

Figure 1. Vicinity map.¹

Location: Ebenecook Harbor, Sheepscot River, Southport, Lincoln County, Maine

Purpose: Standard lease for suspended culture of sugar kelp (*Saccharina latissima*), skinny kelp (*Saccharina angustissima*), horsetail kelp (*Laminaria digitata*), and winged kelp (*Alaria esculenta*)

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¹ Unless otherwise noted, all figures in this report were created in ArcGIS Pro version 2.9 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS.



Application Overview

The applicant, Jodi Brewer and Morning Star Fisheries LLC, is requesting a 1.35² acre standard lease in Ebenecook Harbor, Southport for the suspended culture of marine algae. Lease corner markers and moorings will remain on site year-round, but all other gear will be removed from the site in the off season from June 1 through October 14.³ Jodi Brewer currently operates the experimental lease SHE EHx within the footprint of the standard lease proposal (Figure 4). The standard lease proposal would increase the footprint of existing operations from 0.98⁴ acres to 1.35 acres.

General Characteristics

On September 27, 2023, Maine Department of Marine Resources (MDMR) scientists assessed the proposed lease site. MDMR scientists arrived on site at approximately 10:09 AM. The proposal is situated in subtidal waters in Ebenecook Harbor. Southport Island is to the east, south, and west of the proposal. Green Island and Little Green Island are to the northwest. The shoreline is rocky leading to mixed forest uplands with scattered residential homes.

Depth

MDMR scientists began collecting depths at the proposed site shortly after high tide at approximately 10:22 AM (Table 1). Depths were collected at the proposal corners and determined to be between 32.0 and 38.6 feet. Correcting for tidal variations derives water depths at the previous high tide to be approximately 32.2 to 38.8 feet and approximately 22.9 to 29.5 feet at mean low water (MLW, 0.0 feet) (Table 1).

Table 1. Predicted tidal heights in Boothbay Harbor, Maine.⁵

Date	Time	Height (ft)
2023/09/27	3:22 AM	-0.4 L
2023/09/27	9:39 AM	9.3 H
2023/09/27	3:39 PM	-0.1 L
2023/09/27	9:58 PM	10.5 H

Bottom Characteristics

MDMR scientists observed the bottom characteristics of the proposed lease site via a remotely operated vehicle (ROV). Bottom characteristics were categorized using the Coastal and Marine Ecological Classification Standard (CMECS), a national standard for describing features of the marine environment (Table 2). Sediment information was determined based on visual analysis of the video. The bottom of the proposed lease site is primarily composed of mud.

² Applicant originally requested 1.37 acres. MDMR calculations indicate the area is 1.35 acres.

³ Application page 11,32,33

⁴ Experimental lease SHE EHx decision history page 1

⁵ <https://www.usharbors.com/harbor/maine/boothbay-harbor-me/tides/?tide=2023-09#monthly-tide-chart>



Table 2. Bottom characteristics of the proposed site.

Substrate Origin	Substrate Class	Substrate Subclass	Substrate Group
Geologic Substrate	Unconsolidated Mineral Substrate	Fine Unconsolidated Substrate	Mud

Position and Distances to Shore

The measuring tool in ArcGIS Pro 2.9 was used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcGIS Pro 2.9, digital orthophotography provided by the Maine Office of GIS, and the application coordinates (Table 3, Figure 2).

Application Coordinates (WGS84) – 1.35 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
NW	43.838775°	-69.678455°	then 498.0 feet at 68° True to
NSM	43.839292°	-69.676708°	then 502.3 feet at 72° True to
NE	43.839723°	-69.674900°	then 40.2 feet at 168° True to
SE ⁶	43.839618°	-69.674853°	then 496.6 feet at 248° True to
SSM	43.839102°	-69.676595°	then 500.1 feet at 252° True to
SW ⁷	43.838659°	-69.678389°	then 45.7 feet at 337° True to NW

Table 3. Approximate distances from proposed lease corners to surrounding features (Figure 3).

