

Figure 1: Vicinity map¹

Location: Pleasant Cove, Damariscotta River, Boothbay, Lincoln County, Maine

Purpose: Standard lease for the suspended culture of American oysters (*Crassostrea virginica*)

Site Review by: Flora Drury and Cheyenne Adams

Report Preparation by: Cheyenne Adams, Flora Drury, and Marcy Nelson

Report Completed: May 20, 2021

¹ All figures in this report were created in ArcMap version 10.6 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS (*orthoCoastalCentralCoast2003and2005*).

Application Overview

The applicant, Pleasant Cove Oyster Farm, LLC, is requesting 5.90² acres towards the mouth of Pleasant Cove in the Damariscotta River for the suspended culture of American oysters (*Crassostrea virginica*).³ The applicant proposes to deploy up to 1,728 floating cages (40.5”W x 67.5”L x 20.5”H), 10,368 floating mesh bags (36”L x 30”W x 4”H), 100 wooden trays (24”W x 36”L x 4”H), 50 crates (32”L x 20”W x 15”H), and two adjacent wooden work floats (20’L x 20’W each).⁴ Floating culture gear would be deployed on longlines running from roughly SW to NE, with 15 feet between each row.⁵ Most floating cages would be sunk to the bottom for overwintering, while floating wooden trays and mesh bags would be removed and stored on land.⁶ An electric power washer would be used as needed to address biofouling, and an electric tumbler/grader would be used to clean and sort oysters. Both pieces of equipment would be powered by a 2000-watt generator, which would not be stored on site.⁷

General Characteristics

On December 11, 2020, Maine Department of Marine Resources (MDMR) Scientists Flora Drury and Cheyenne Adams visited the proposed aquaculture lease, which is north of Little Huckleberry Island (Image 1). MDMR Area Biologist Ari Leach was also present. MDMR staff arrived on site at 9:47 am; the tide was in the early ebb stage. The proposed lease occupies subtidal waters in Pleasant Cove, in Boothbay, Maine (Figure 1). The shoreline surrounding the proposal is mostly rocky, with mixed forest uplands throughout Pleasant Cove (Images 2-4). To the east of the proposed lease area is the main navigational channel of the Damariscotta River (Image 5) and the South Bristol shoreline is along the eastern shore of the river (Image 6).

² Applicant originally requested 6.26 acres. DMR calculations, based on the coordinates provided by the applicant, indicate the area is 5.90 acres.

³ Application, pages 1-2

⁴ Application, pages 6-8

⁵ Application, page 12

⁶ Application, page 21; the application does not specify the overwintering plans for crates.

⁷ Application, page 22



Image 1: Facing southwest towards Little Huckleberry Island from the proposed corner 6 (December 11, 2020).



Image 2: Facing west/southwest towards the head of Pleasant Cove from the proposed corner 6 (December 11, 2020).



Image 3: Facing west towards the Boothbay shoreline and applicant's Limited Purpose Aquaculture sites from the proposed corner 6 (December 11, 2020).



Image 4: Facing northwest from the proposed corner 6 (December 11, 2020).



Image 5: Facing north from the proposed corner 6 (December 11, 2020).



Image 6: Facing northeast toward the Darling Marine Center and Clarks Cove from the proposed corner 6 (December 11, 2020).

