

The Proposed Offshore Wind Project and The Future of Sears Island

**Mack
Point**

**Sears
Island**

Google Earth



1 M



Today's Talk

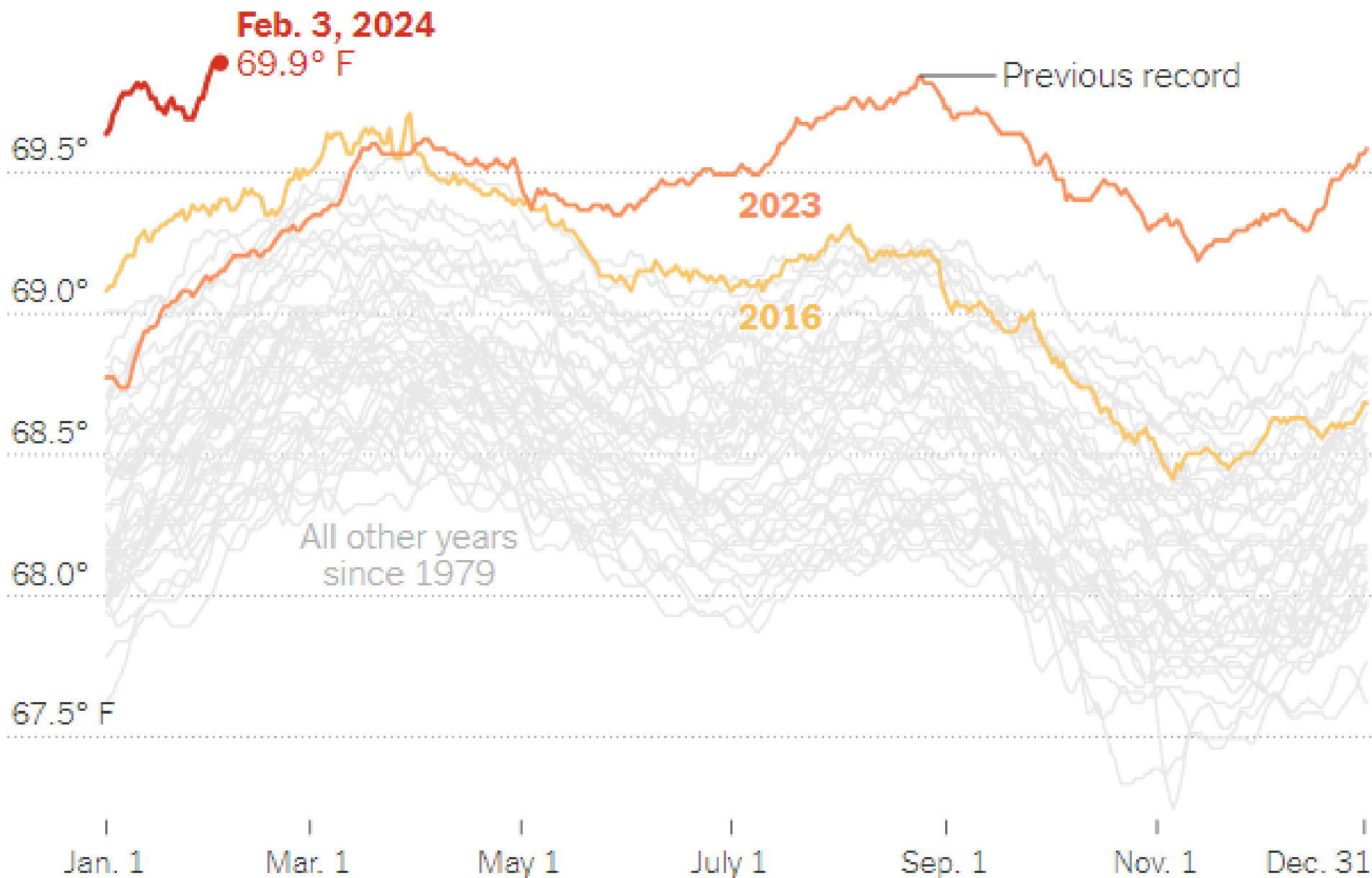
- We need clean energy to limit the damage from climate change
- Wind power provides clean energy – needs a port
- Our Earth is finite, we must preserve undeveloped land
- Mack Point meets all requirements for a commercial wind port
- Developing Sears Island would be destructive.
- Preserving Sears Island has ecological value, human value, and reduces carbon in the atmosphere.
- Sears Island needs protection

Climate Change is Here. Time to Act. We need Offshore Wind



The Landings Marina in Rockland, January 2024
Penobscot Bay Pilot, Photo by Cathie Dorr

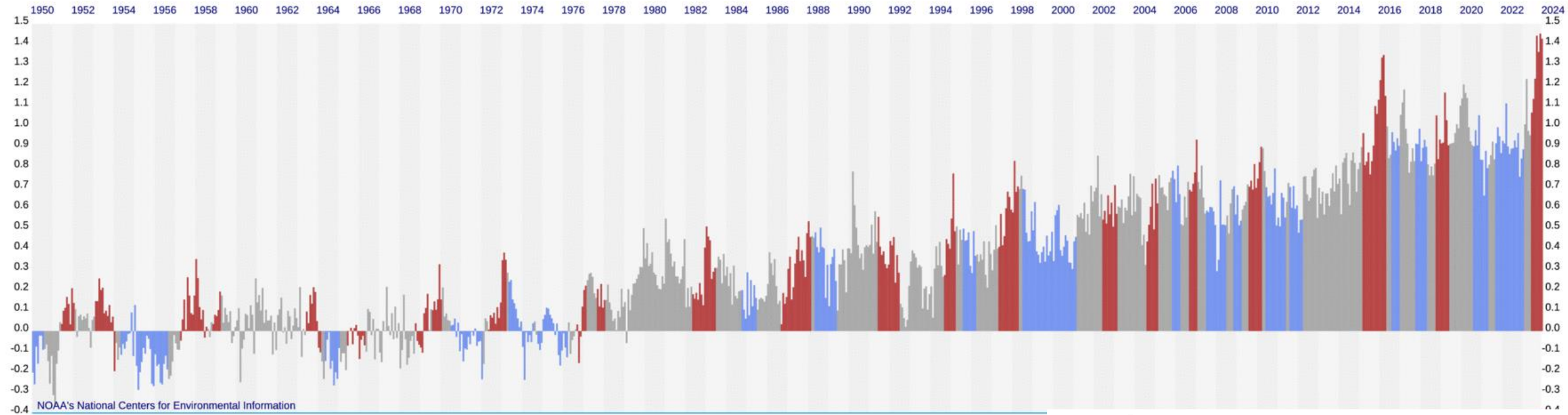
Daily Sea Surface Temperatures



Source: Copernicus Climate Change Service/ECMWF • By Elena Shao

Monthly global temperature anomalies since January 1950, with ENSO status

1950 1976 2000 2023



Global Surface Temperature Departures ($^{\circ}\text{C}$), colored by monthly ENSO values
Jan 1950 through Dec 2023

El Niño Months
ENSO Neutral Months
La Niña Months

Selected Significant Climate Anomalies and Events: Annual 2023



CANADA

Wildfires across Canada burned more than 45.7 million acres, shattering a record (2.6 times over) for the most acres burned in Canadian and North American history. These fires caused widespread air quality deterioration across much of Canada and the U.S.

NORTH AMERICA

2023 was North America's warmest year on record.

CALIFORNIA

Nine back-to-back atmospheric rivers pummeled California in Jan 2023, which brought a total of 32 trillion gallons of rain and snow to the state.

EASTERN NORTH PACIFIC HURRICANE SEASON

Above-average activity: 17 storms, including 10 hurricanes

HAWAII

On Aug 8, winds from Hurricane Dora exacerbated a wildfire on the island of Maui in Hawaii that destroyed the historic town of Lahaina and became the deadliest wildfire in the U.S. in over a century.

HURRICANE OTIS

On Oct 25, Hurricane Otis made landfall as a Category 5 hurricane near Acapulco on Mexico's southern Pacific coast after increasing wind speed by 115 mph within 24 hours and bringing catastrophic damage to a city of nearly one million people.

ATLANTIC HURRICANE SEASON

Above-average activity: 20 storms, including seven hurricanes

AFRICA

2023 was Africa's warmest year on record.

SOUTH AMERICA

South America had its warmest year on record.

GLOBAL TROPICAL CYCLONES

Above-average activity: 78 storms, including 45 hurricanes/cyclones/typhoons

GLOBAL OCEAN

For nine consecutive months (Apr–Dec), global ocean surface temperatures were record warm.

ANTARCTIC SEA ICE EXTENT

The Antarctic had record-low annual maximum and minimum sea ice extents during 2023.

ARCTIC SEA ICE EXTENT

The 2023 Arctic maximum and minimum extents were third- and sixth-smallest on record, respectively.

EUROPE

Europe had its second-warmest year on record.

ASIA

2023 was Asia's second-warmest year on record.

CYCLONE DANIEL

On Sep 10, Storm Daniel brought strong winds and an unprecedented amount of rain to eastern Libya, which caused massive destruction—dams burst across many towns and led to the death of more than 10,000 people, making it the deadliest and costliest tropical cyclone of 2023.

NORTH INDIAN OCEAN CYCLONE SEASON

Above-average activity: eight storms, including four cyclones

SOUTH INDIAN OCEAN CYCLONE SEASON*

Above-average activity: nine storms, including seven cyclones

AUSTRALIA CYCLONE SEASON*

Above-average activity: nine storms, including five cyclones

WESTERN NORTH PACIFIC TYPHOON SEASON

Below-average activity: 17 storms, including 12 typhoons

SUPER TYPHOON MAWAR

Super Typhoon Mawar passed within 100 miles of Guam in the Western Pacific on May 24 as a Category 4 storm. Mawar resulted in heavy rainfall and widespread power outages on Guam.

TROPICAL CYCLONE MOCHA

Cyclone Mocha was the North Indian Ocean's first named storm of 2023, and made a devastating landfall as a Category 4 cyclone in Myanmar on May 14.

OCEANIA

Oceania had its 10th-warmest year on record.

