20-05-11: Ocean SAMP General & Enforceable Policies
- 650-RICR-20-05-2 through 8 (remaining parts of Ocean SAMP)

Aquaculture and the CRMC

- CRMC is the lead agency for aquaculture permitting (for fresh and tidal waters) in the state via R.I. General Laws § 20-10-3
- By statute and regulation CRMC coordinates with DEM and Marine Fisheries Council on reviewing aquaculture applications for impact to fisheries and the environment
- All importation of animals for aquaculture must be approved by the CRMC Biosecurity Board
- CRMC maintains a MOA with DEM in order to effectively maintain the safety and interstate transport of RI product according to the National Shellfish Sanitation Program and the USFDA
- CRMC works collaboratively with DEM, USDA and the industry to promote animal welfare and oyster reef restoration and enhancement.

Marine Aquaculture in Rhode Island

-Dominated by shellfish farming (no finfish culture in tidal waters)

-98% Oysters with some mussels, quahogs and sugar kelp




-Industry valued at $6.7 million dollars in 2021

-Exceeds value of landed wild quahogs

-Supports hundreds of jobs

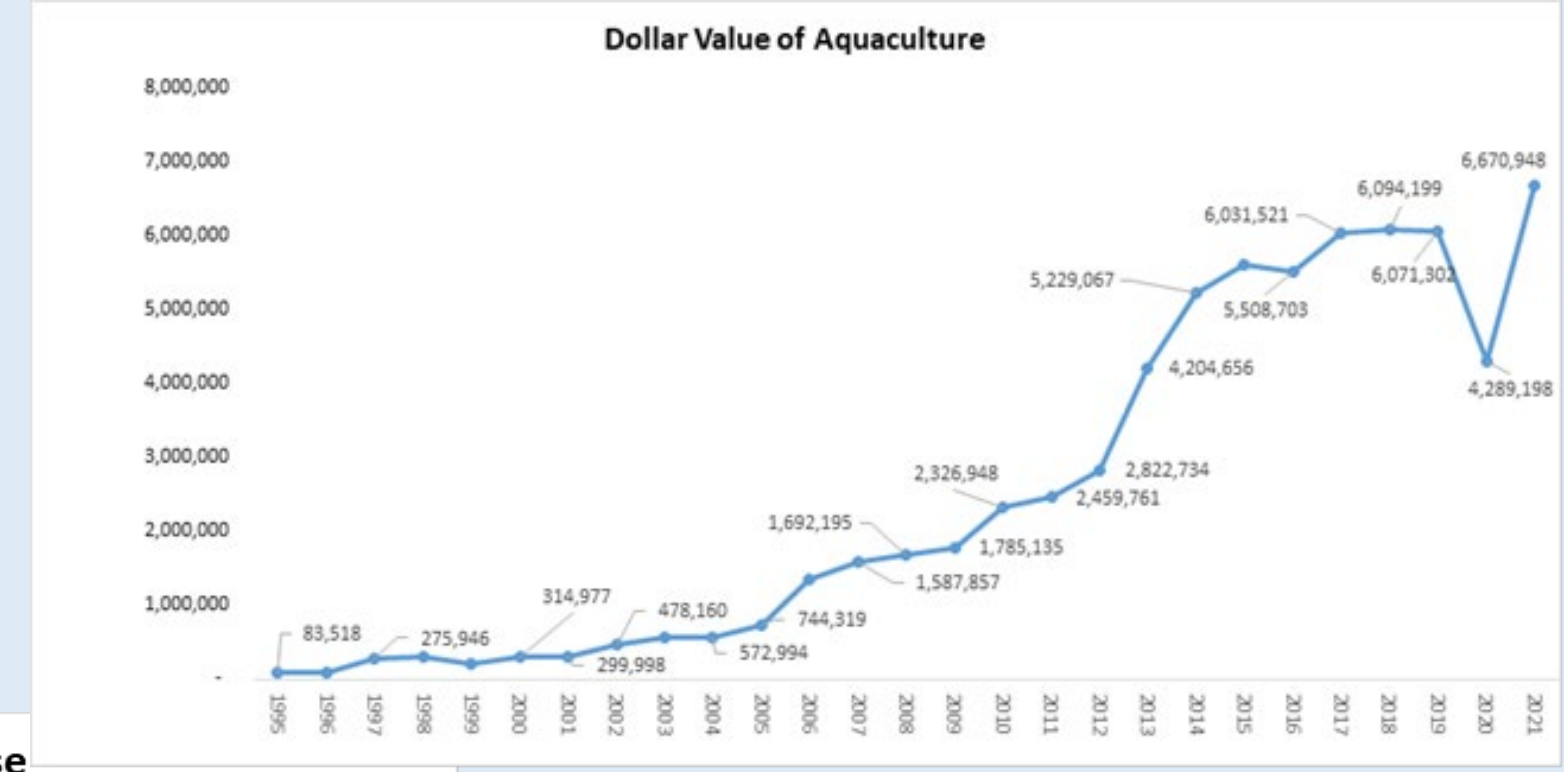
- Nationally recognized products for quality and taste, can be found locally and also shipped throughout the country.

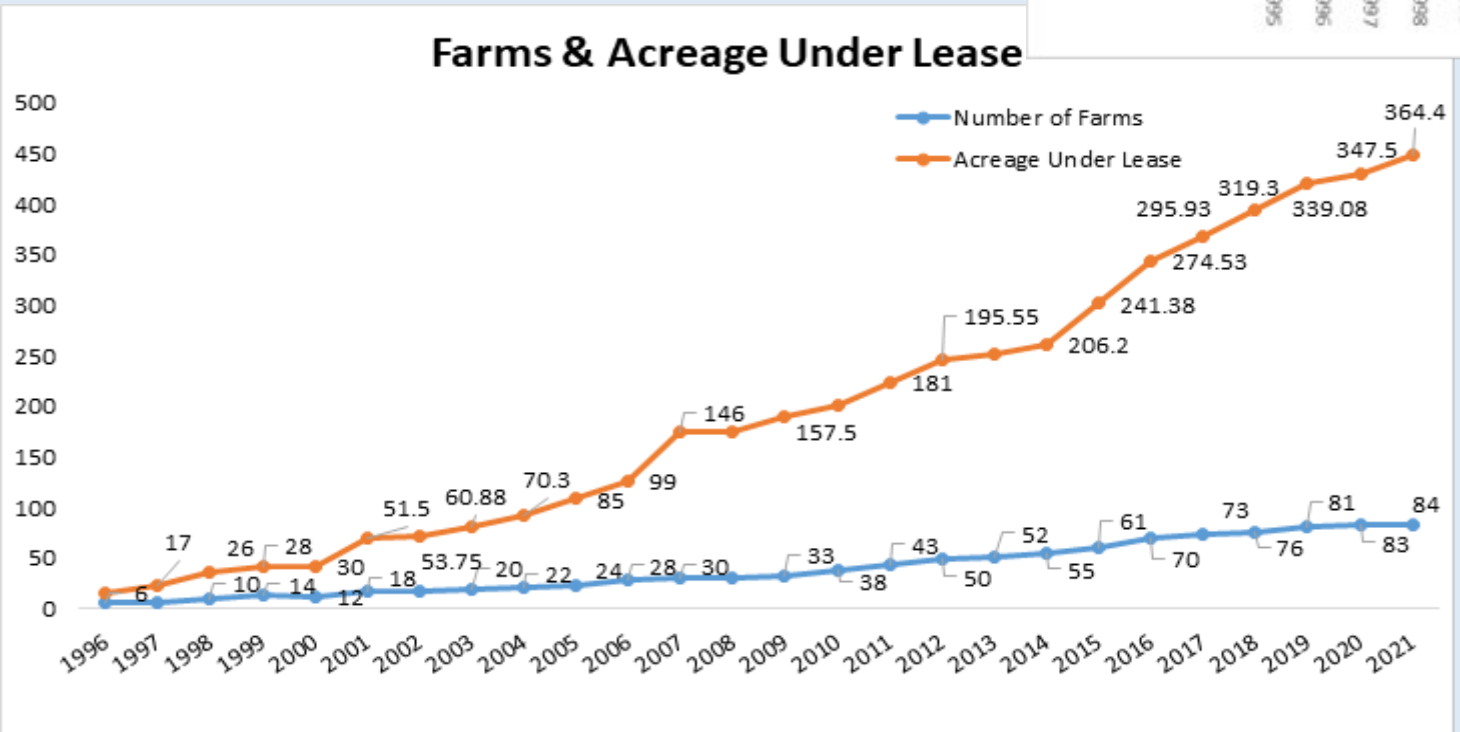
Why farm shellfish and seaweeds?