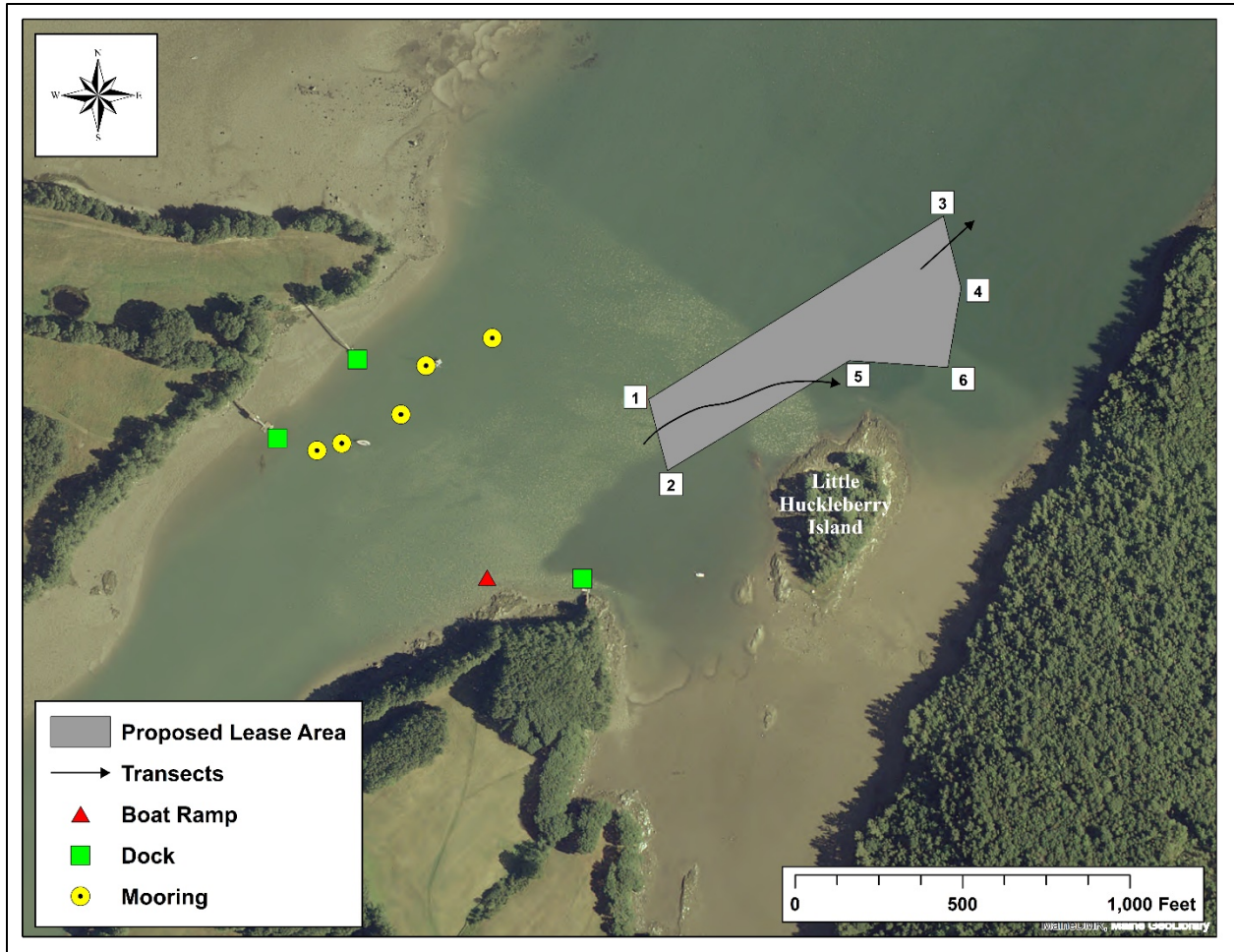


Figure 2: Dive and drop camera transects conducted during the site visit and nearby docks, moorings, and boat ramp observed on December 11, 2020.

Depth

At the time of the MDMR’s site assessment, water depths within the proposed lease site ranged from 15.8 feet to 25.0 feet, sloping deeper on the eastern side of the proposed lease area. Depth measurements were collected using a transom-mounted depth sounder. MDMR staff observed the depths of the proposed lease site at approximately 9:50 am. Correcting for tidal variation derives water depths approximately 3.1 feet higher at the nearest high tide (18.9 to 28.1 feet) and approximately 7.1 feet lower at mean low water (8.7 to 17.9 feet).

Table 1: Tide predictions for East Boothbay, Damariscotta River, Maine (43.8650° N, 69.5833° W)⁸

Date	Time	Height (ft.)
12/11/2020	1:11 AM	-0.10 L
12/11/2020	7:27 AM	10.16 H
12/11/2020	1:51 PM	-0.48 L
12/11/2020	8:00 PM	9.45 H

⁸ <http://tbone.biol.sc.edu/tide/tideshow.cgi>

Bottom Characteristics

MDMR staff observed the bottom characteristics of the proposed lease site via dive and drop camera transects on December 11, 2020 (Figure 2). The sediment was classified using the Coastal and Marine Ecological Classification Standard,⁹ a national standard for describing features of the marine environment (Table 2). Sediments were categorized based on visual analysis; no sediment samples were collected, or grain size analyses performed. The bottom of the proposed lease area is composed of soft mud sediment (Image 7).

Table 2: Substrate classification on proposed lease site.