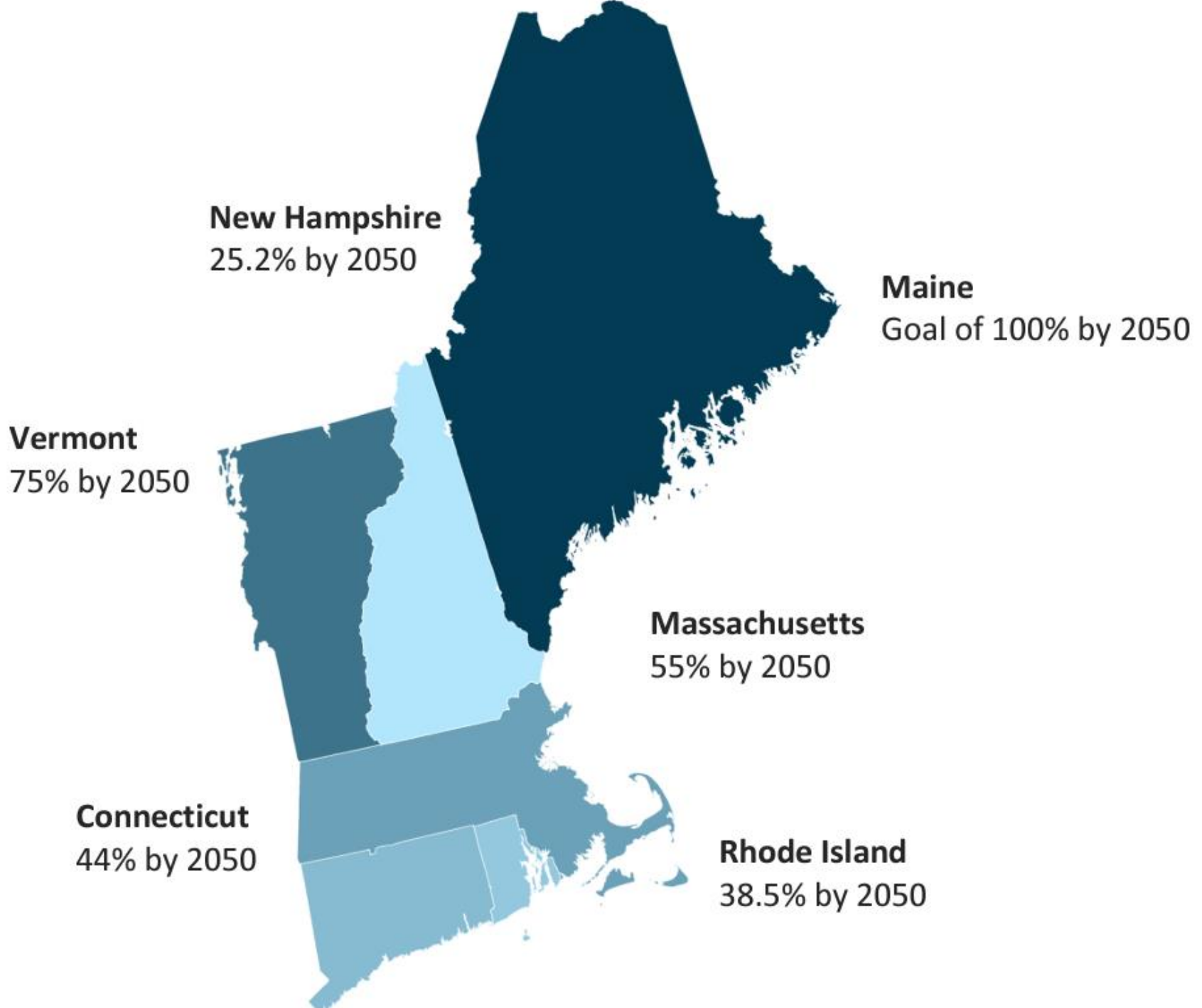
SOUTHWEST PACIFIC CYCLONE SEASON*

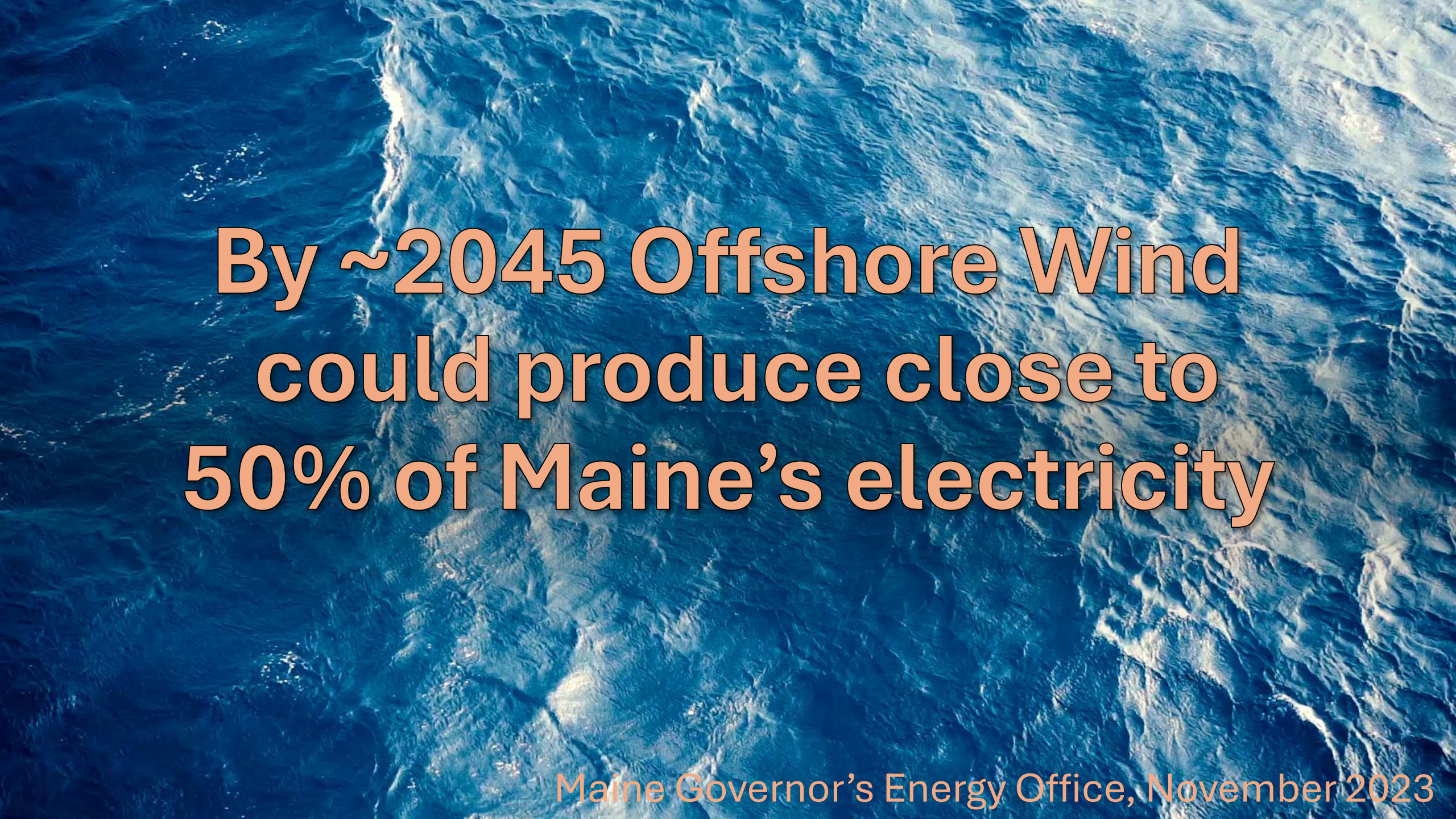
Below-average activity: six storms, including three cyclones

*Cyclone season runs from June 2022–July 2023

Climate Goals by 2050

Maine is the leader!



An aerial photograph of the ocean with deep blue water and white-capped waves. The text is overlaid in the center in a bold, orange font with a white outline.

**By ~2045 Offshore Wind
could produce close to
50% of Maine's electricity**

Maine needs a wind port
to support
offshore wind

Where will it be?



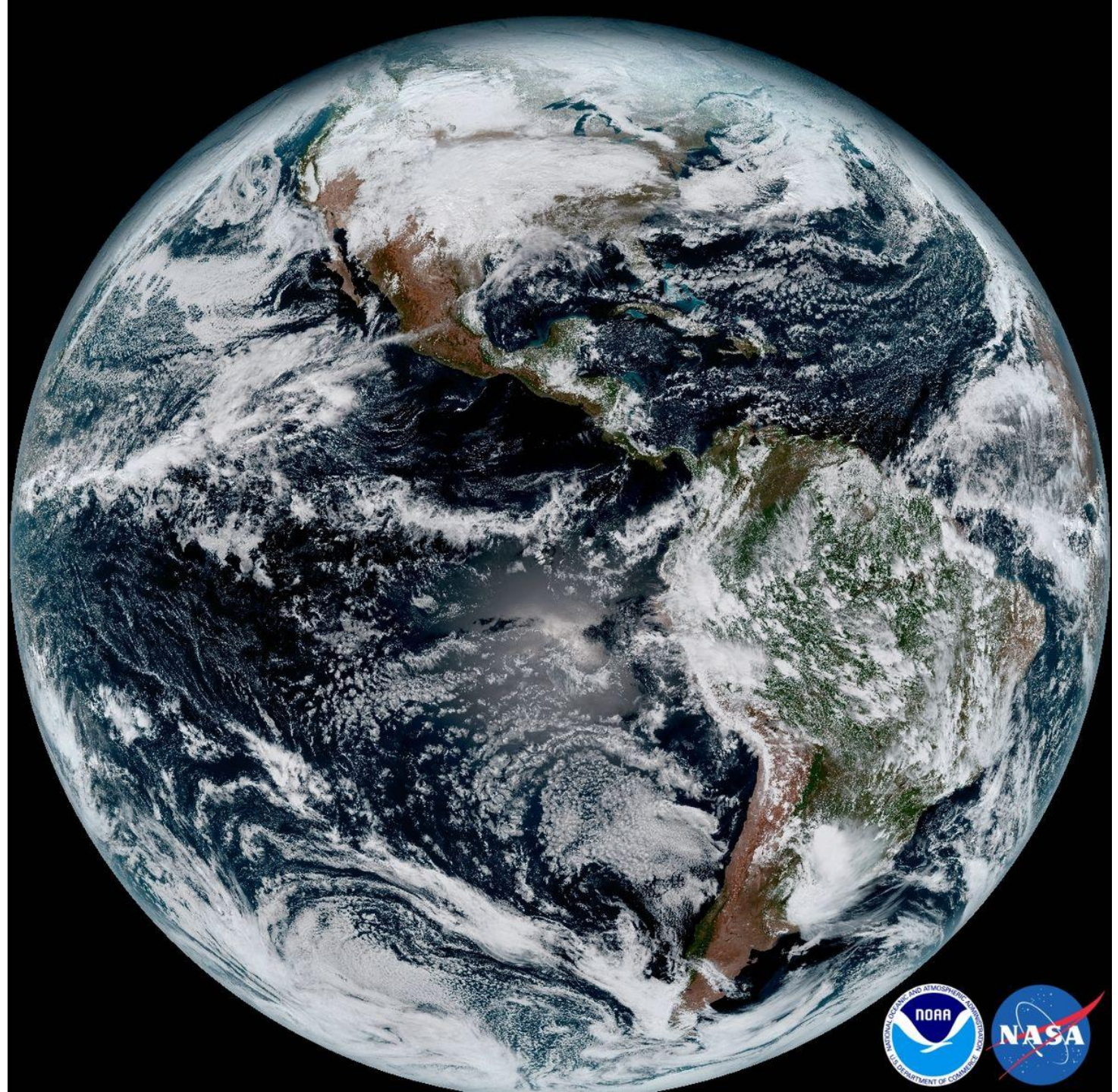
OR



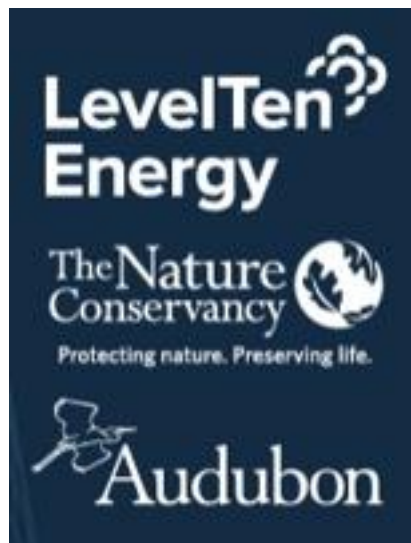
Preserving
undeveloped
lands and
waters

is critical

to the future of
life on our
planet



Beyond Carbon-Free: A Framework for Purpose-Led Renewable Energy Procurement and Development



Communities

Developers should engage early and often with the communities their projects are built in. Projects should have strong community support, employ diverse local workforces, and ensure local economic and community benefits.

Conservation

Projects should be sited thoughtfully to minimize impacts on wildlife, habitats, and natural areas.

Climate

Renewable development can create greater relative carbon reductions when built in areas with high fossil fuel generation, and should minimize the carbon released by construction-related disturbances to forests, wetlands, and other ecosystems.

wetlands, and other ecosystems.

"Best Practices" developed by:



November 2019

BEST PRACTICES

for Low Impact Solar Siting, Design, and Maintenance

Avoiding and Minimizing Impacts to Natural and Agricultural Resources

Natural Resource Siting Best Practices

- (1) **Preferentially use disturbed, developed, or degraded lands.** This includes landfills, brownfields¹, roadway medians and edges, parking lots, rooftops, idle or underutilized industrial or commercial sites, and sand and gravel pits. Utilizing disturbed lands avoids new forest clearing, minimizes soil disturbance, and takes advantage of unutilized or underutilized space.

Essential Wind Port Capacities:

- Full-scale commercial wind port
 - 140 20-MW wind turbines
- Capacity to generate up to ~2.8 GW of electricity for Maine
 - 12,400 GWh each year from offshore wind by 2050
 - $\text{GWh}/\text{number of hours in service} = \text{GW}$
- Providing ~50% of Maine's electricity needs by 2050



Wind Port Design Criteria

Minimum 100 Acres of Contiguous Flat Area (1% grade)

Unrestricted Deep-Water Access (35ft)

Unlimited Air Draft (No bridges, wires, etc.)

6000 PSF pier loading

Berth for delivery vessels and two WTGs (min 1500')

Offshore Wind Port
Development in Maine

72nd Maine Transportation Conference
By: Matt Burns, Maine Port Authority

Mack Pt. vs Sears Island Key Points

It is possible to achieve the design criteria at both sites.

Construction costs are similar. \$400-\$500 million.

A major cost driver for Mack Pt. is land lease costs. Assume a 30-year lease.

Sears Island has ample room to expand port operations in the future. Mack Pt. does not allow for this.