- Shellfish and seaweed aquaculture can increase food production, create economic opportunities in coastal areas, and enhance natural harvests. The US imports 85% of seafood we eat.
- These aquatic crops provide important ecosystem services that can improve water quality around farm sites. SUSTAINABLE!
- Aquaculture farms can also provide habitat for fish and crustaceans, benefiting wild populations. REGENERATIVE!

https://www.fisheries.noaa.gov/new-england-mid-atlantic/aquaculture/milford-labs-gopro-aquaculture-project?playlistVideoId=6193172433001

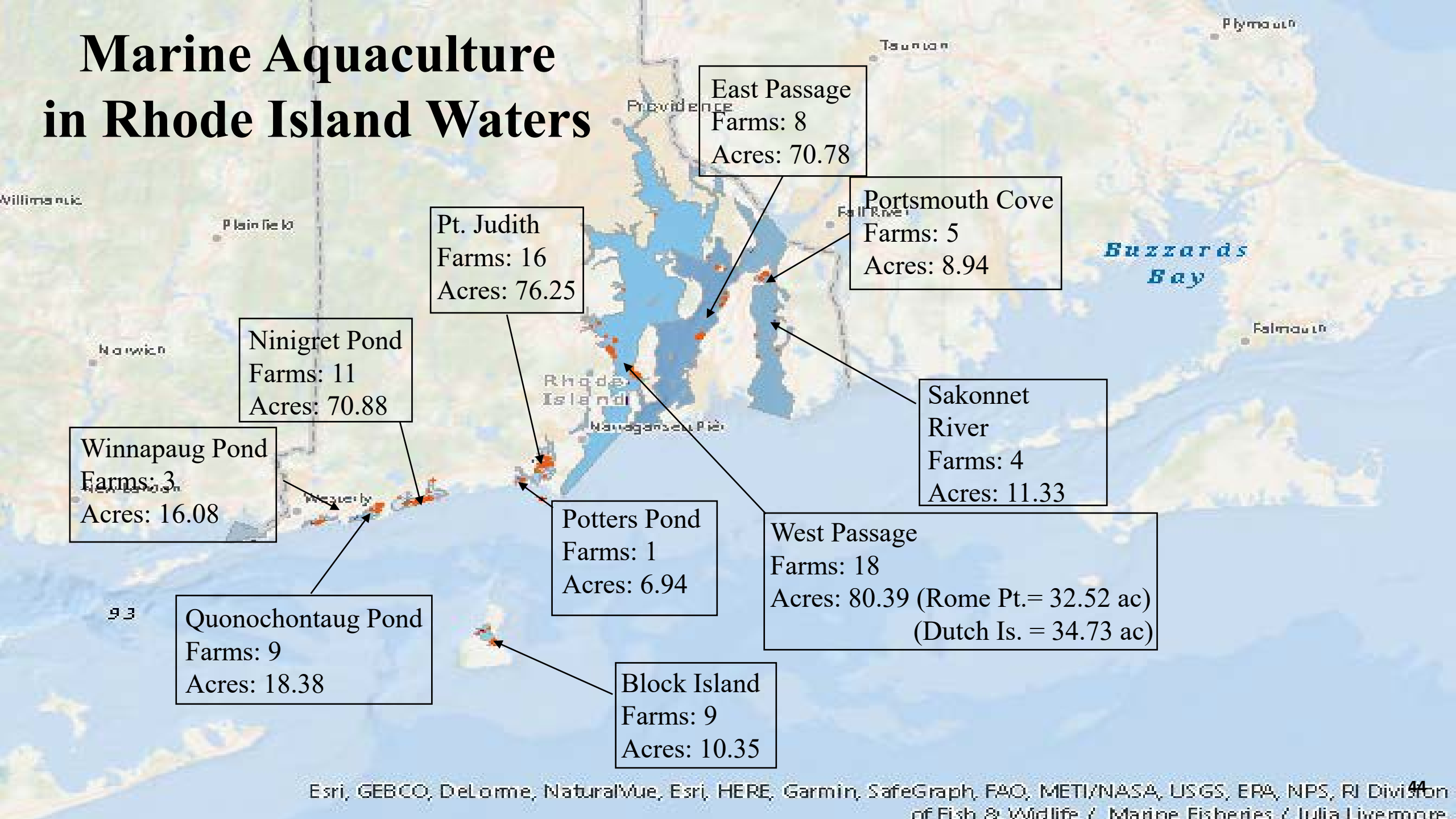
RI Aquaculture Statistics 2021: 364 acres; $6.67 million





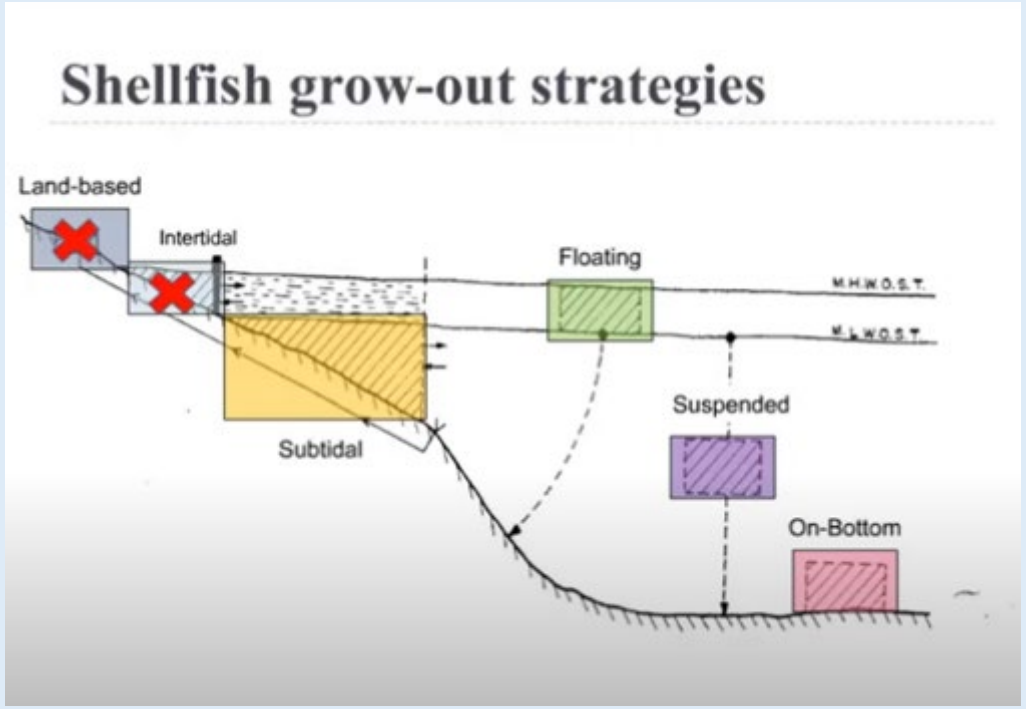
Approximate average per acre production value: $18K

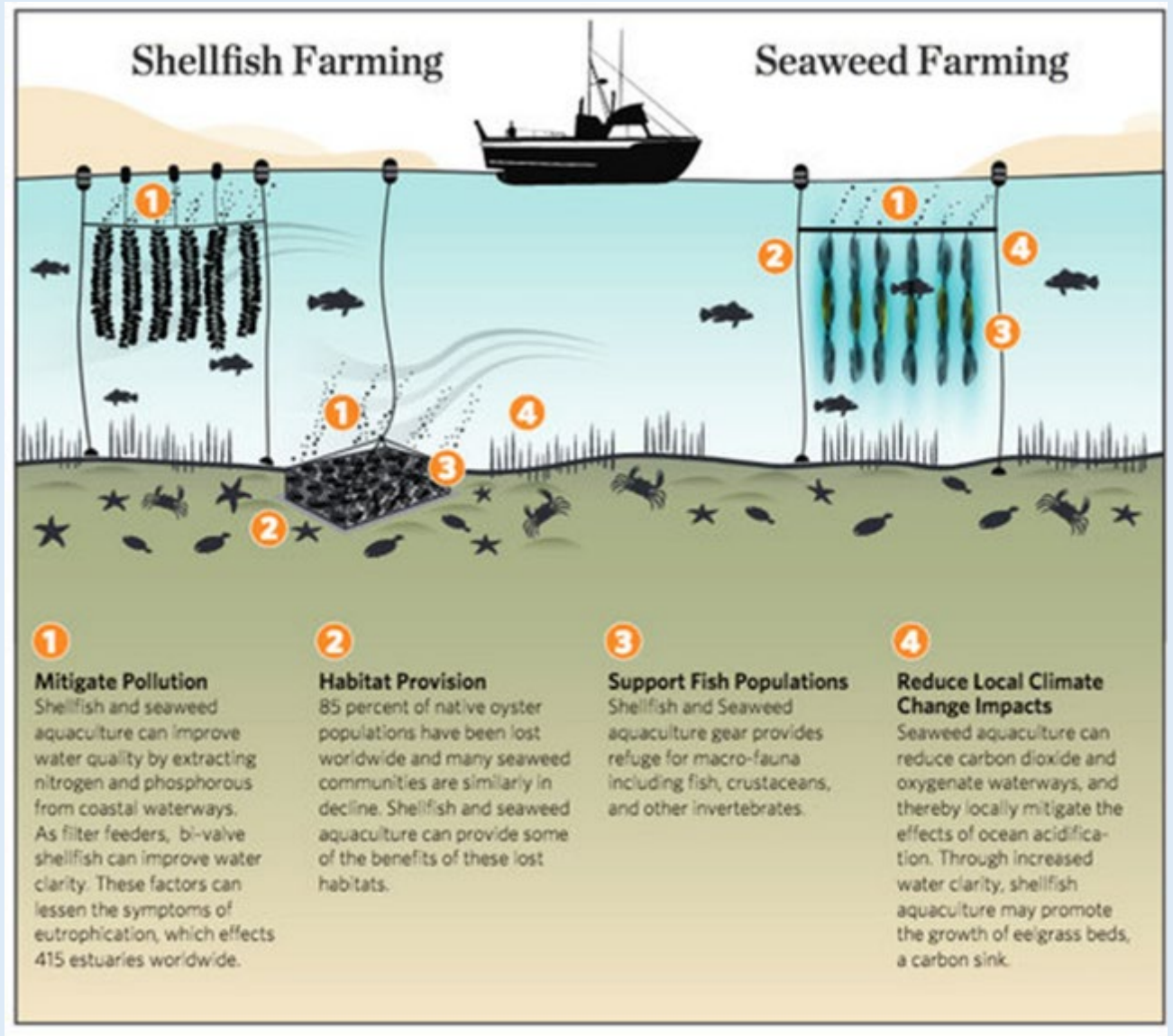
Marine Aquaculture in Rhode Island Waters