Feature	Distance
NW corner to Green Island at MLW	~865 feet to the northwest
NE corner to Green Can “3”	~1,820 feet to the north
SE corner to nearest shoreline at MLW	~855 feet to the southeast
SW corner to Red Nun “2”	~185 feet to the southwest

⁶ Labeled in application as SW

⁷ Labeled in application as SE

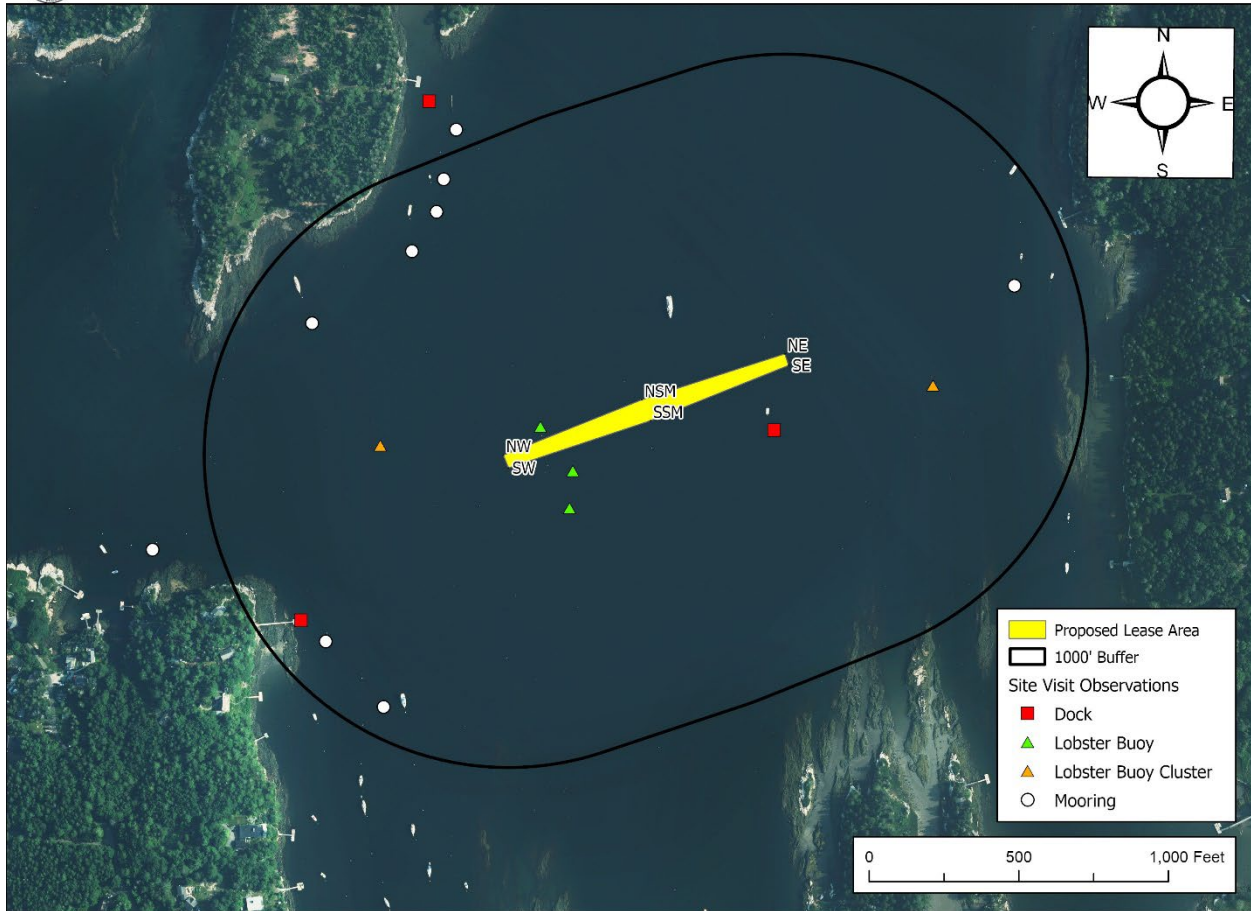


Figure 2. Proposed lease area with site visit observations.