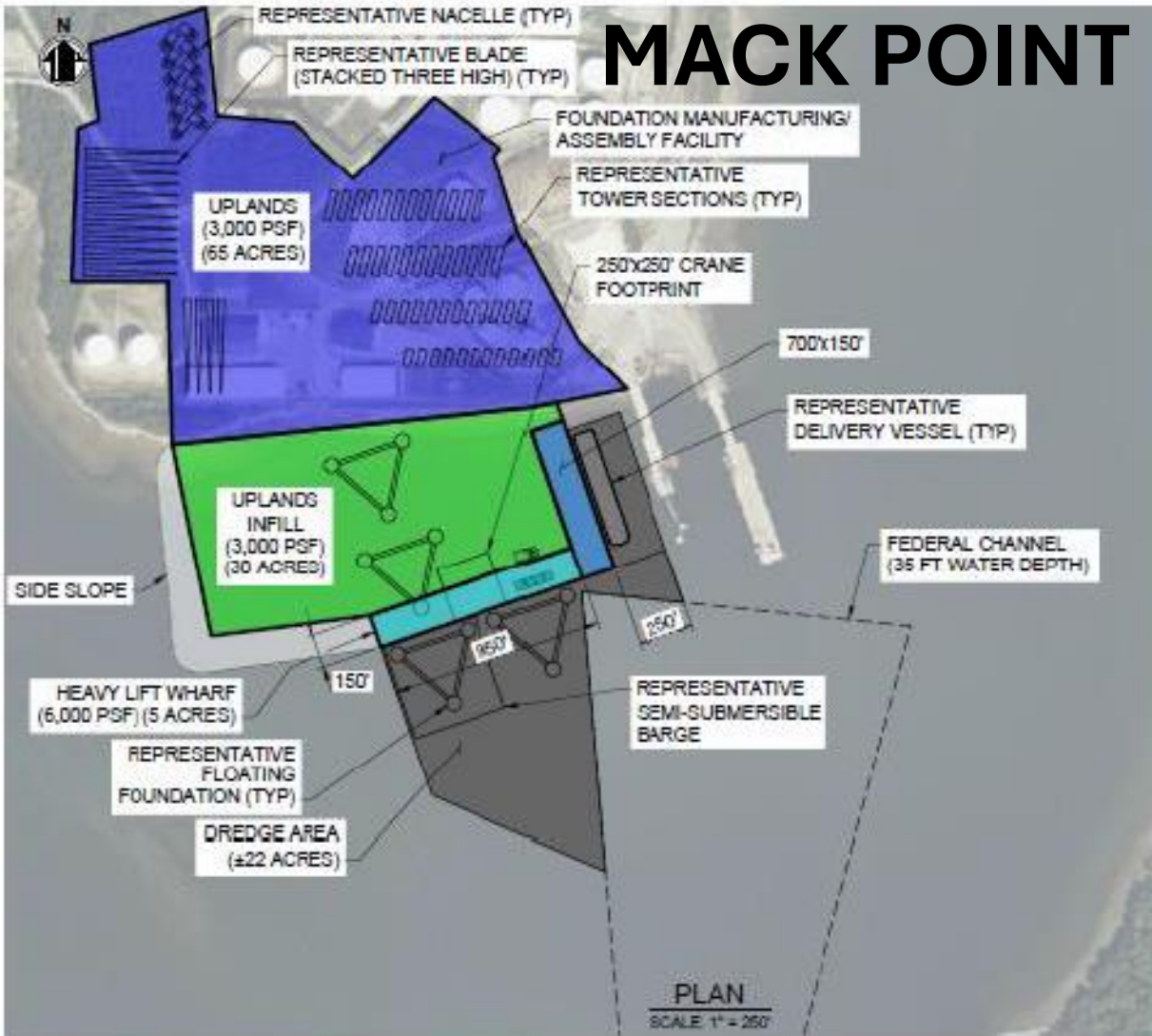
A 100-acre footprint at Mack Pt. has an irregular shape that would create inefficiency. The most desirable footprint would be a rectangular as possible.

Offshore Wind Port
Development in Maine

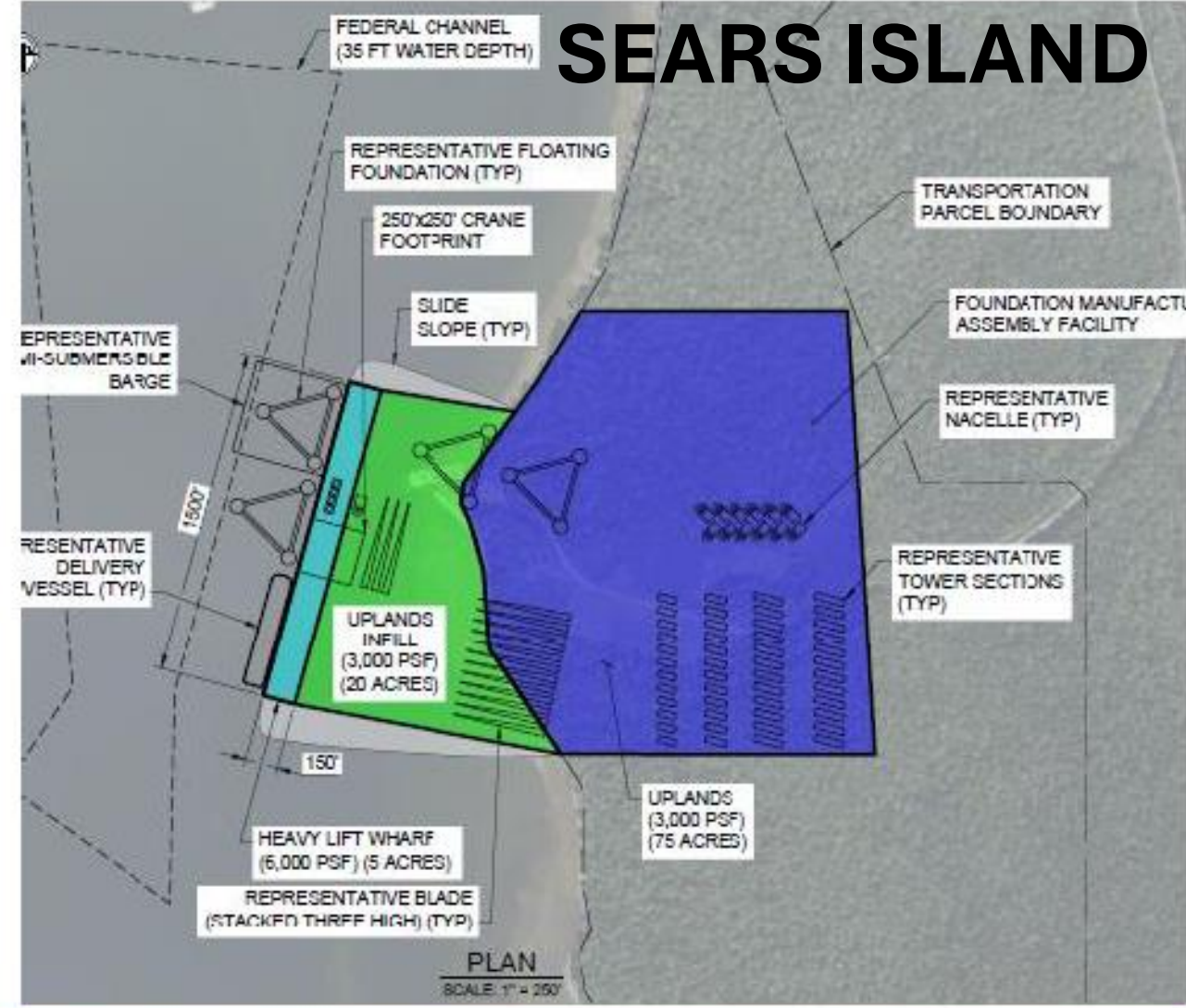
72nd Maine Transportation Conference
By: Matt Burns, Maine Port Authority