Types of Aquaculture in RI

- Bottom culture: oysters and quahogs
- Suspended culture: oysters, mussels, sugar kelp
- Floating culture: oysters





Types of on bottom culture

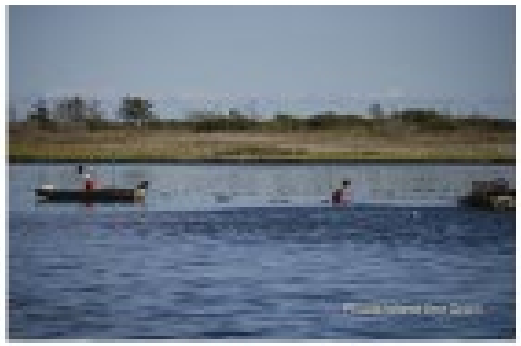
- Oysters planted directly on the bottom
- Bottom trays
- Bottom cages
- Rack and bag

Harvest methods for bottom culture:

- Dredge or bullrake bottom plant
- Barge/Pontoon with A Frame
- Vessel with winch- deepwater
- In water with waders or wetsuit in shallow areas






Suspended Oyster Culture

Shellfish in Mid-water – Hanging Cages

Mussel Culture

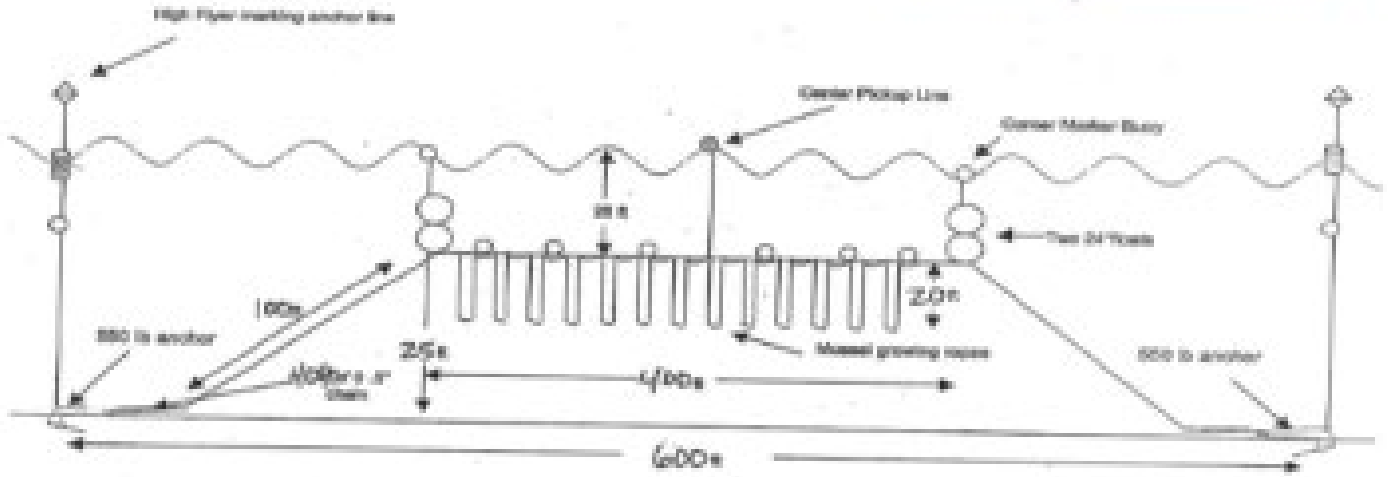
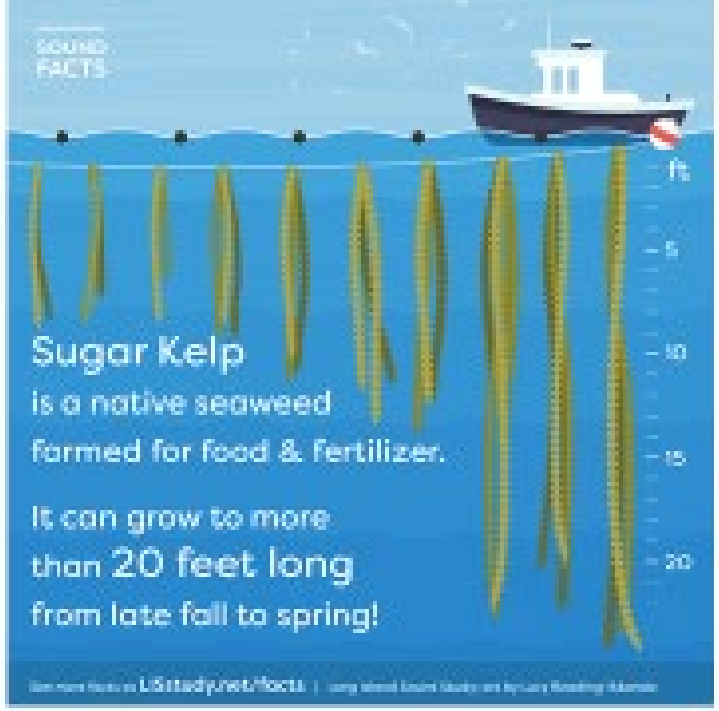
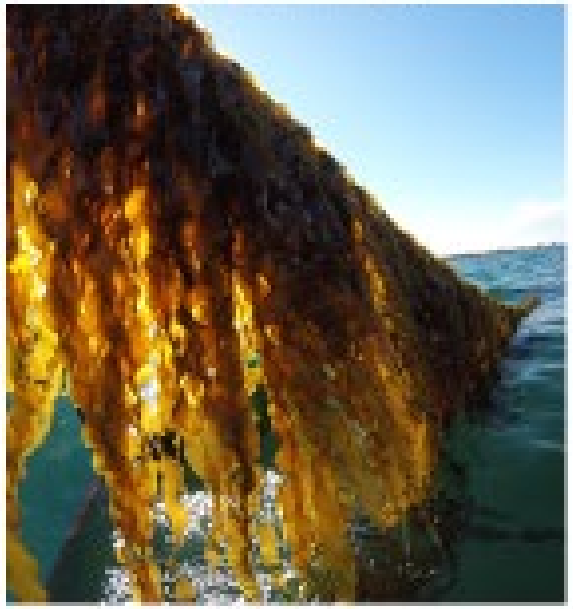


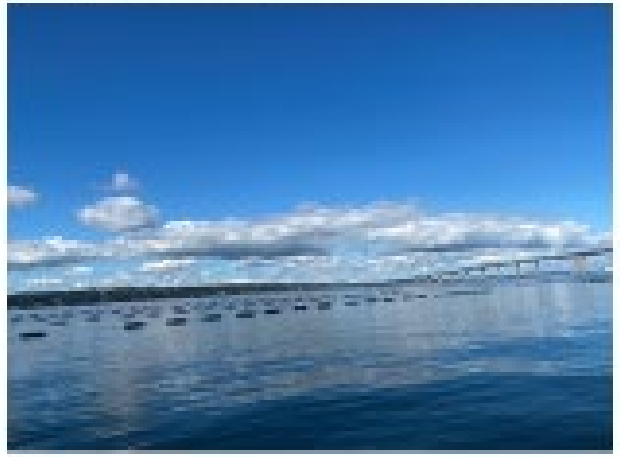
Figure 1. Schematic of a submerged longline with dimensions for deployment in water depths of approximately 70 ft (22 meters).