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



Image 7: Soft mud observed on the bottom of the proposed lease (December 11, 2020).

Position and Distances to Shore

The measuring tool and coordinate geometry (COGO) report tool in ArcMap 10.6 were used to verify the distances and bearings between proposed lease corners. Distances to shore were determined using the measuring tool in ArcMap 10.6, digital orthophotography provided by the Maine Office of GIS, and the application coordinates.

⁹ https://www.fgdc.gov/standards/projects/cmecs-folder/CMECS_Version_06-2012_FINAL.pdf

Application Coordinates (WGS84) – 5.90 acres (Figure 2)

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>	
1	43° 55' 21.50" N	69° 35' 12.49" W	then 220.21 feet at 165.15° True to
2	43° 55' 19.40" N	69° 35' 11.70" W	then 635.63 feet at 58.92° True to
5	43° 55' 22.68" N	69° 35' 04.29" W	then 294.24 feet at 93.96° True to
6	43° 55' 22.50" N	69° 35' 00.28" W	then 240.56 feet at 9.41° True to
4	43° 55' 24.85" N	69° 34' 59.76" W	then 220.61 feet at 346.24° True to
3	43° 55' 26.96" N	69° 35' 0.50" W	then 1,036.96 feet at 238.19° True to 1.

Table 3: Approximate distances from the proposed lease to surrounding features (Figures 1 & 2). Measurements were made using digital orthophotography provided by the Maine Office of GIS (*orthoCoastalCentralCoast2003and2005*).

Feature	Distance
Corner 2 to nearest dock	~410 feet to the southwest
Corner 1 to nearest mooring	~500 feet to the northwest
5-6 Boundary to Little Huckleberry Island, nearest point (~MLW)	~150 feet to the south
Corner 6 to Carlisle Point, nearest point (~MLW)	~370 feet to the southeast
Corner 1 to northwest shore of Pleasant Cove, nearest point (~MLW)	~750 feet to the northwest

The criteria MDMR uses to determine the suitability of an aquaculture operation to a particular area (MDMR Regulations Chapter 2.37(1)(A)) are discussed, with respect to the proposal, below:

(1) Riparian Owners Ingress and Egress

The proposed lease occupies subtidal waters in Pleasant Cove in the lower Damariscotta River, to the north of Little Huckleberry Island (Figure 2). At the time of MDMR’s site assessment, there were approximately 7 docks, 5 moorings, and a boat ramp (Image 8) observed within the cove (Figure 2). The nearest of these structures is a dock approximately 410 feet to the southwest of the proposal (Image 9). The nearest mooring is approximately 500 feet to the northwest. Although vessels under sail would require more space than motorized vessels to navigate to and from these moorings, and MDMR is not aware of which type of vessels are typically associated with these moorings and docks, adequate space would likely remain for access to these structures if the proposed lease were granted.

During MDMR’s site assessment on December 11, 2020, several residential buildings were observed along the northwestern and southeastern shorelines of Pleasant Cove. Some sections of the northwest shoreline in Pleasant Cove consist of gravel beach that could facilitate shore landing. However, considering the distances between these features and the proposal, it is unlikely the proposed lease area would significantly hinder riparian ingress and egress via shore

landing, if the proposal were to be granted. The only possible exception to this is shore landing on Little Huckleberry Island, approximately 150 feet to the south of the proposal at the nearest point, which is discussed below in “Section 2: Navigation.”



Image 8: Boat ramp located to the SW of the proposed lease (December 11, 2020).



Image 9: Nearest dock, located to the SW of the proposed lease (December 11, 2020).

(2) Navigation

The Damariscotta River is heavily traveled year-round by commercial and recreational mariners. The proposed lease occupies subtidal waters within Pleasant Cove and is approximately 440 feet to the west of the Damariscotta River's marked navigational channel (Figure 1). Therefore, if the proposed lease were granted it would not impede vessel flow within the main channel.