Searsport, ME OSW Terminal Concept Sketches

MACK POINT



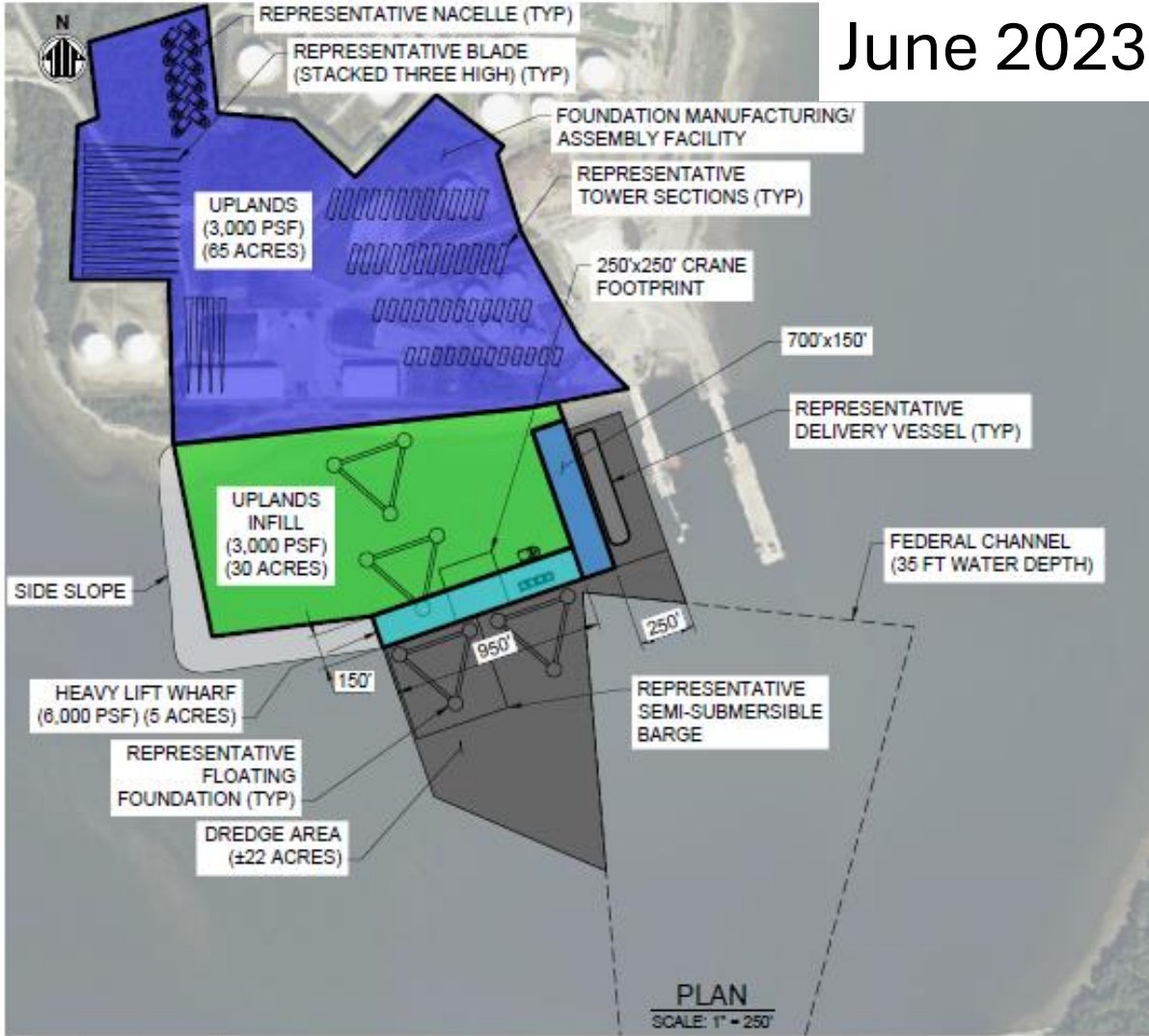
SEARS ISLAND



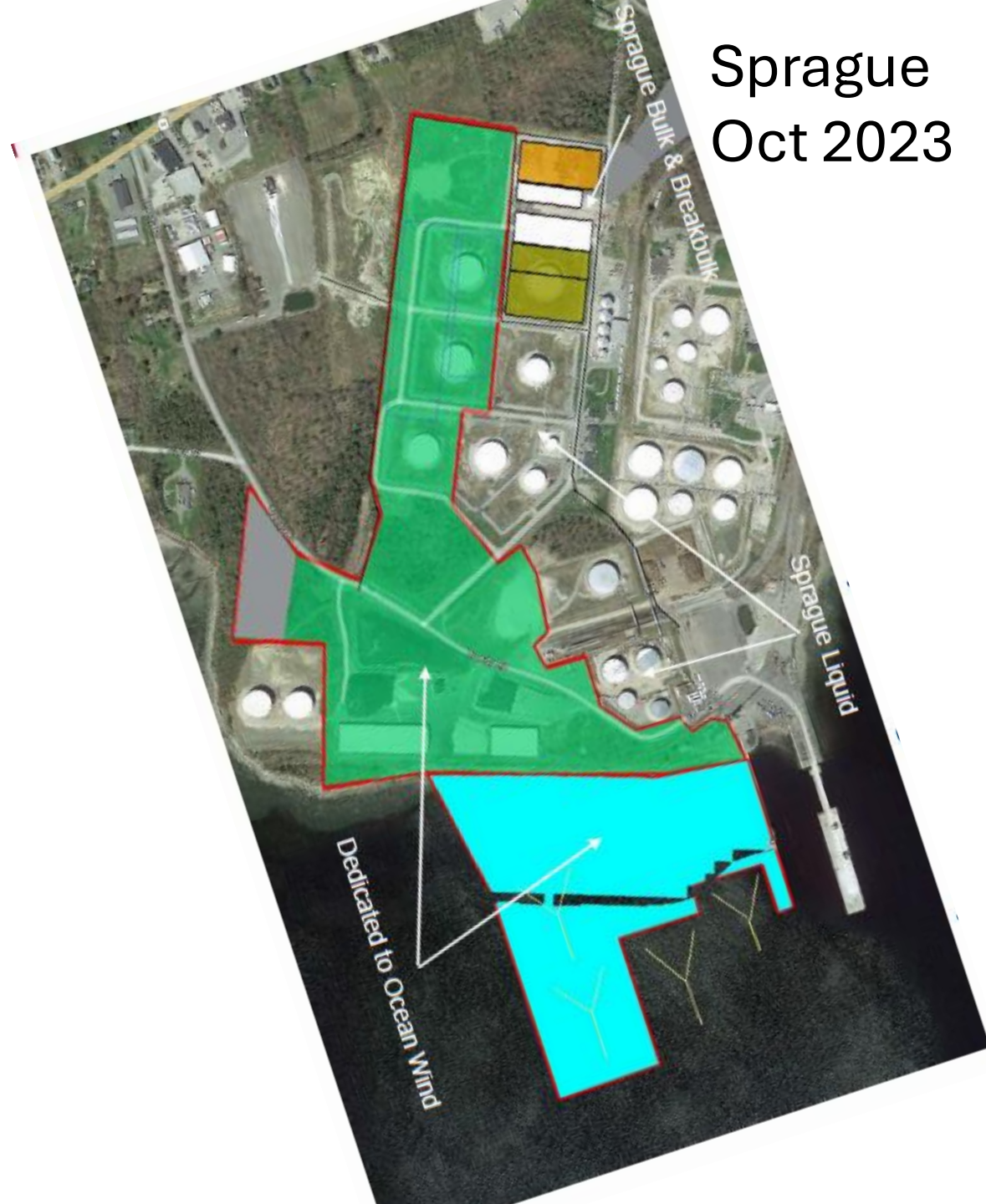
Mack Point Alternatives

M&N

June 2023



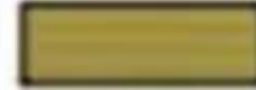
Sprague
Oct 2023



Sprague Alternative Wind Port

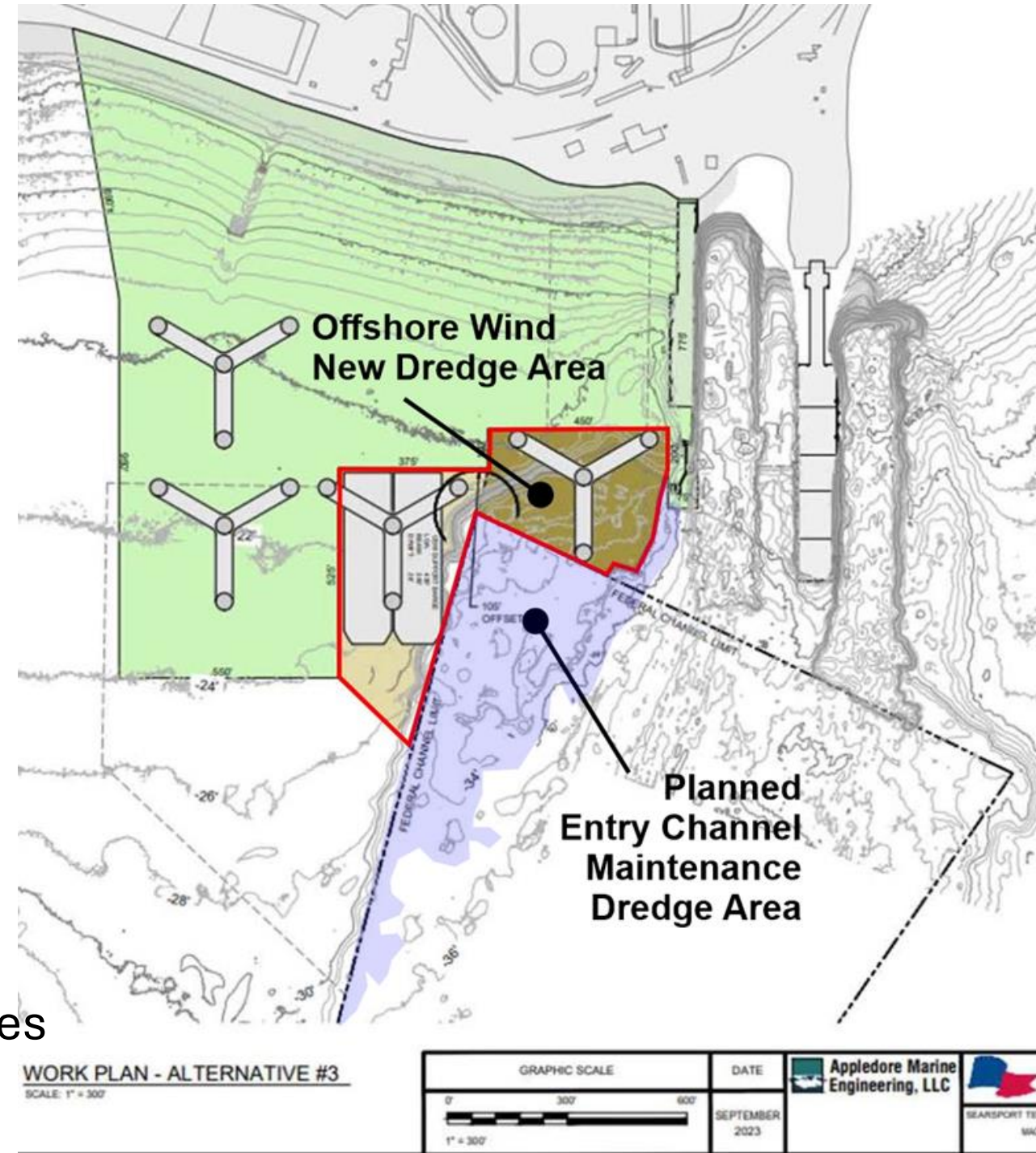
- New Dredge Area

- 4.2 acres / 33,000 CY
 - Dredge to -28' MLLW
- 3.6 acres / 28,000 CY
 - Dredge to -34' MLLW



- Federal Channel Maintenance

- ~40,000 CY (planned since 2015)
- PRELIMINARY DATA
- 3 samples in dredge area; 2008 + 2015
- All metals + organics FAR BELOW SV
- Before dredging, need 7 total sample sites
 - Add Dioxin analyses



Ramboll Environ 2017 reported:

- 2008 – 10 sites composted into 4 samples
- 2015 – 10 sites, 17 individual samples, depths

**Table A-1. Screening Values for Beneficial Use of Dewatered Dredge Material
Searsport Harbor, Searsport, Maine**

Group	Analyte name	Maximum Detected Concentration	Screening Value	Units
INORG	Lead	28.4	100	mg/kg
INORG	Mercury	0.2	4	mg/kg
INORG	Arsenic	18.6	29	mg/kg
INORG	Cadmium	0.3	8	mg/kg
INORG	Chromium (total)	81.8	100	mg/kg
PCB	PCBs (total)	12.8	740	µg/kg
SVOC	Indeno(1,2,3-cd)pyrene	271	14000	µg/kg
SVOC	Benzo(k)fluoranthene	400	49000	µg/kg
SVOC	Chrysene	532	160000	µg/kg
SVOC	Benzo(a)pyrene	444	8000	µg/kg
SVOC	Dibenz(a,h)anthracene	78.9	2000	µg/kg
SVOC	Benzo(a)anthracene	658	2000	µg/kg
TEQ	Dioxin TEQ	Not analyzed	16	pg/g

Screening values from Chapter 418 of the Maine Solid Waste Management Rules (MEDEP 2012)