Sugar Kelp: an emerging industry

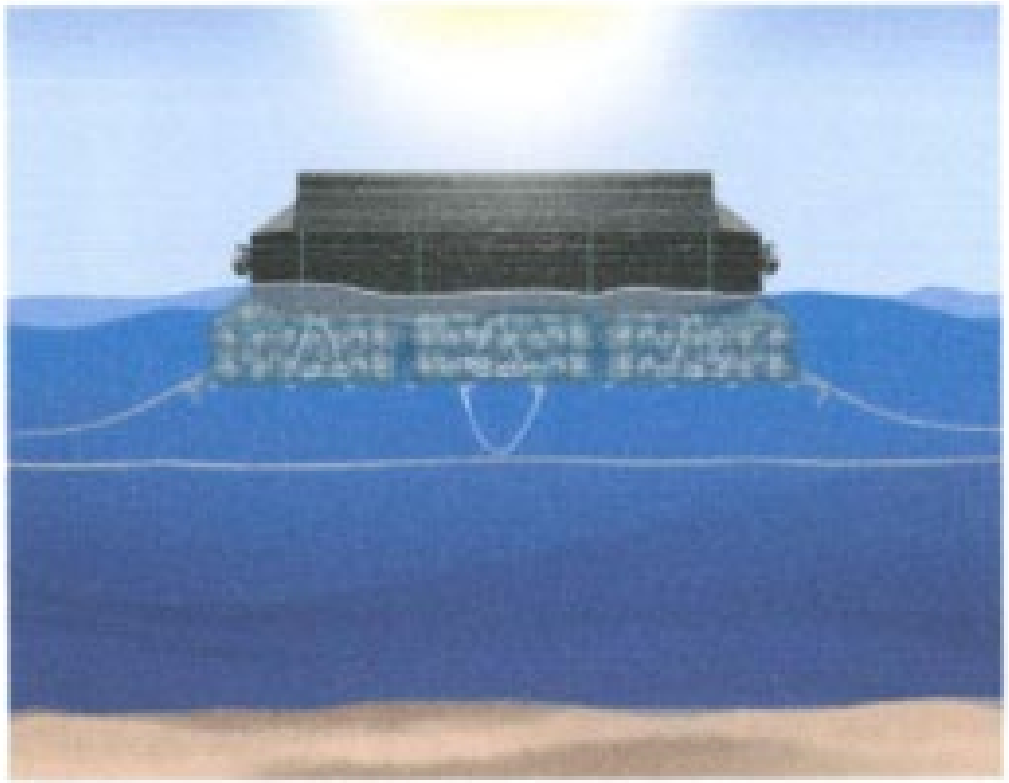


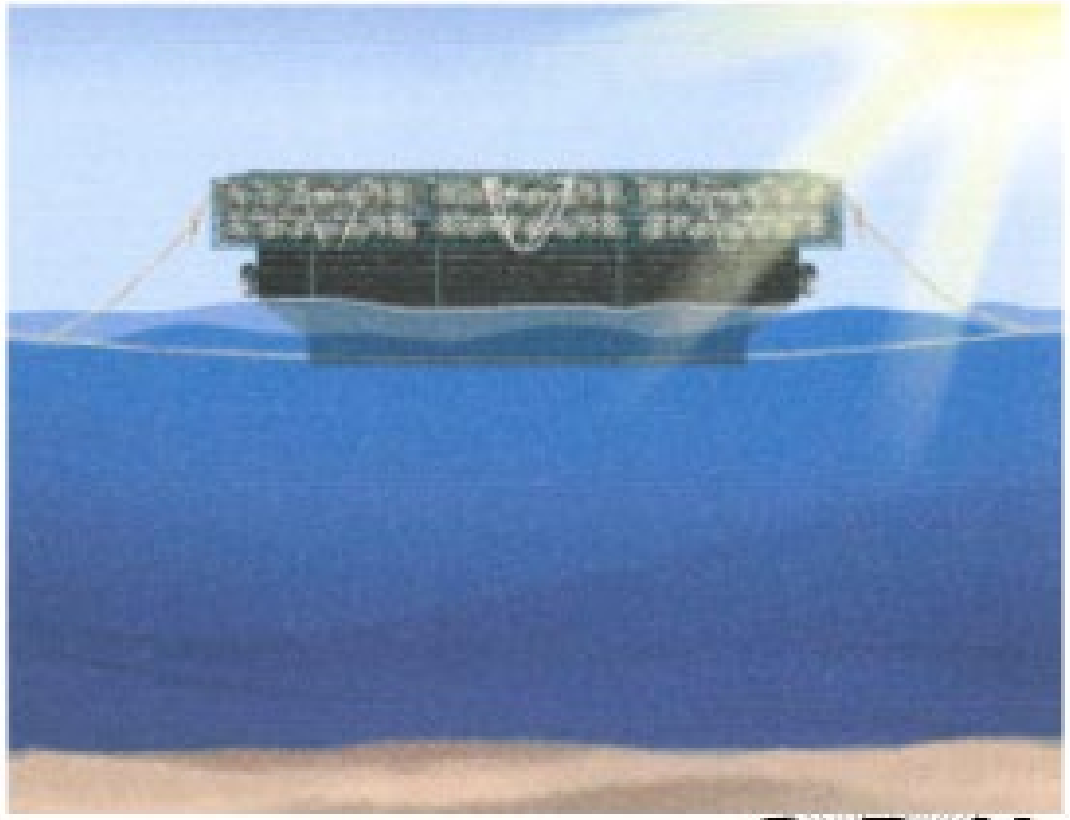


Floating Oyster Gear



Floating Gear





Narragansett Bay SAMP

Aquaculture Element

Develop the aquaculture element for the Narragansett Bay SAMP to guide the development of aquaculture through the CRMC regulatory process while minimizing its effects on the natural resources and existing uses.

Review natural and physical resource information for development of an Aquaculture Map;

Develop an Aquaculture Map that identifies conflict areas for integration within CRMC regulations, including any new standards;

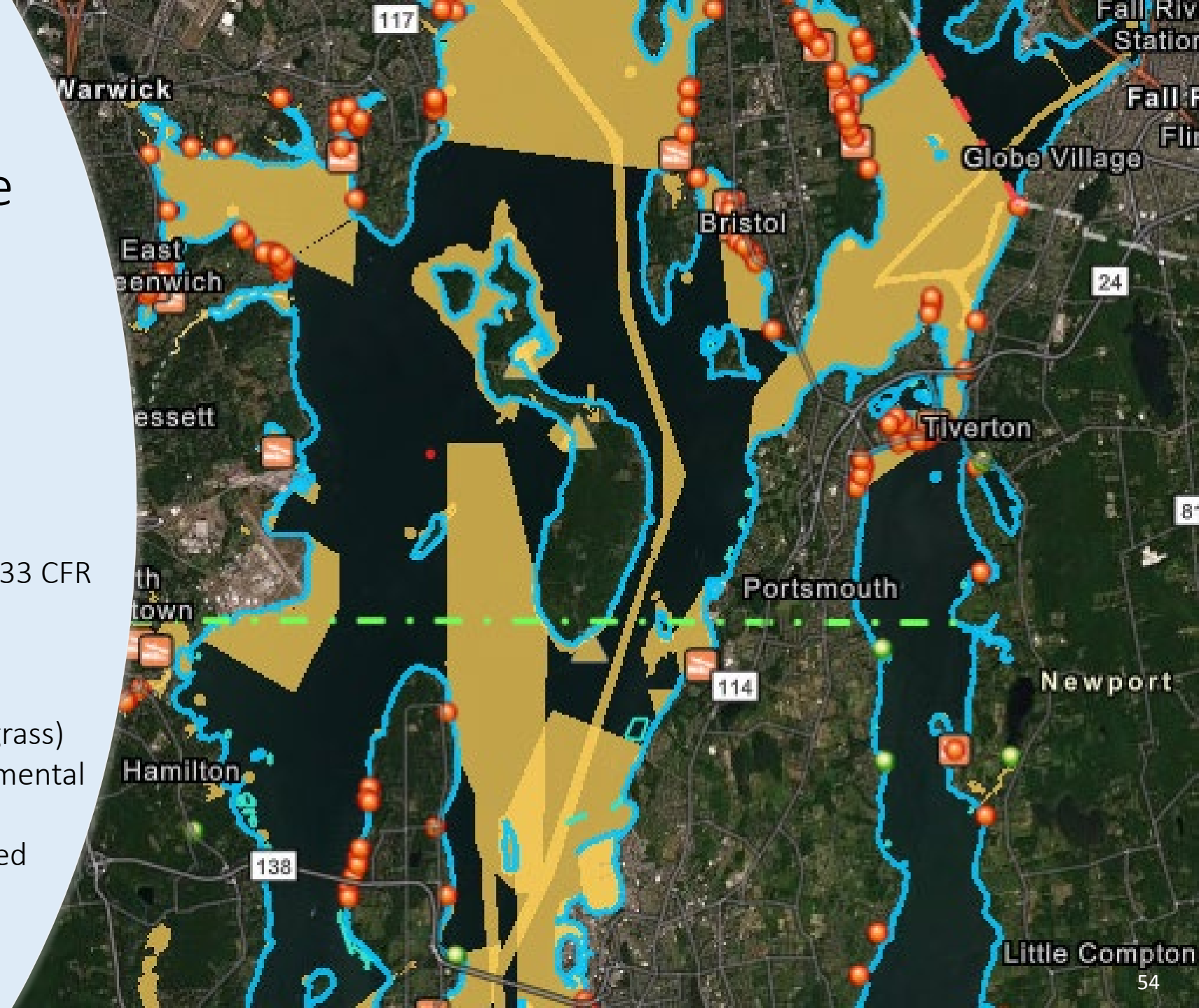
Build upon existing CRMC inclusive **aquaculture review processes** and provide for additional outreach and public input; and

Develop guidance for **aquaculture gear selection**.