Although no vessels were observed during MDMR's site assessment on December 11, 2020, it is expected that the cove experiences some vessel traffic during the summer months from recreational mariners and shorefront landowners. The proposal does not prevent vessel access to Pleasant Cove, although those mariners attempting to access Little Huckleberry Island and some sections of Carlisle Point would likely need to alter their original course slightly. Approximately 390 feet and 410 feet would remain between the eastern and western boundaries of the proposed lease, respectively, and the shoreline of Carlisle Point, which is likely adequate for the number and type of vessels that may access the point via shore landing. Access to Little Huckleberry Island by the type of vessels capable of shore landing is unlikely to be prevented by the proposal, if granted, but it is likely that mariners would need to alter their original course to circumnavigate the proposed lease area. Although the a shareholder of Pleasant Cove Oyster Farm, LLC currently holds 4 Limited Purpose Aquaculture (LPA) licenses within the proposed lease boundaries, the proposal encompasses a larger footprint and surrounds more of the Little Huckleberry Island shoreline than is currently occupied by the existing LPAs.

(3) Fishing and Water-Related Uses

At the time of MDMR's site assessment on December 11, 2020, approximately 4 lobster (*Homarus americanus*) trap buoys were observed in the general vicinity of the proposal. Additionally, the main navigational channel of the Damariscotta River, to the east of the proposed lease area, exhibited moderate lobstering activity. The nearshore lobster fishery in Maine takes place during the summer and fall seasons due to the annual migration and molt cycle of lobsters. It is possible that lobster fishing activity occurs to a greater extent or in closer proximity to the proposed lease site at other times of the year than when the site assessment was conducted.

Although evidence of clams (castings and siphons) was occasionally observed and European oysters (*Ostrea edulis*) were rarely observed during the underwater assessment, there did not appear to be commercially exploitable quantities of either. Moreover, the proposed lease site is likely too deep to facilitate commercial shellfish harvest by hand or rake. Moreover, the proposed lease, if granted, would not hinder the ability of harvesters to access the nearby tidally exposed mud flats, where the commercial harvest of shellfish is more likely to occur.

(4) Other Aquaculture Uses

Twelve Limited Purpose Aquaculture (LPA) licenses and th3 leases are located within 1 mile of the proposed lease (Figure 3). The 4 LPAs that are within the proposed lease boundaries are held by Clay Gilbert, a shareholder of Pleasant Cove Oyster Farm, LLC, and are approved for the suspended culture of American oysters. According to the application, these LPA licenses will be

terminated if the proposed lease is granted.¹⁰ The nearest aquaculture site not associated with the application, LPA LKNA420, is approximately 1,045 feet to the north and approved for the suspended culture of American oysters. Access to, and navigation around, the nearby aquaculture sites is unlikely to be impacted by the proposal, if the lease were to be granted.