µg/kg: microgram(s) per kilogram

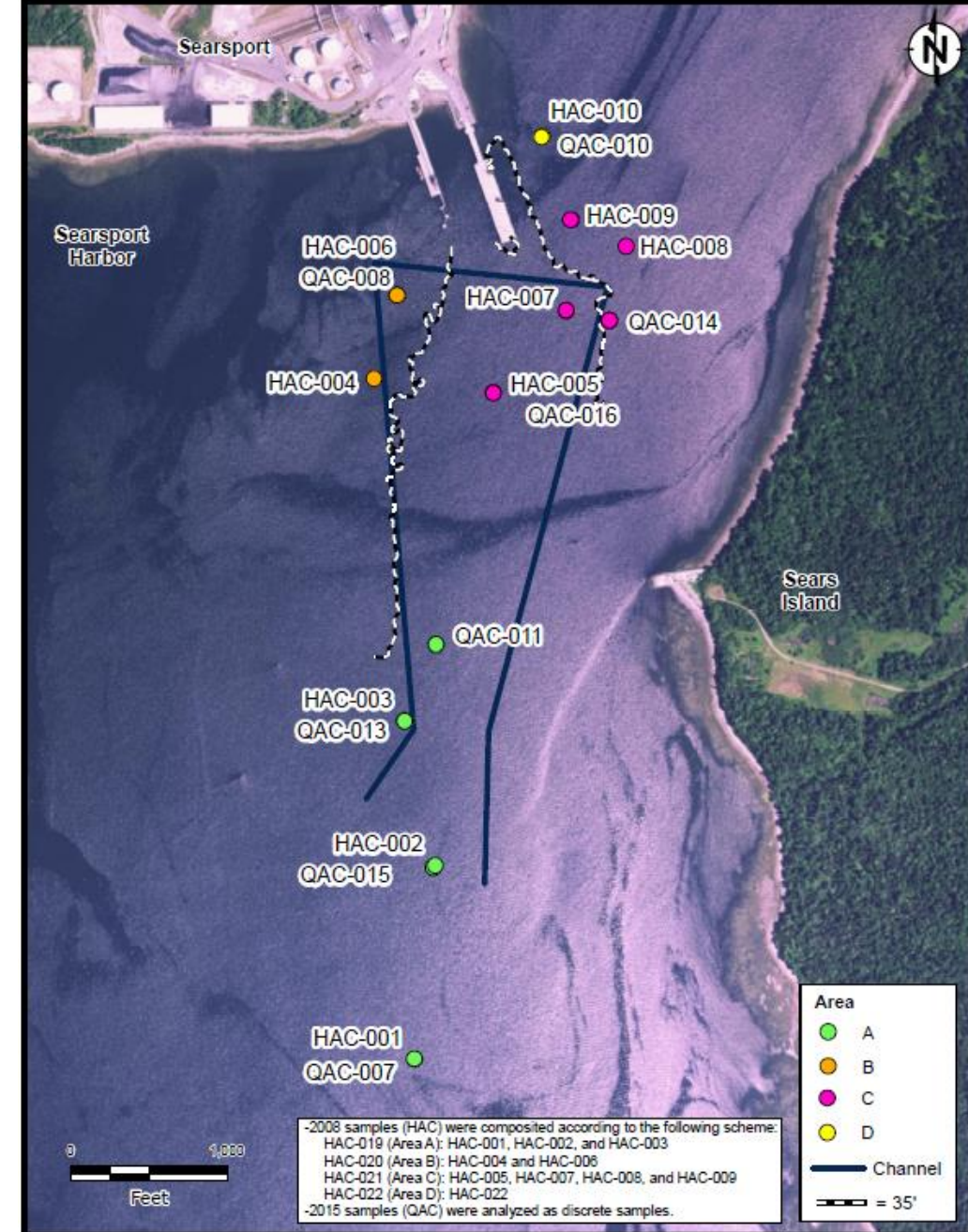
mg/kg: milligram(s) per kilogram

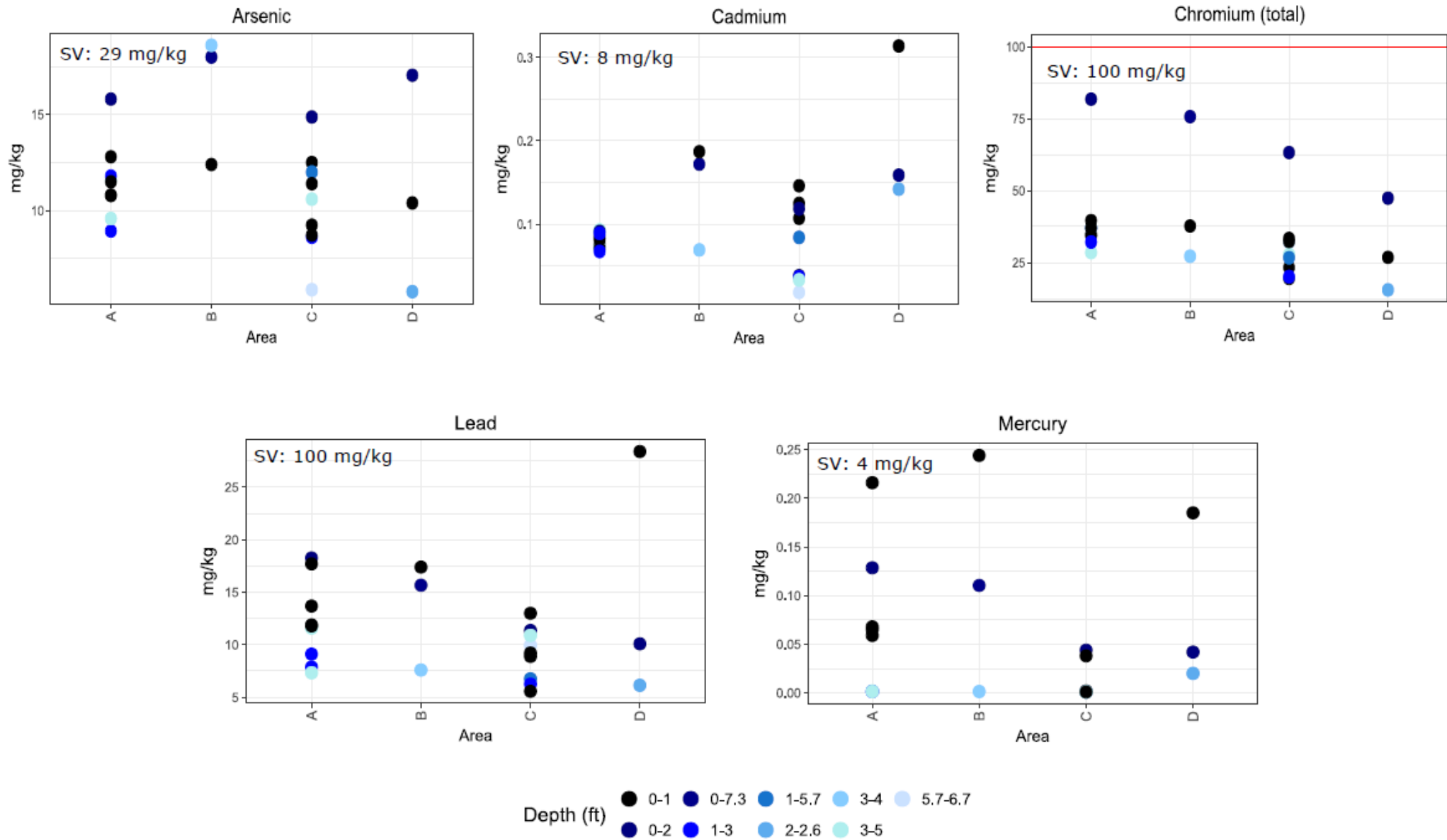
PCB: polychlorinated biphenyl

pg/g: picogram(s) per gram

SVOC: semi-volatile organic compound

TEQ: toxicity equivalents



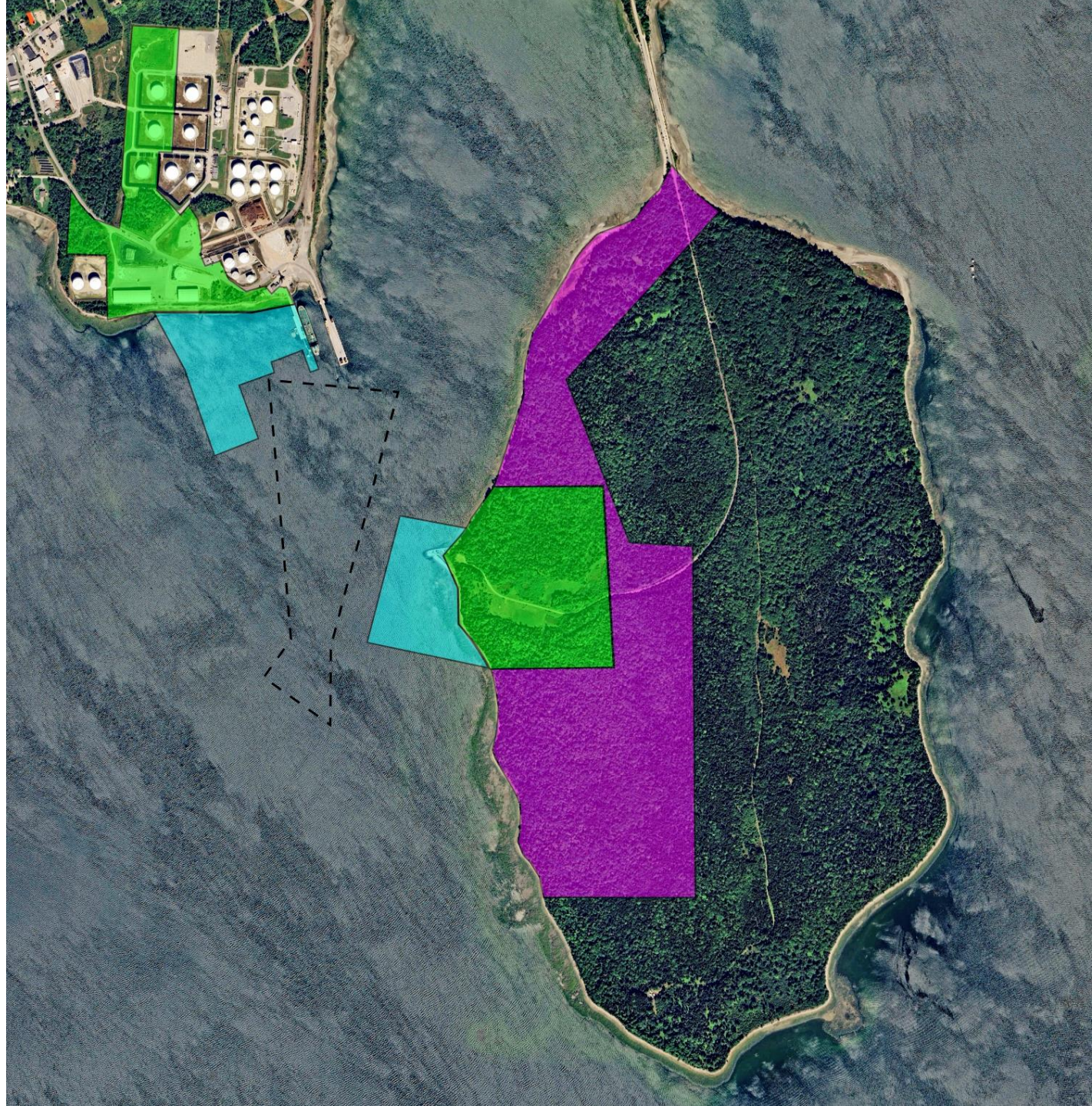


Wind Port Options...
as we currently
understand them...