Pursuant to statute and regulation, aquaculture leases are evaluated in consideration of applicable decision criteria. The site report documents MDMR’s observations of the area and other information, in consideration of those criteria, as noted below:

(1) Riparian Ingress and Egress

During the site visit, MDMR observed two docks within 1,000 feet of the proposal. One dock was moored 182 feet south of the proposal and appeared to be a work float. The other dock was attached to a pier 875 feet southwest of the proposal located on Dogfish Head, Southport Island. MDMR observed numerous other docks located to the south and east on Southport Island, and one dock northwest of the proposal on Green Island (Figure 2).

Additionally, MDMR scientists observed several moorings in the vicinity of the proposal. The closest observed mooring was 750 feet northwest of the proposal near Green Island. The moorings observed had a variety of power boats and sailboats attached.



A Harbormaster Questionnaire was completed by the local harbormaster and submitted to the MDMR Aquaculture Division on June 7, 2023. The harbormaster indicated that the proposal should not change any current riparian ingress and egress.

(2) Navigation

The proposal is in subtidal water in Ebenecook Harbor. There is a marked navigational channel adjacent to the proposal. The proposal is 185 feet northeast of red nun "2" and 1,820 feet south of green can "3". The proposed lease is located partially within the marked navigational channel. There is 865 feet of water at MLW between the northwest corner of the proposal and Green Island (Figure 3).

During the site visit, MDMR observed several boats navigating in the area of the proposed lease. One recreational vessel was traveling north-south, three commercial fishing vessels were operating to the west, and a sailboat was navigating in the marked navigational channel north of the proposal.

The harbormaster indicated in the Harbormaster Questionnaire that the proposal will not change current navigation.