Bay SAMP Aquaculture Constraints Map

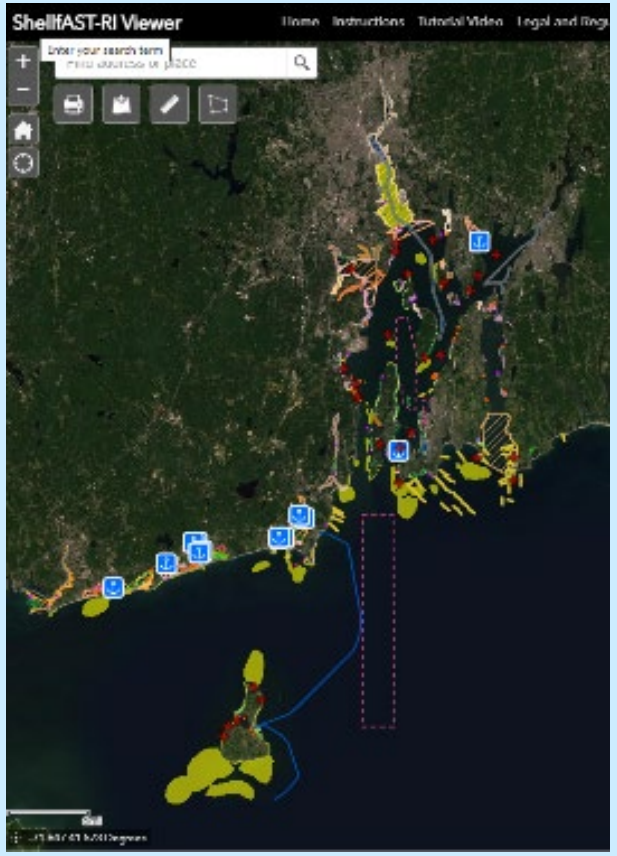
"Hard Constraint": locations where aquaculture leases are not suitable in accordance with federal and state regulatory constraints.

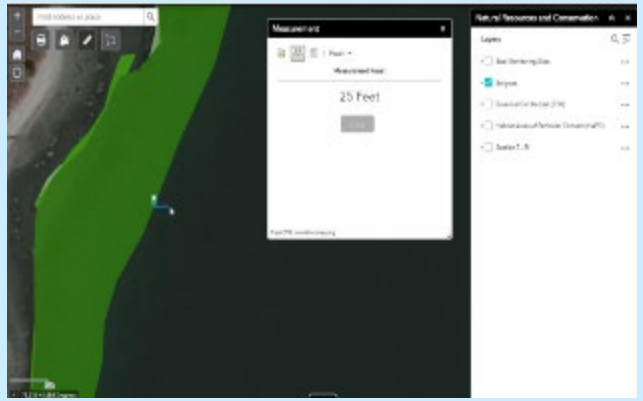
- Department of Defense restricted zones (33 CFR §§ 334.80, 334.81 and 334.82)
- Federal Navigation Projects
- Prohibited or Conditional waters
- Areas of SAV (i.e., eelgrass and widgeon grass)
- Developed with CRC and the URI Environmental Data Center
- Also includes ancillary data layers identified by the Working Group

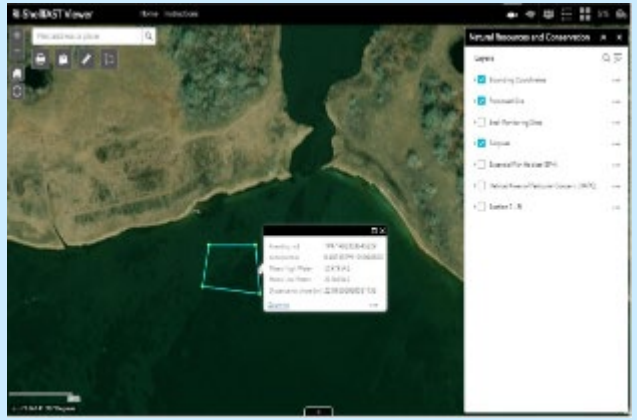


Parallel efforts to Bay SAMP: Shellfast-RI siting tool (Beta version)

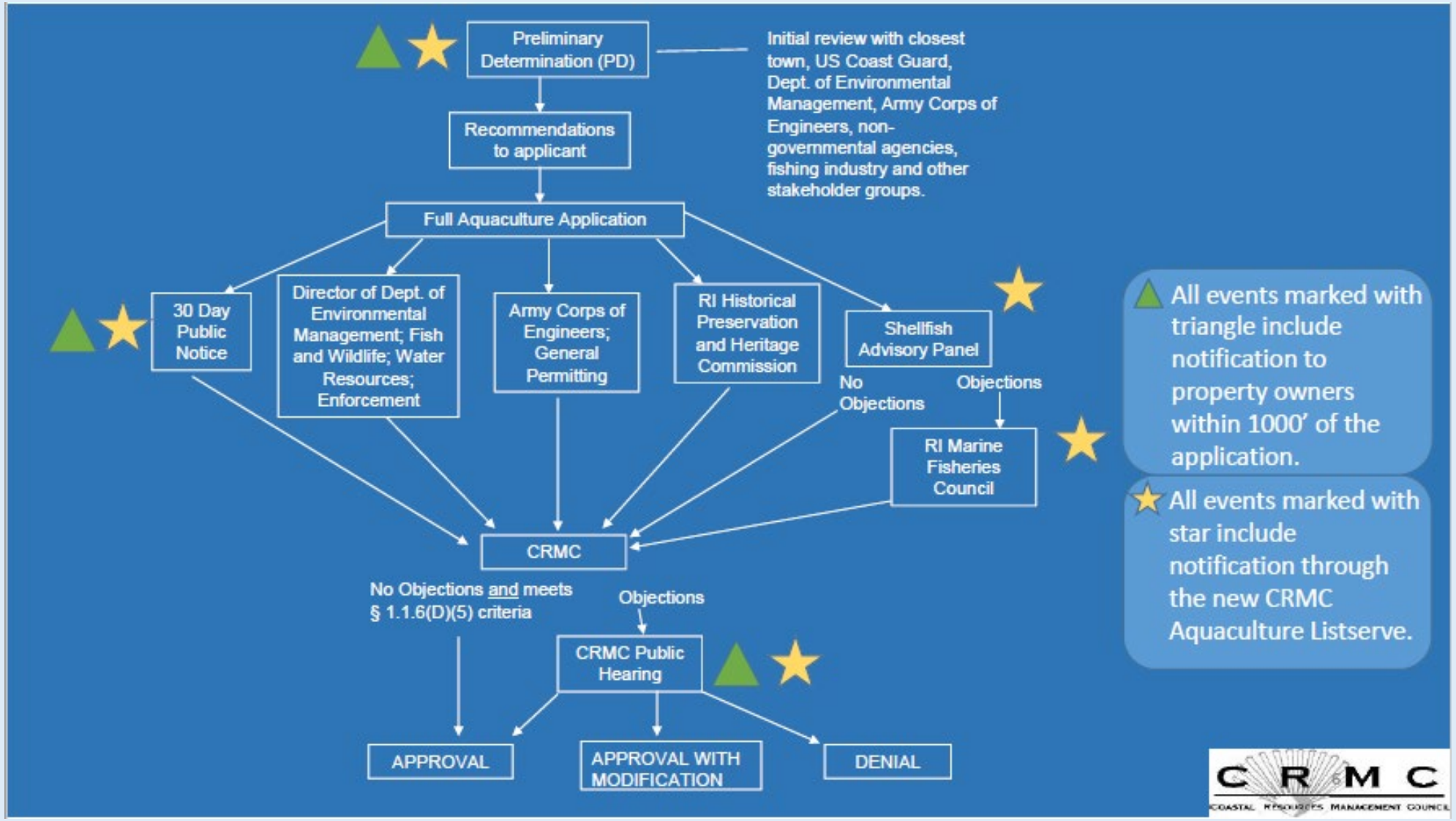
- Shellfast-RI is a GIS based siting tool designed to compliment the permitting resource website and Bay SAMP Constraints Map
  - Developed by CRMC with help from NOAA, RI Sea Grant, Marine Affairs Institute at RWU School of Law and URI Environmental Data Center
  - Mapping tool to assist applicants in planning and generating accurate data and maps regarding site selection and local conditions
  - Includes many data sets identified through the Bay SAMP process as important considerations in the permit process
  - Will compliment the Bay SAMP constraints map with additional data and info for site planning within in an interactive application