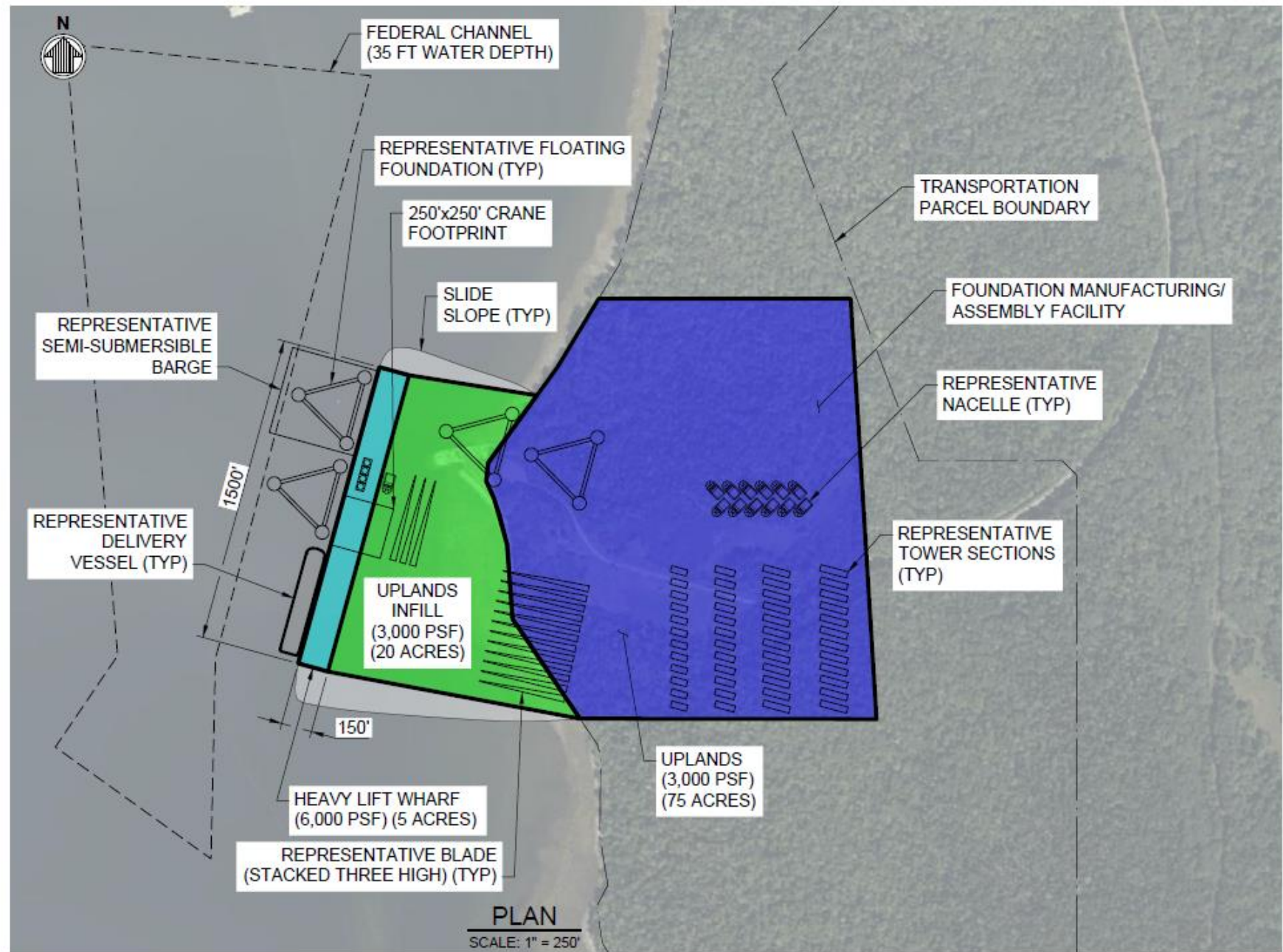
Industrialized
Mack Point

or

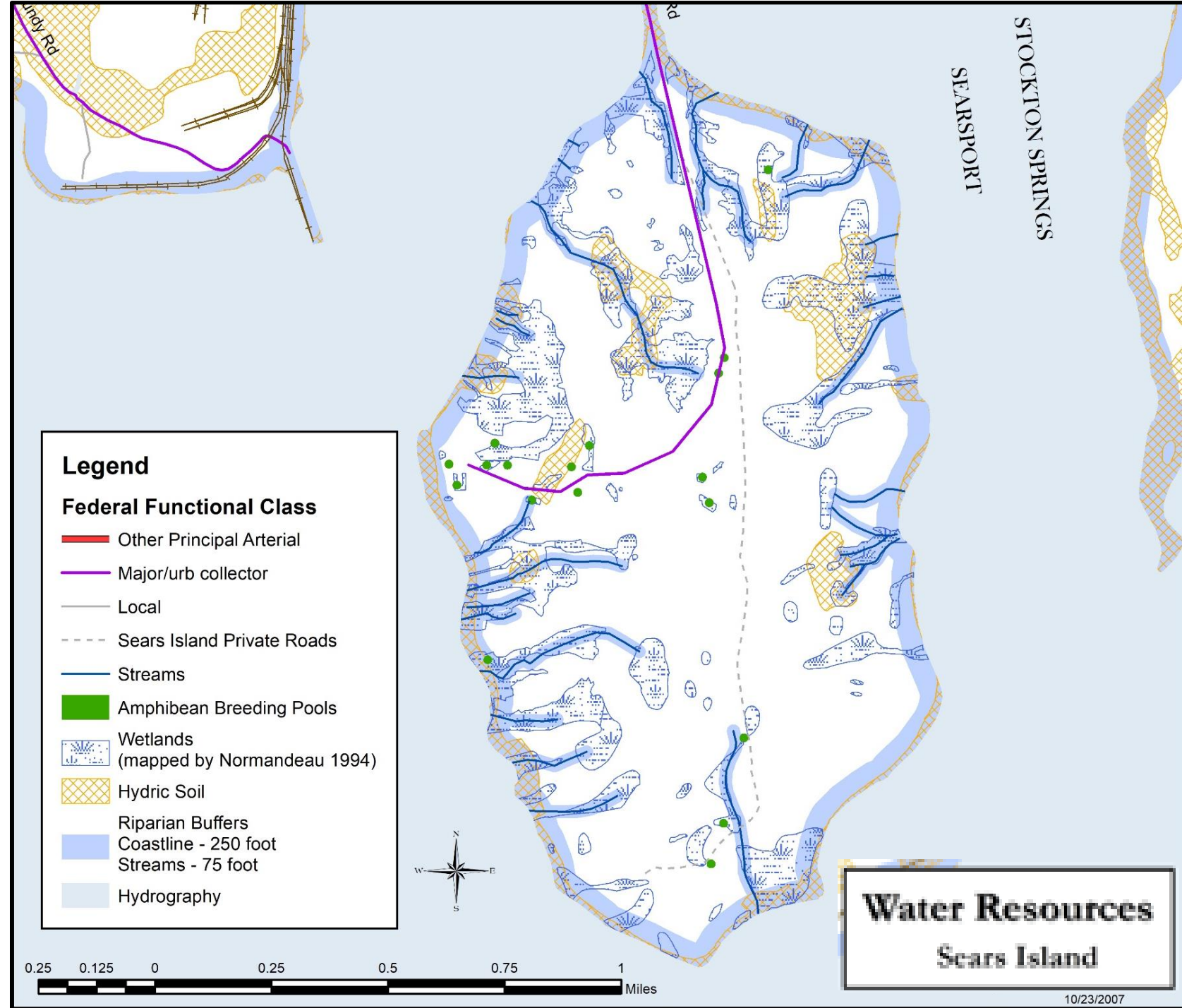
Undeveloped
Sears Island



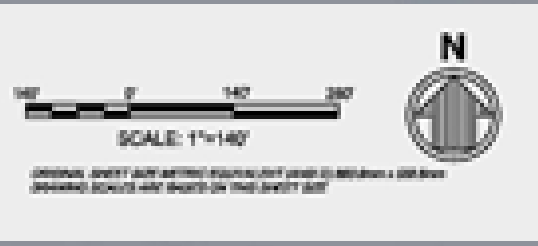
Wind Port at Sears Island




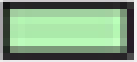





Sears Island Wetlands + Streams

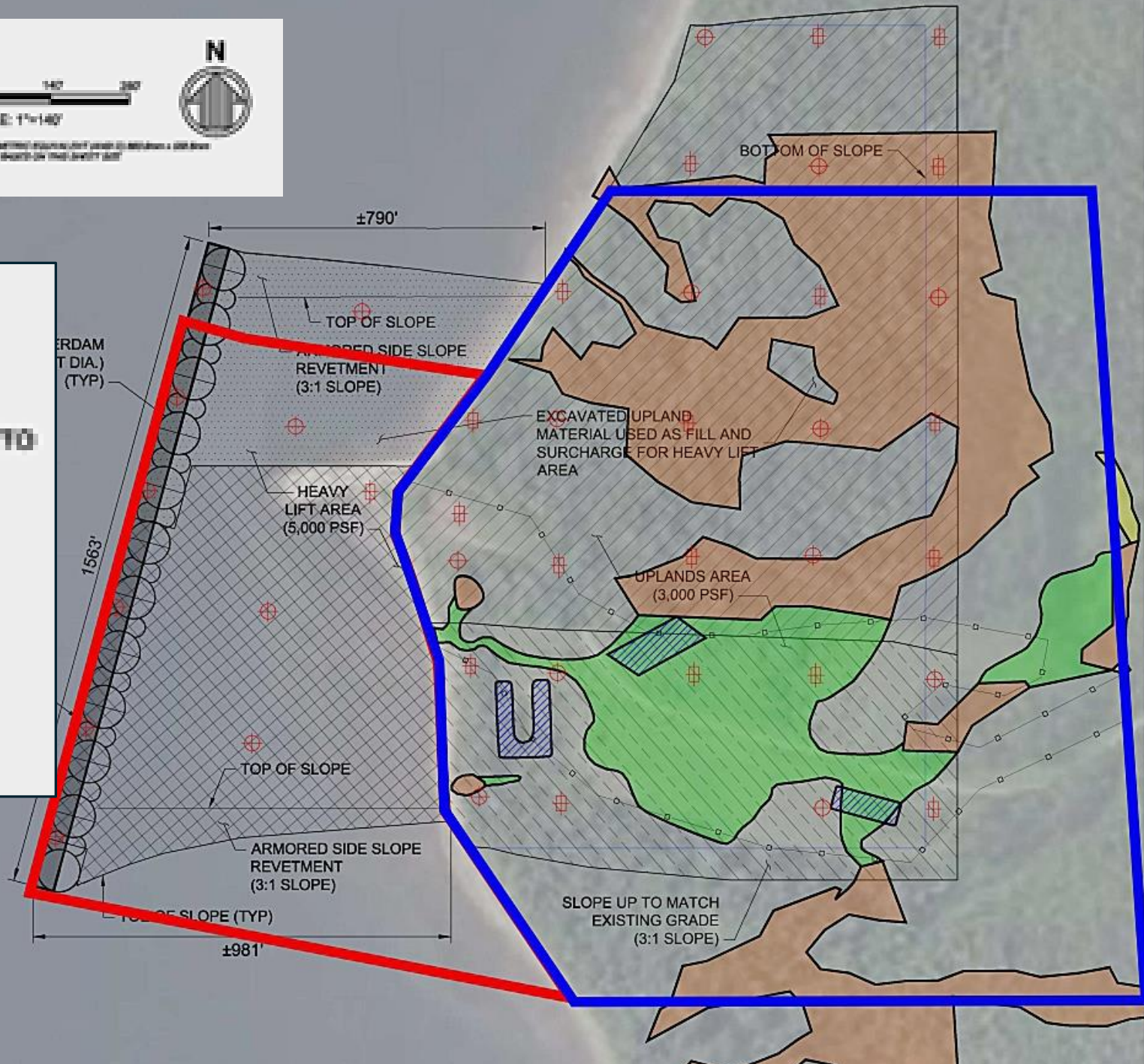


Wetlands Lost on Sears Island



LEGEND

-  EXISTING WETLANDS
-  APPROXIMATE AREA OF DIRECT IMPACT DUE TO EARLIER ACTION
-  WETLANDS CREATED BY EARLIER ACTION
-  DETENTION BASIN
-  LIMITS OF EXISTING CLEARED AREA
-  PROPOSED BORING
-  PROPOSED TEST PIT



Vernal Pools

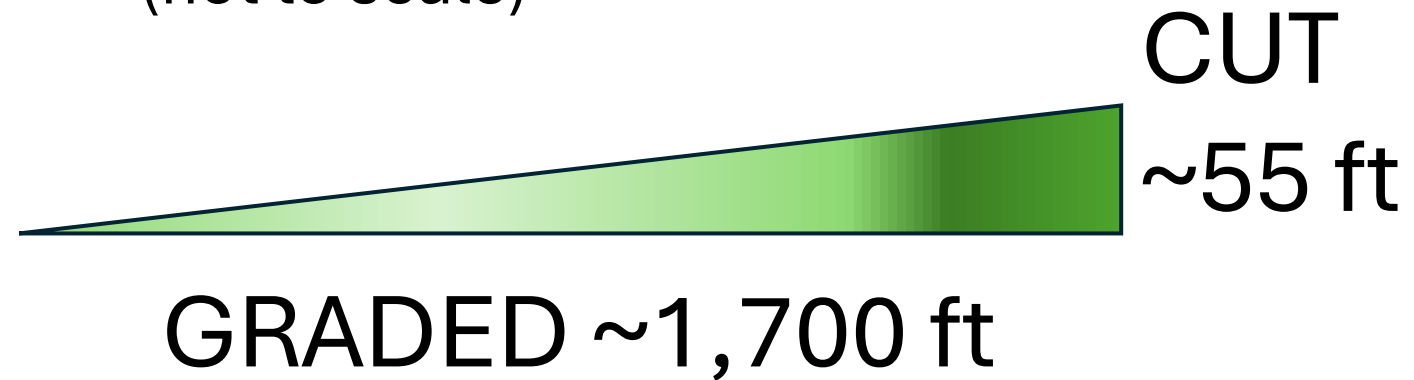


Critical Breeding Habitat



Consequences for Sears Island

- ~75 acres of upland cleared + graded
- 25+ acres of wetland destroyed
- 1,215,000++ cubic yards of soil removed
- Coastal sand dune buried
- Road upgraded for heavy equipment
- Wedge of land cleared:
 - (not to scale)