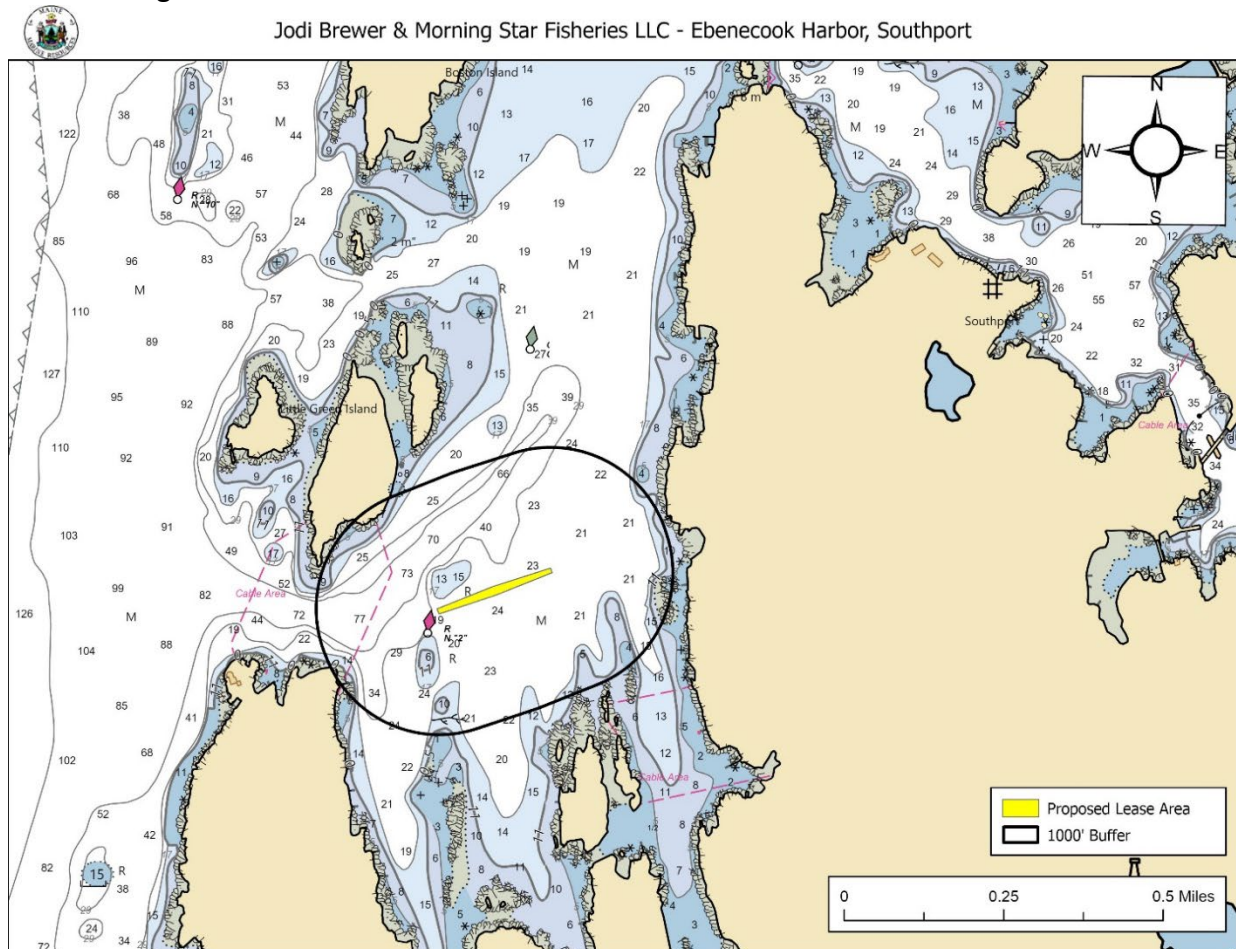


Figure 3. Navigational channels in the vicinity of the proposed lease area.



(3) Fishing and Other Uses

During the site assessment, MDMR observed three lobster buoys and two clusters of lobster buoys within 1,000 feet of the proposed lease. The closest lobster buoy observed was approximately 45 feet north of the proposal (Figure 2). During the site assessment, MDMR observed a school of Atlantic menhaden (*Brevoortia tyrannus*) inside the proposal boundaries. No other commercial or recreational fishing was observed during the site visit.

The harbormaster indicated in the Harbormaster Questionnaire that there is no fishing within the boundaries of the proposal.

(4) Other Aquaculture Uses

There is one aquaculture lease and one limited purpose aquaculture (LPA) site (JSMI116) within 1,000 feet of the proposal. Jodi Brewer currently operates experimental lease SHE EHx within the boundaries of this proposal. This standard lease proposal is intended to replace SHE EHx.