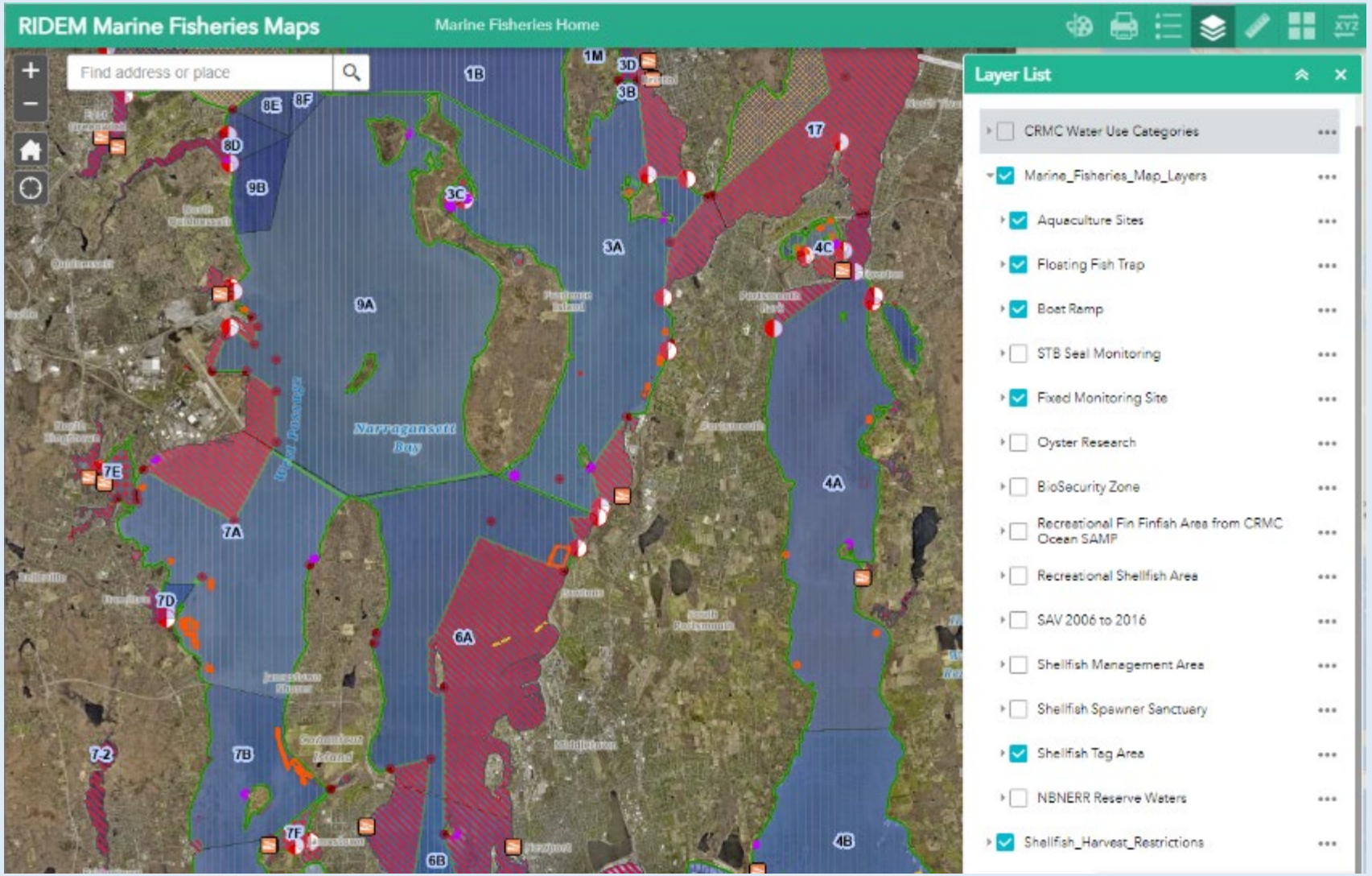




CRMC Aquaculture Permitting Process



DEM Marine Fisheries Map



https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=8beb98d758f14265a84d69758d96742f