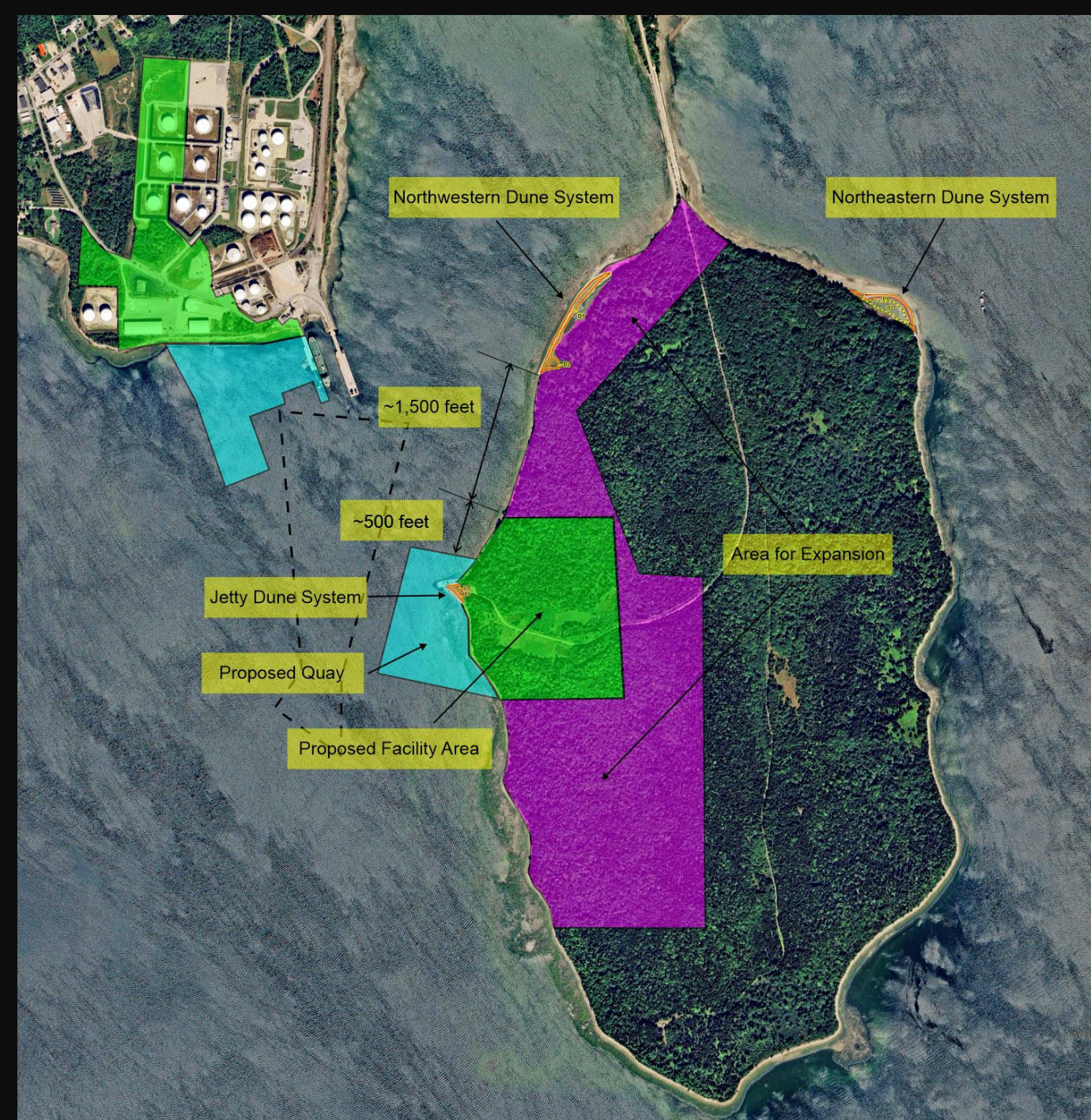
Coastal sand dune lost

LD 2266 - 3-18-2024

Would cancel sand dune regulations before environmental review

Passed April 2024

Dune would lie beneath the dock

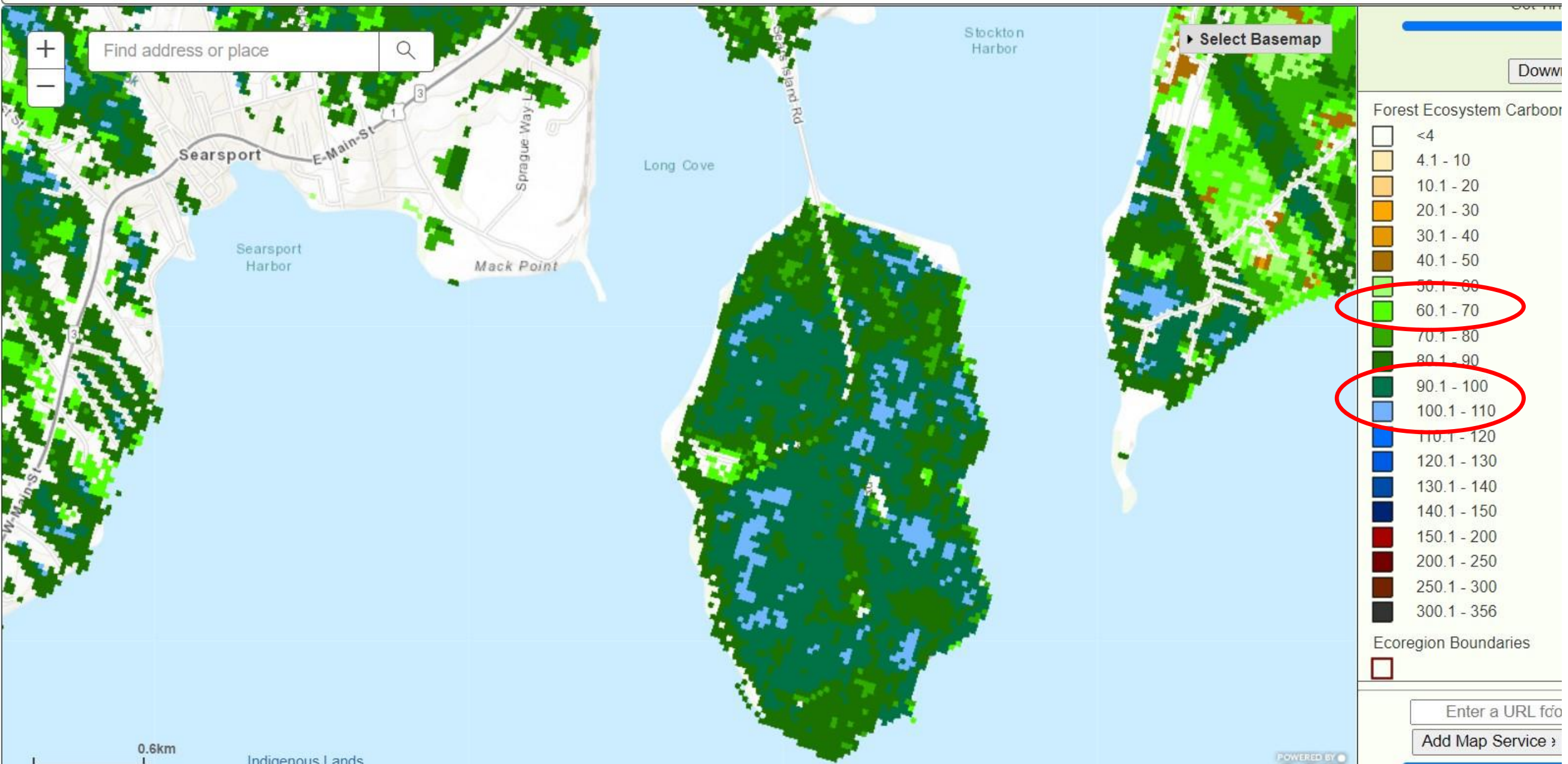


Carbon Sequestration Lost

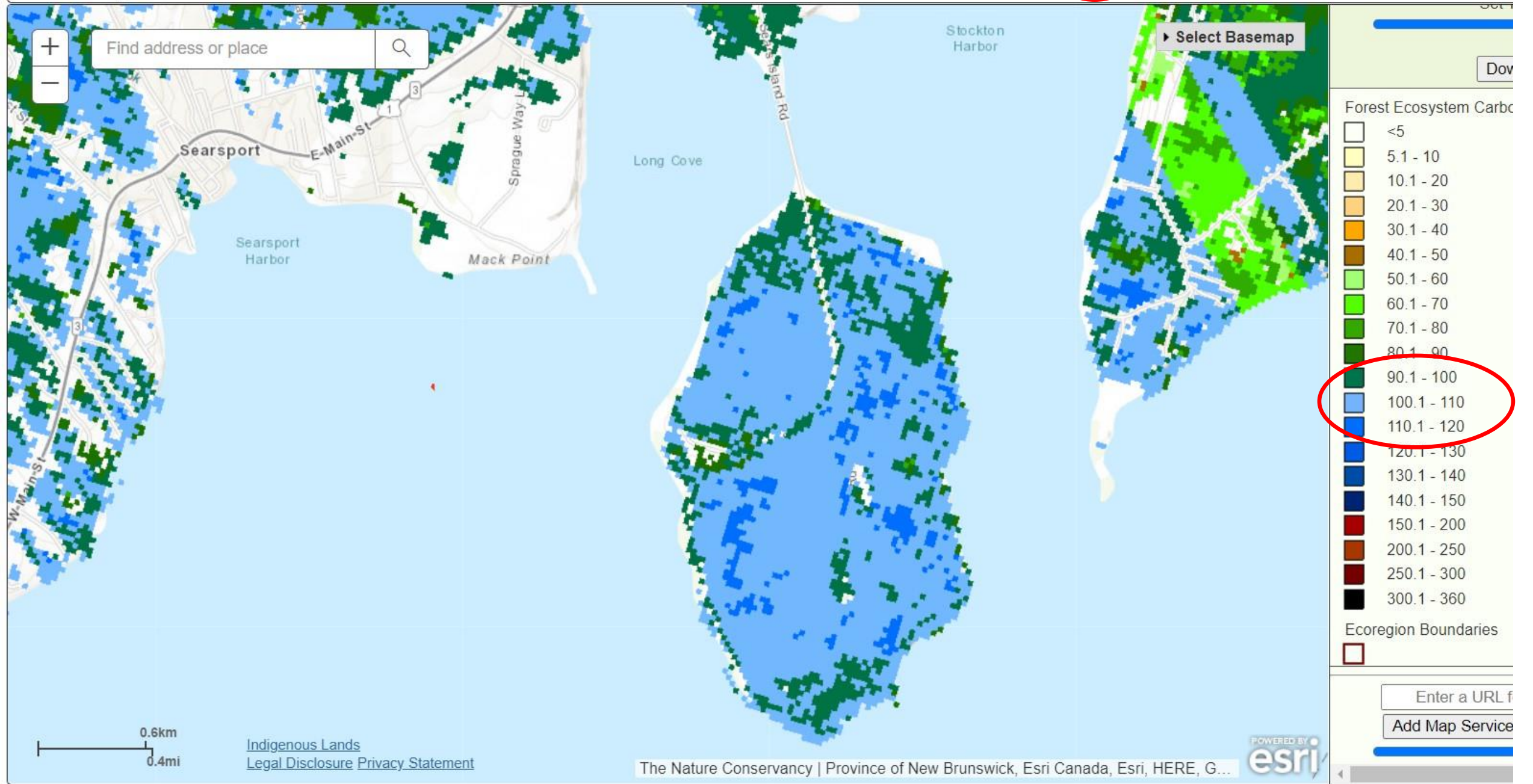


FOREST ECOSYSTEM CARBON 2010 METRIC TONS per ACRE

Get a quick



FOREST ECOSYSTEM CARBON 2050 (METRIC TONS / ACRE)



SEARS ISLAND PLANNING INITIATIVE

DRAFT STEERING COMMITTEE CONSENSUS AGREEMENT

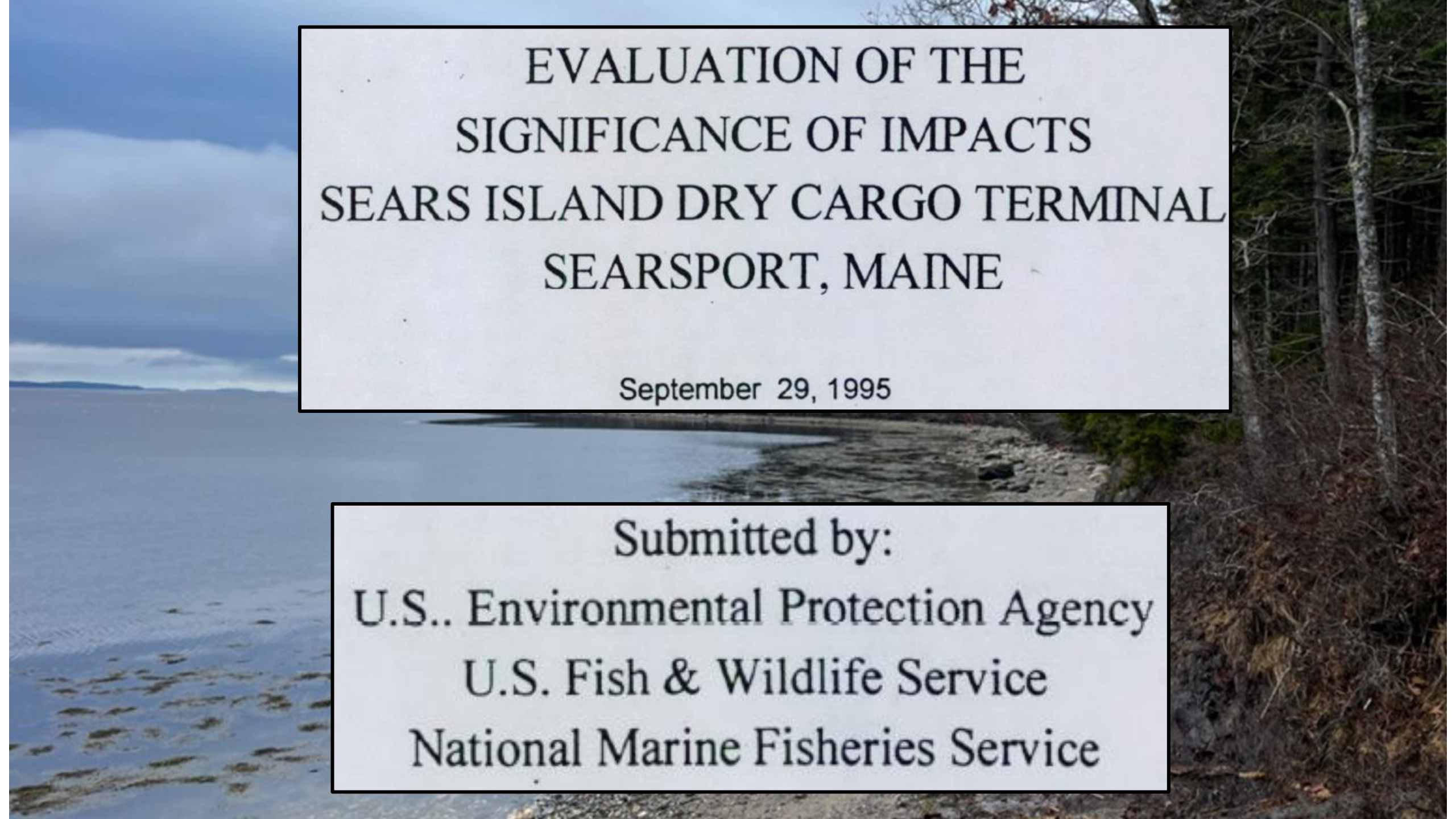
April 12, 2007 version* (as amended at the April 27 SC meeting)

1) **Appropriate and Inappropriate Uses for Sears Island:** The Steering Committee has determined that appropriate uses for Mack Point and Sears Island are compatibly managed marine transportation, recreation, education and conservation.