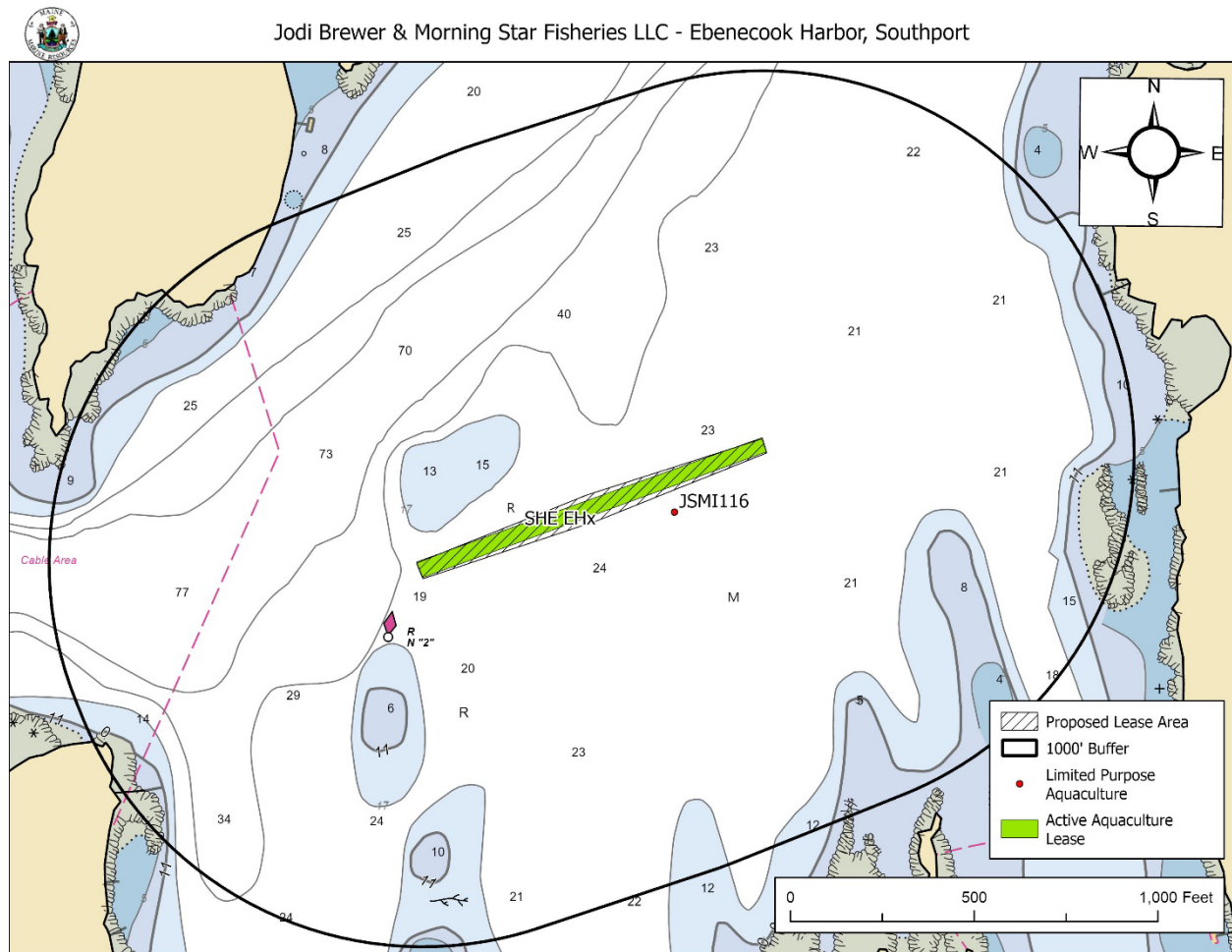


Figure 4. Aquaculture leases and LPA licenses in the vicinity of the proposed lease area.



(5) Existing System Support

Epibenthic Flora and Fauna

MDMR scientists utilized an ROV to assess the epibenthic ecology of the proposed lease. The relative abundance of epibenthic flora and fauna observed in the video transects is described below in Table 4.

Table 4. Species observed using underwater camera footage.

Species Observed	Abundance
Lobster burrows	Abundant
Sand shrimp (<i>Crangon septemspinosa</i>)	Occasional

Eelgrass (*Zostera marina*)

Recent records of eelgrass collected by the Maine Department of Environmental Protection (MDEP) in 2023 indicate no mapped eelgrass presence in the vicinity of the proposal (Figure 5).⁸ No eelgrass was observed within the proposal boundaries during MDMR’s site assessments.



Jodi Brewer & Morning Star Fisheries LLC - Ebenecook Harbor, Southport



Figure 5. Mapped eelgrass (*Z. marina*) in the vicinity of the proposed lease area.

⁸ Data obtained from The Maine Office of GIS “GISVIEW.MEDEP.Seagrass2023”. Widgeon grass was observed only in a tributary to the Great Salt Bay, upstream of a culvert that likely restricts tidal flow. Eelgrass was the dominant vascular species in all other locations. This is the most current record of mapped eelgrass within the vicinity of the proposal.



Wildlife

According to Geographic Information System (GIS) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIFW) and available through the Maine Office of GIS (MEGIS), there is no mapped Tidal Waterfowl and Wading Bird Habitat (TWWH) in the vicinity of the proposal. Data collected by the United States Fish and Wildlife Service in 2022 by aerial nest survey shows the closest mapped bald eagle nesting site to be approximately 1,790 feet northwest of the proposal (Figure 6).

On June 21, 2023, an Environmental Review Coordinator with MDIFW responded by email to a “Request for Agency Review and Comment” stating that minimal impacts to wildlife are anticipated.⁹

During the site visit, MDMR scientists observed herring gull (*Larus argentatus*), double-crested cormorant (*Nannopterum auritum*), a bald eagle (*Haliaeetus leucocephalus*), common loon (*Gavia immer*), and seal (species unidentified) in the general vicinity of the proposal.