Dredging & Dredged Material Management

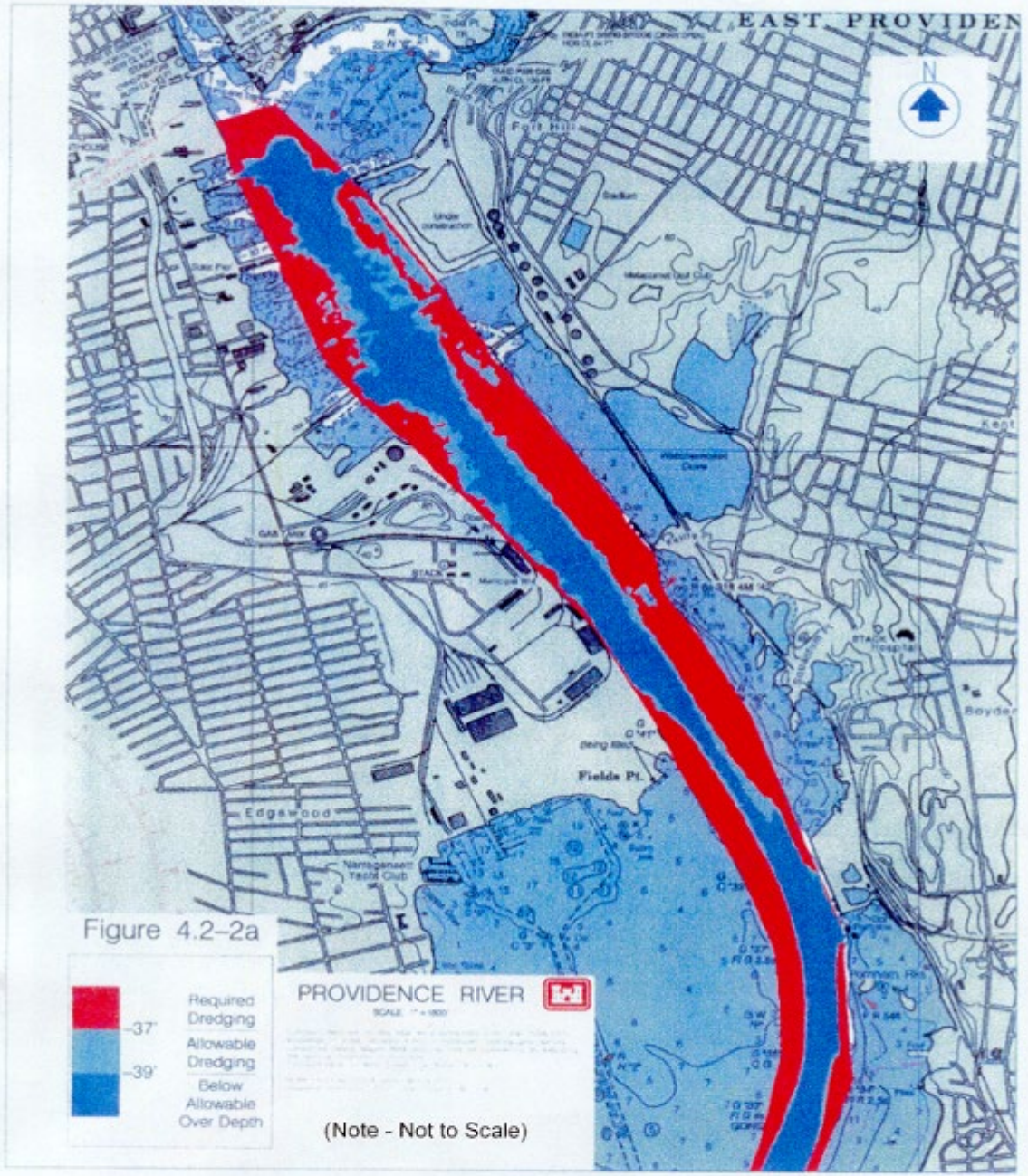
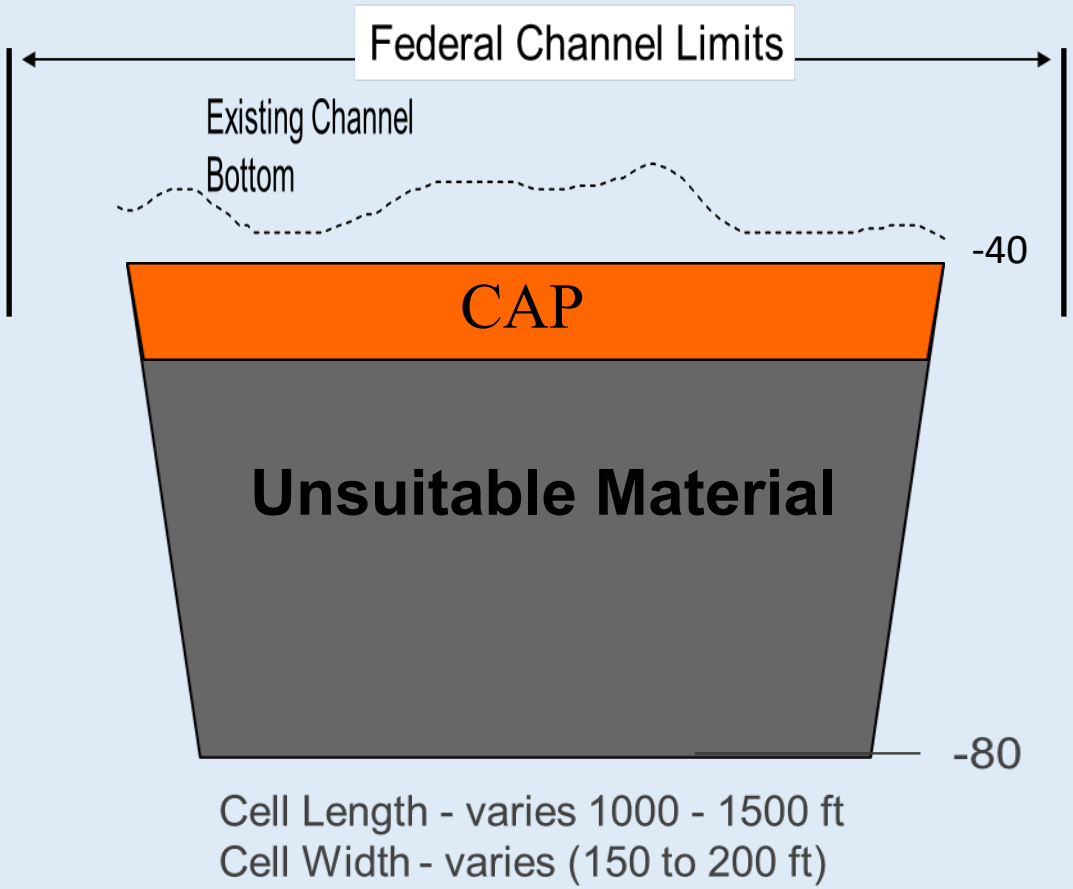
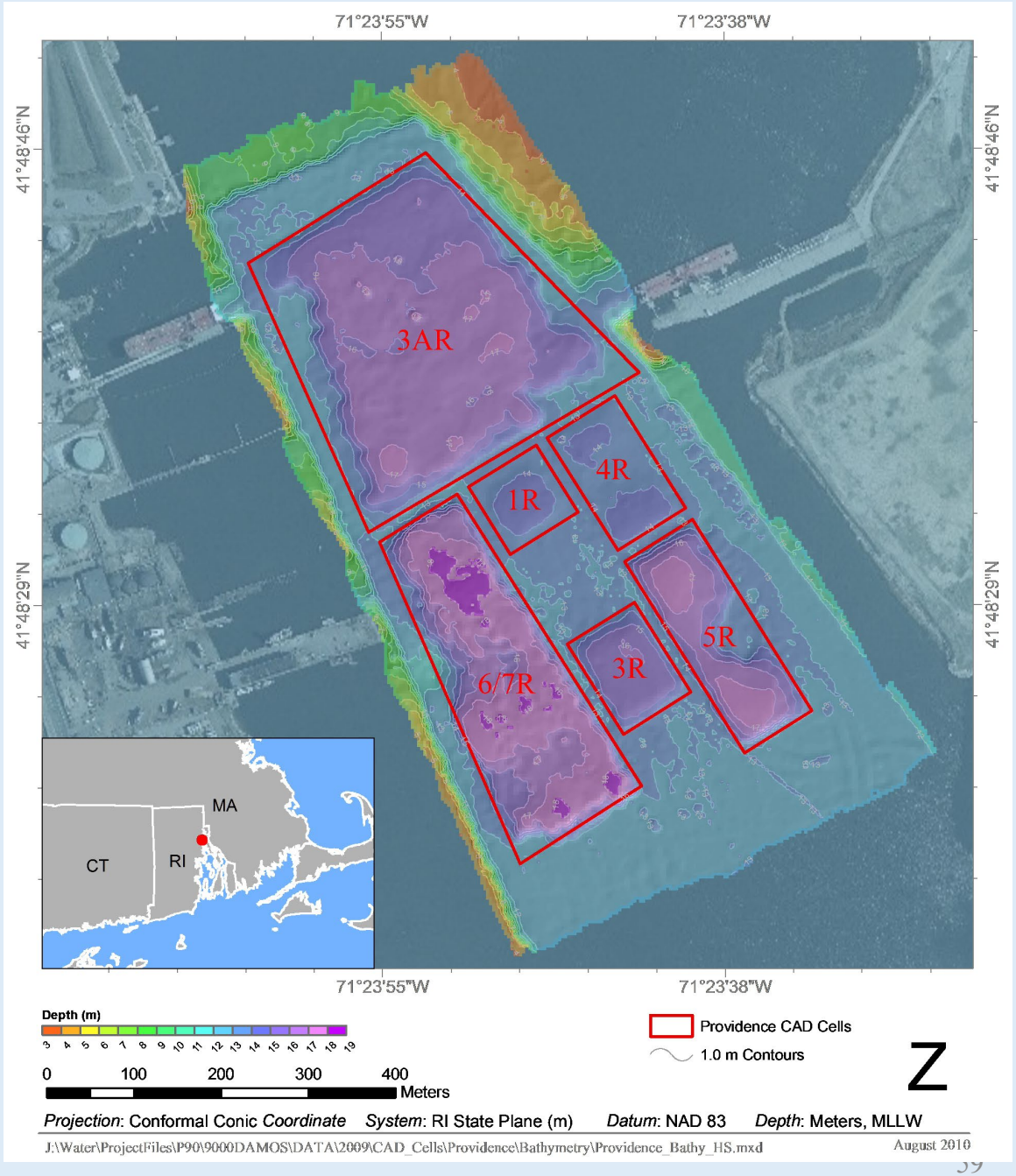


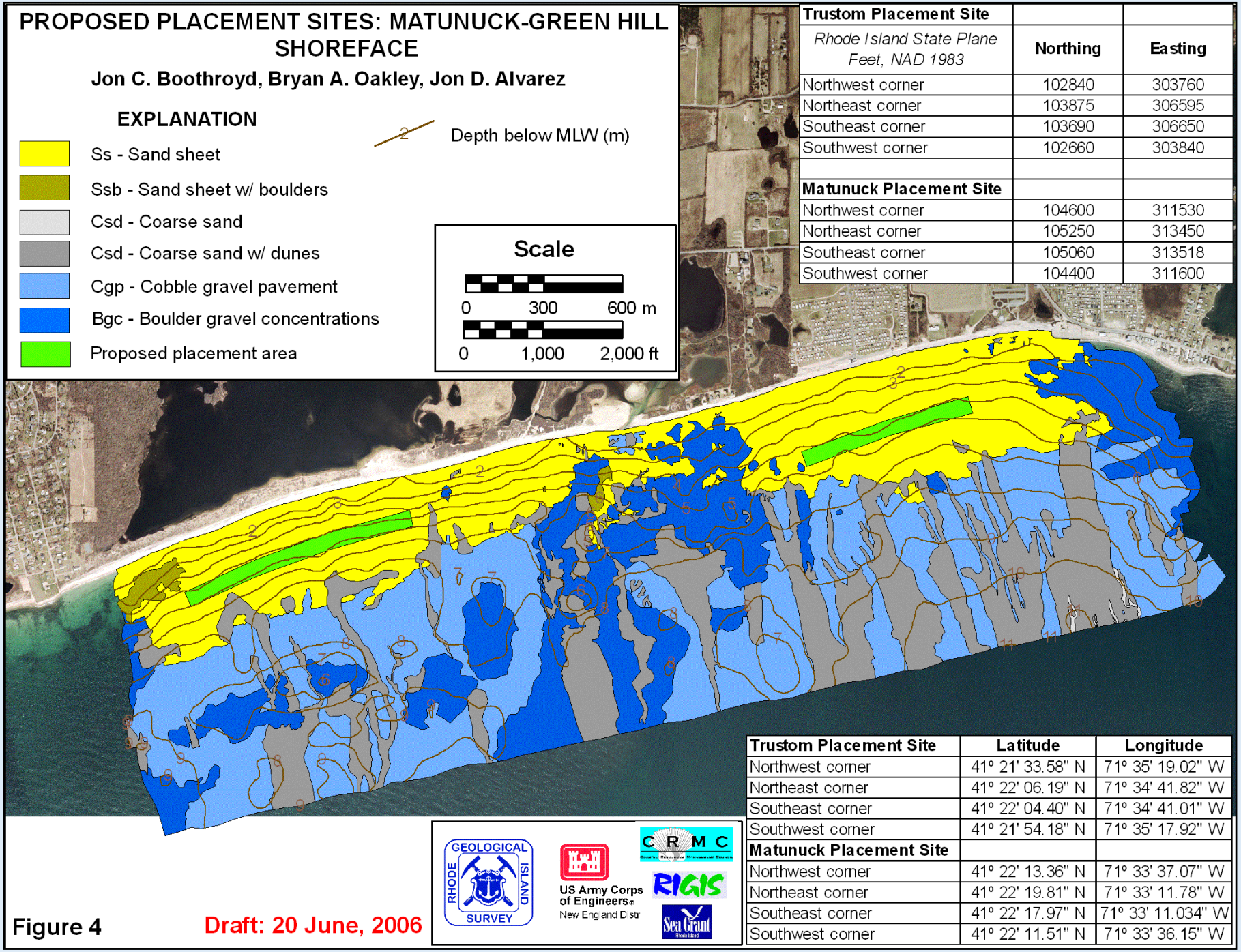
Figure 4.2-2a. Distribution of Shoaling Sediment within the Upper Channel (37 and 39 ft depths)