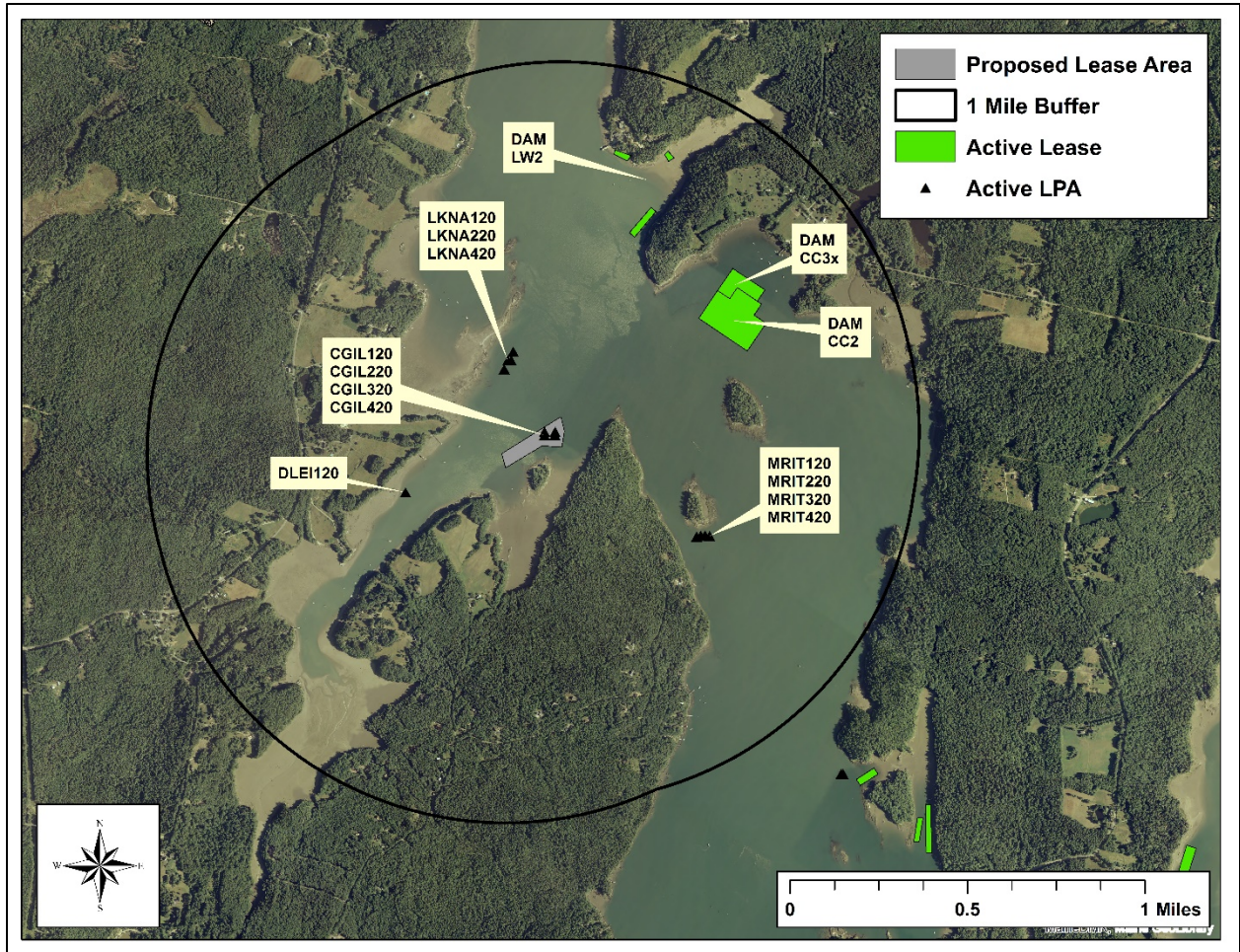


Figure 3: Aquaculture activity near the proposed lease area.

(5) Existing System Support

Epibenthic Flora and Fauna

On December 11, 2020, MDMR staff conducted SCUBA and drop camera transects to assess the epibenthic ecology of the area (Figure 2). The observed bottom was entirely soft mud sediment and primarily dominated by brown benthic microalgae (Image 7). Other organisms were noted occasionally and are listed in Table 4.

¹⁰ Application, page 23

Table 4: Species observed during MDMR SCUBA and drop camera transects conducted on December 11, 2021.

Species Observed	Abundance
Benthic Microalgae	Abundant
Horseshoe Crab (<i>Limulus polyphemus</i>)	Occasional
Crab molts (<i>Cancer sp.</i>)	Rare
Cerianthid Anemone (<i>Cerianthus borealis</i>)	Rare
Rockweed (<i>Ascophyllum nodosum</i>)	Rare
European Oyster (<i>Ostrea edulis</i>)	Rare
Clam castings	Occasional

Wildlife

On December 11, 2020, various gulls (*Larus sp.*) and long-tailed ducks (*Clangula hyemalis*) were observed in the general vicinity of the proposal. Additionally, Canada geese (*Branta canadensis*) were observed onshore and a gray seal (*Halichoerus grypus atlantica*) was noted in the water near the proposal.

According to GIS (Geographic Information System) data maintained by the U.S. Fish and Wildlife Service and available through the Maine Office of GIS, the 660-foot protective buffer associated with the nearest bald eagle (*Haliaeetus leucocephalus*) nest is located >2,200 feet east of the proposed lease site (Figure 4). Although bald eagles are no longer considered a species of special concern in Maine, they are protected under federal law by The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940. The nearest bald eagle nest is significantly farther away from the proposal than the USFWS-mandated 660 feet.

Additionally, according to GIS data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIF&W), the intertidal areas to the north and south of the proposal, as well as toward the head of Pleasant Cove, is designated Tidal Wading Bird and Waterfowl Habitat that is considered Significant Wildlife Habitat under Maine’s Natural Resource Protection Act (NRPA). At the nearest point, the proposed lease area is approximately 310 feet from designated tidal waterfowl and wading bird habitat (Figure 4). Furthermore, on November 20, 2020, a MDIF&W wildlife biologist responded by email to a “Request for Agency Review and Comment” stating that “minimal impacts to wildlife are anticipated.”