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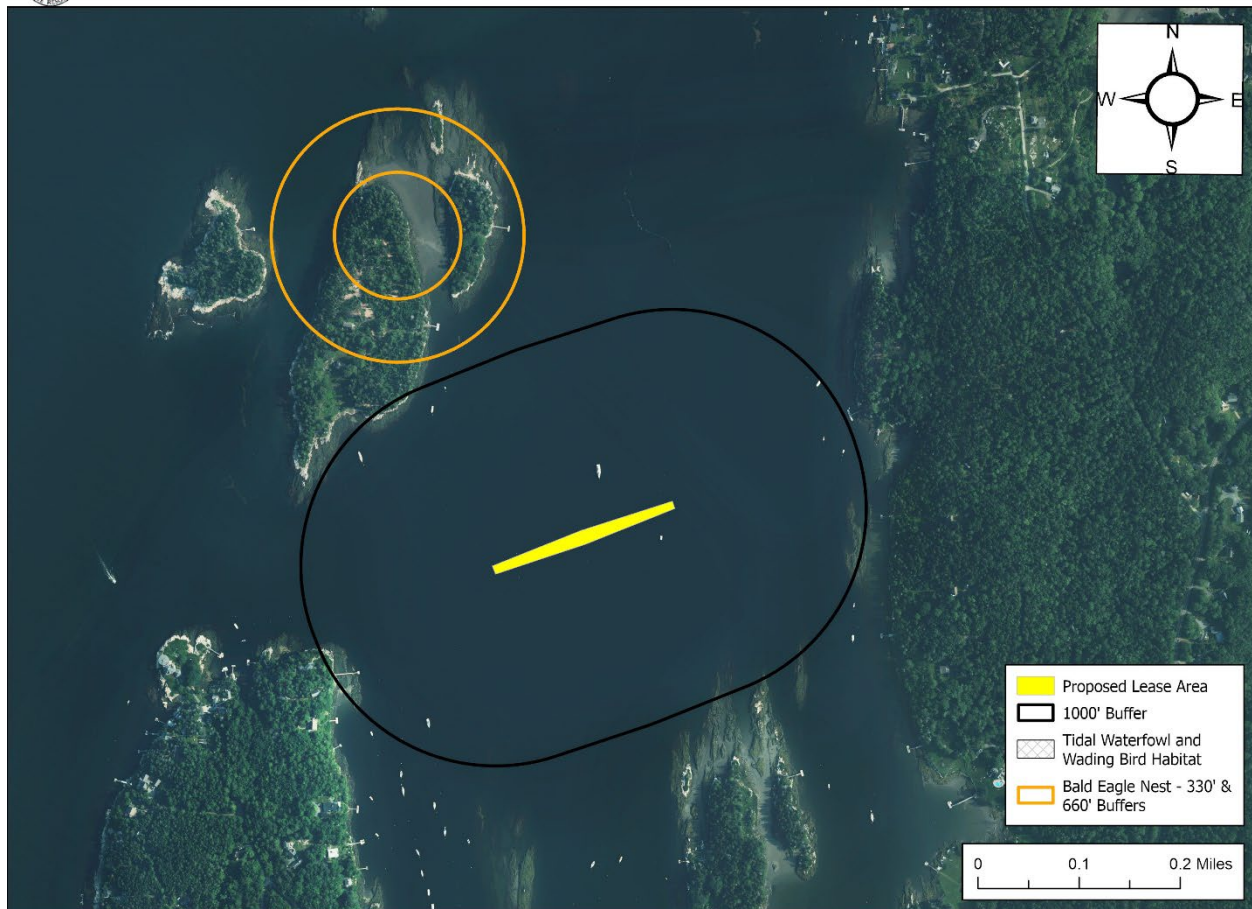


Figure 6. Mapped bald eagle nests and TWWH.¹⁰

⁹ Email correspondence between MDIFW and MDMR

¹⁰ Data obtained from USFWS “Bald_Eagle_Nests_-_Maine_2023” and MDIFW maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”



(6) Interference with Public Facilities

The proposed lease is not within 1,000 feet of any beach, park, docking facility, or conserved lands owned by federal, state, or municipal governments (Figure 7).