Federal Channel Limits
Existing Channel
Bottom
-40
CAP
Unsuitable Material
-80
Cell Length - varies 1000 - 1500 ft
Cell Width - varies (150 to 200 ft)


71°23'55"W
71°23'38"W
41°48'46"N
41°48'29"N
3AR
4R
1R
6/7R
3R
5R
MA
CT
RI
Depth (m)
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
0 100 200 300 400
Meters
Providence CAD Cells
1.0 m Contours
N
Projection: Conformal Conic Coordinate System: RI State Plane (m) Datum: NAD 83 Depth: Meters, MLLW
J:\Water\ProjectFiles\P90\9000DAMOS\DATA\2009\CAD_Cells\Providence\Bathymetry\Providence_Bathy_HS.mxd
August 2010

PROPOSED PLACEMENT SITES: MATUNUCK-GREEN HILL SHOREFACE

Jon C. Boothroyd, Bryan A. Oakley, Jon D. Alvarez



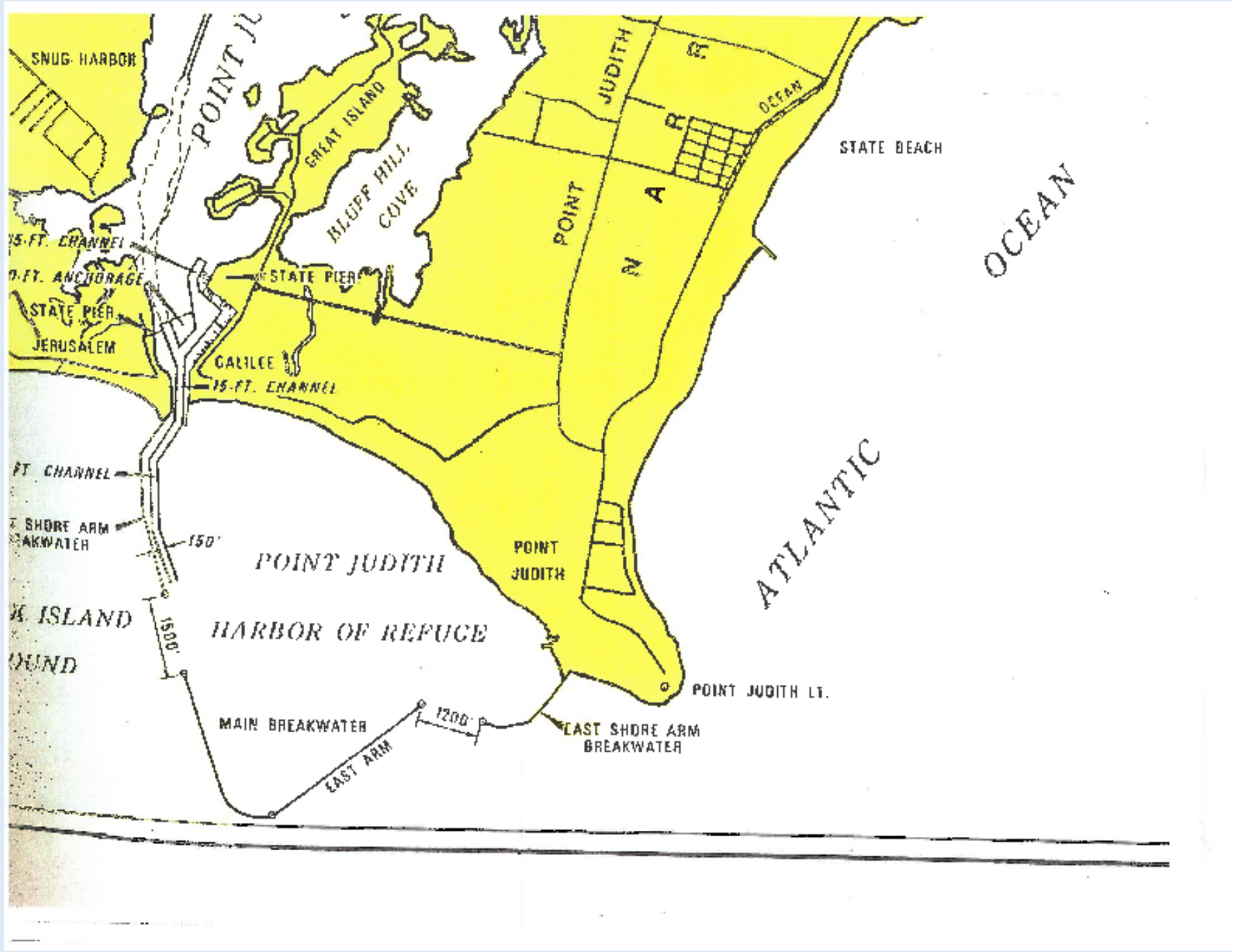
Trustom Placement Site		
Rhode Island State Plane Feet, NAD 1983	**Northing**	**Easting**
Northwest corner	102840	303760
Northeast corner	103875	306595
Southeast corner	103690	306650
Southwest corner	102660	303840
Matunuck Placement Site		
Northwest corner	104600	311530
Northeast corner	105250	313450
Southeast corner	105060	313518
Southwest corner	104400	311600

Trustom Placement Site	Latitude	Longitude
Northwest corner	41° 21' 33.58" N	71° 35' 19.02" W
Northeast corner	41° 22' 06.19" N	71° 34' 41.82" W
Southeast corner	41° 22' 04.40" N	71° 34' 41.01" W
Southwest corner	41° 21' 54.18" N	71° 35' 17.92" W
Matunuck Placement Site		
Northwest corner	41° 22' 13.36" N	71° 33' 37.07" W
Northeast corner	41° 22' 19.81" N	71° 33' 11.78" W
Southeast corner	41° 22' 17.97" N	71° 33' 11.034" W
Southwest corner	41° 22' 11.51" N	71° 33' 36.15" W

Rhode Island Geological Survey · US Army Corps of Engineers New England Distri · CRMC · RIGIS · Sea Grant

Figure 4

Draft: 20 June, 2006


SNUG HARBOR
GREAT ISLAND
BLUFF HILL COVE
JUDITH
OCEAN
STATE BEACH
POINT
NARR
OCEAN
15-FT. CHANNEL
STATE PIER
JERUSALEM
GALILEE
15-FT. CHANNEL
FT. CHANNEL
SHORE ARM
AKWATER
150'
POINT JUDITH
HARBOR OF REFUGE
POINT
JUDITH
ATLANTIC
ISLAND
OUND
1500'
POINT JUDITH LT.
MAIN BREAKWATER
1200'
EAST SHORE ARM
BREAKWATER
EAST ARM


Flood Tide
Deltas
Habitat
Restoration
(Ninigret Pond: 40 Acres Restored)

Marina Management Issues:

Clean Marina
State Building Official
Dredging Limitations – Long Term Permits

Moderated Discussion with RI CRMC Leadership

Igor Runge

Moderator, Program Co-Chair

Senior Consultant, GZA GeoEnvironmental, Inc.

EBC

Environmental Business Council of New England

Energy Environment Economy

Closing Remarks

Rick Mandile

SAGE Environmental