2) **Build out of Mack Point:** Mack Point shall be given preference as an alternative to port development on Sears Island. MaineDOT in conjunction

- No soil harvesting

4) **Permitting for a Cargo Port:** It is understood that none of the parties are endorsing in advance any proposal for a marine transportation facility. They will not, however, oppose such a facility for “non-substantive” reasons. If any cargo/container port proposal is determined to meet applicable environmental standards, **including an alternatives analysis which documents that the need could not be met elsewhere,** all parties agree they would not object to or oppose fulfillment of a cargo/container port on Sears Island once such development has satisfied all regulatory requirements. All stakeholders reserve the right to object to certain kinds of proposed facilities (e.g. LNG or oil terminal)



EVALUATION OF THE
SIGNIFICANCE OF IMPACTS
SEARS ISLAND DRY CARGO TERMINAL
SEARSPORT, MAINE

September 29, 1995

Submitted by:
U.S.. Environmental Protection Agency
U.S. Fish & Wildlife Service
National Marine Fisheries Service



Environmental Resource Characterization:

“The valuable freshwater wetlands, saltmarshes, eelgrass*, mudflats, intertidal, and subtidal habitat found on and around Sears Island

provide an unusual mix of high-quality habitats all within close proximity.

This mixture of habitats results in a high biodiversity of flora and fauna on the island.” P.1-2

* Unclear if eelgrass remains today, DEP survey summer 2024

Ecosystem Diversity

“The array of valuable habitats on Sears Island (i.e., forested and scrub-shrub wetlands, streams, vernal pools, salt marsh, rocky intertidal areas, mudflats, eelgrass beds*, and subtidal habitat) contribute to the high biodiversity of flora and fauna observed on and around the island.” P. 15

“...Sears Island has a remarkable array of rare species, birds, mammals, and marine fauna that appears uncommon in Penobscot Bay.” P. 16

Conclusion: Sears Island Alternatives

- “All three federal environmental agencies (USFWS, USEPA, NMFS) believe that the impacts associated with a Sears Island port facility would cause significant degradation of waters of the United States.”
- “We believe the facts...should compel the Corps (ACE) to reach the same conclusion.”



Conclusion – Mack Point Alternatives

- “The freshwater and marine habitats at Mack Point are clearly inferior to those found at Sears Island.
- Specifically, the freshwater wetland systems on Mack Point are degraded by the adjacent industrial uses.”
- “The quality of the unvegetated subtidal habitat has undoubtedly been diminished due to its proximity to the Searsport primary treatment wastewater discharge...”



FINAL THOUGHTS

- A wind port can be built at Mack Point
- Minimizes environmental impact
- Preserves Sears Island

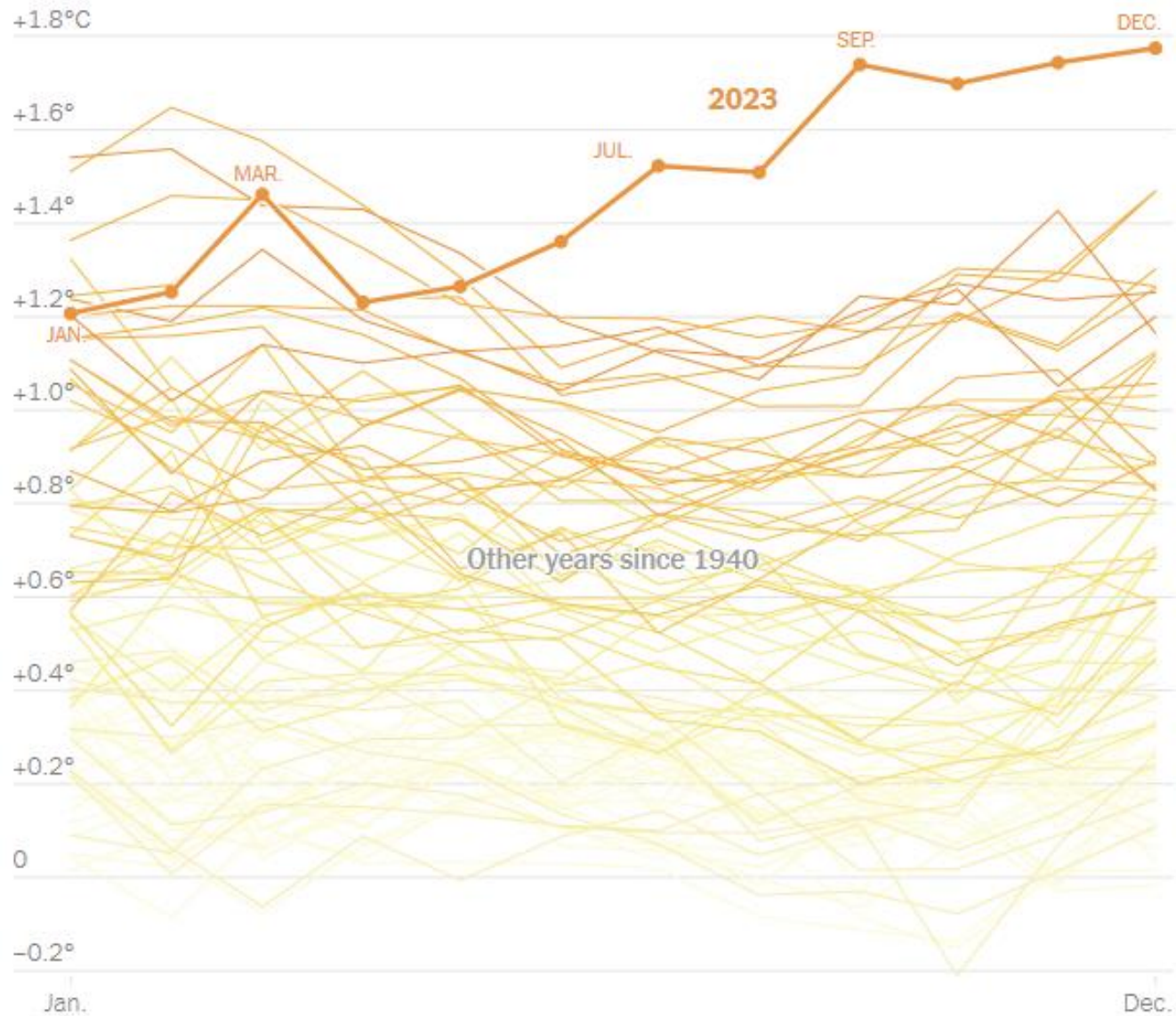






Monthly global temperature compared with preindustrial levels

1940s-60s 1970s 1980s 1990s 2000s 2010s 2020s



Rockport Harbor, Jan 10, 2024



Photo by Linda Clancy

Kennebec R. in Waterville, Dec 19, 2023



Robert F. Bukaty/AP

Mack Point keep?

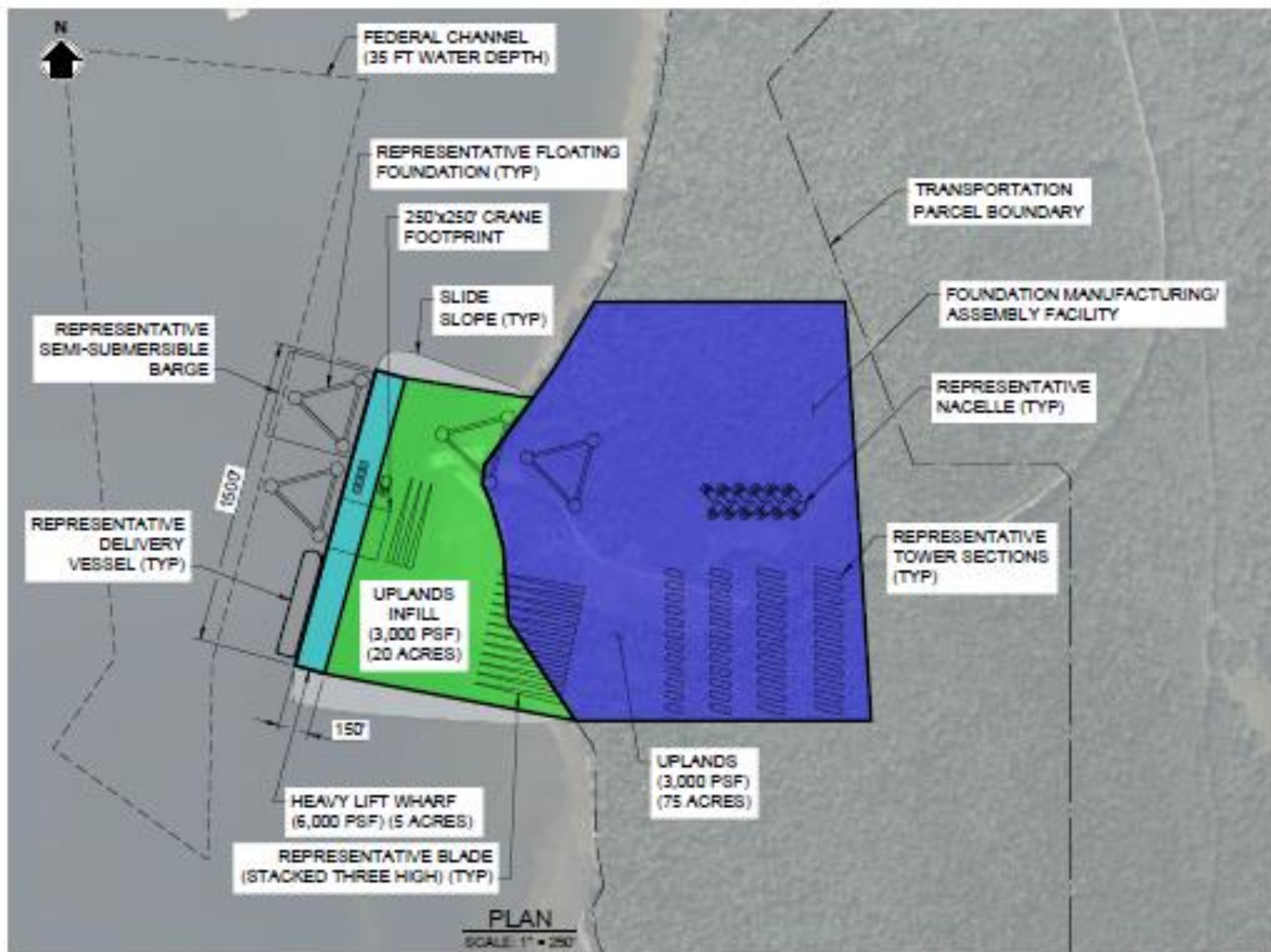
- Cost \$400 – 500 million
- 100 contiguous acres
- 1,650' dock – L shaped

- Upland buildings removed
 - 40+ acres
- Dredge volume
 - 61,000 to 500,000 cu yd

Sears Island keep?

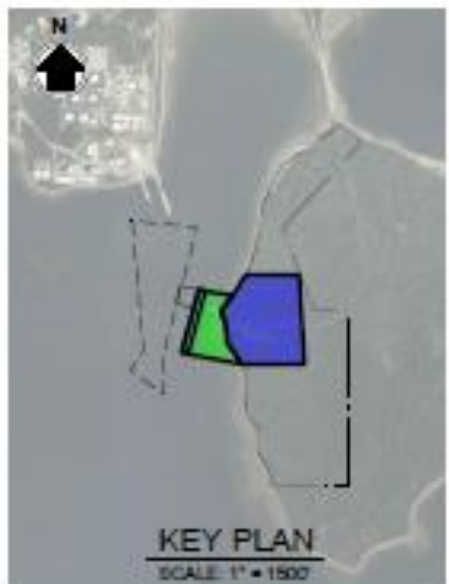
- Cost \$400 – 500 million
- 100 contiguous acres
- 1,500' dock – straight

- Upland cleared
 - 44+ acres of intact forest
- No dredging, adjacent to channel



NOTES:

1. Layout is preliminary.
2. Layout assumes 20MW wind turbine generator components, and are representative based on available information.
3. Foundation size is approximate. It has been scaled from existing semi-submersible installations to accommodate 20MW turbine units.
4. Based on existing water depths, no dredge or designated turning basin is required for the Sears Island alternative.
5. Wetlands are not shown on drawing. Wetlands may be present in project area.



Forest Ecosystem Carbon (2010): NaN mt/acre.

Estimates of Forest Carbon (Aboveground, Coarse Woody Debris and Total Ecosystem) are from [Williams et al. \(2021b\)](#) following methods described in Gu et al. (2019) for the Southeast US. To estimate carbon stock, attributes were determined for all forested 30-m pixels in the continental United States and a forest carbon cycle model trained to match Forest Inventory and Analysis (FIA) data was used to predict carbon stocks for 2010 based on site-level attributes of forest type group, years since disturbance, and site productivity class. Results were iterated backward in time to provide continuous, annual reporting of forest carbon dynamics for each pixel. Unlike in most prior studies that lack spatial detail on the stand age of forest stands that persisted in a forested condition during the satellite data era, this study

[Zoom to](#)