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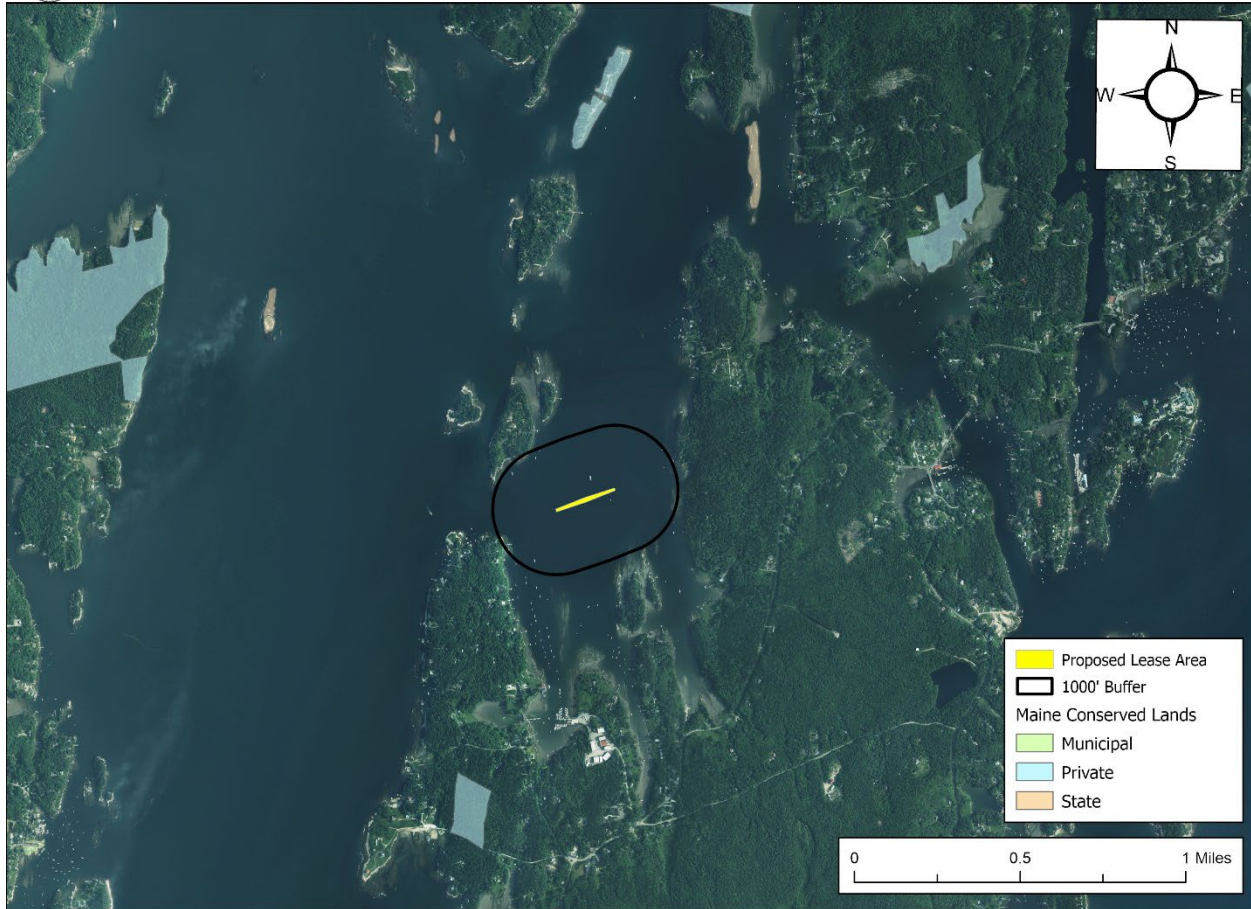


Figure 7. Public facilities near the proposed lease site.¹¹

(7) Water Quality

The proposed lease is currently located within an area classified as Approved by the MDMR Bureau of Public Health and Aquaculture.

¹¹ Data obtained from The Maine Office of GIS "GISVIEW.MECONSLANDS.Conserved_Lands"