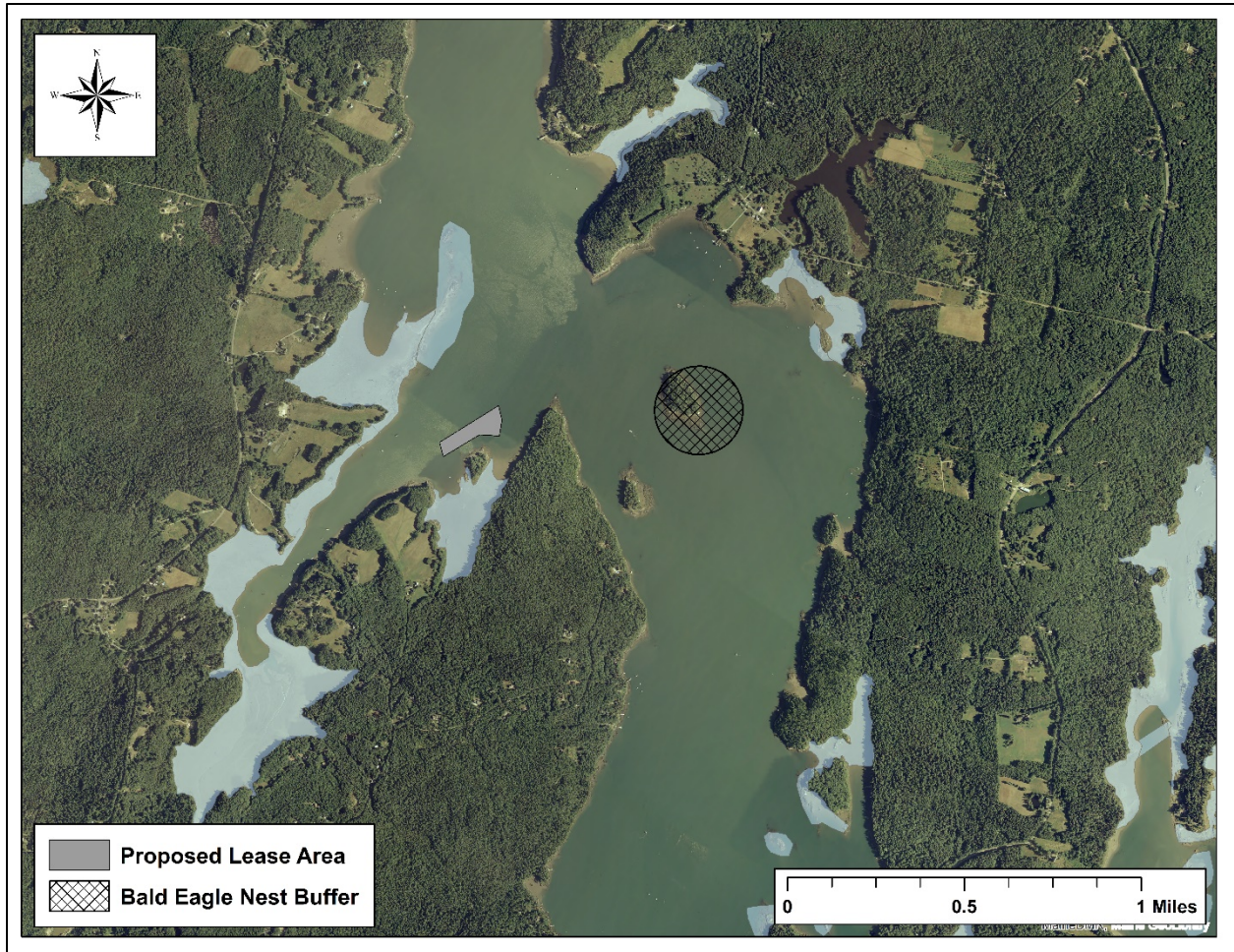


Figure 4: Bald Eagle Nest¹¹ and Tidal Wading Bird and Waterfowl Habitat¹² near the proposed lease site.

Eelgrass (*Zostera marina*)

According to historical data collected by MDMR in 2005, the nearest documented presence of eelgrass (*Zostera marina*) is more than 1,000 feet to the north of the proposed lease site (Figure 5). Additionally, no eelgrass blades, nor evidence of eelgrass rhizomes, were observed during MDMR’s underwater assessment on December 11, 2020.

¹¹ Data obtained from USFWS: <https://services.arcgis.com/QVENGdaPbd4LUkLV/ArcGIS/rest/services>

¹² Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”

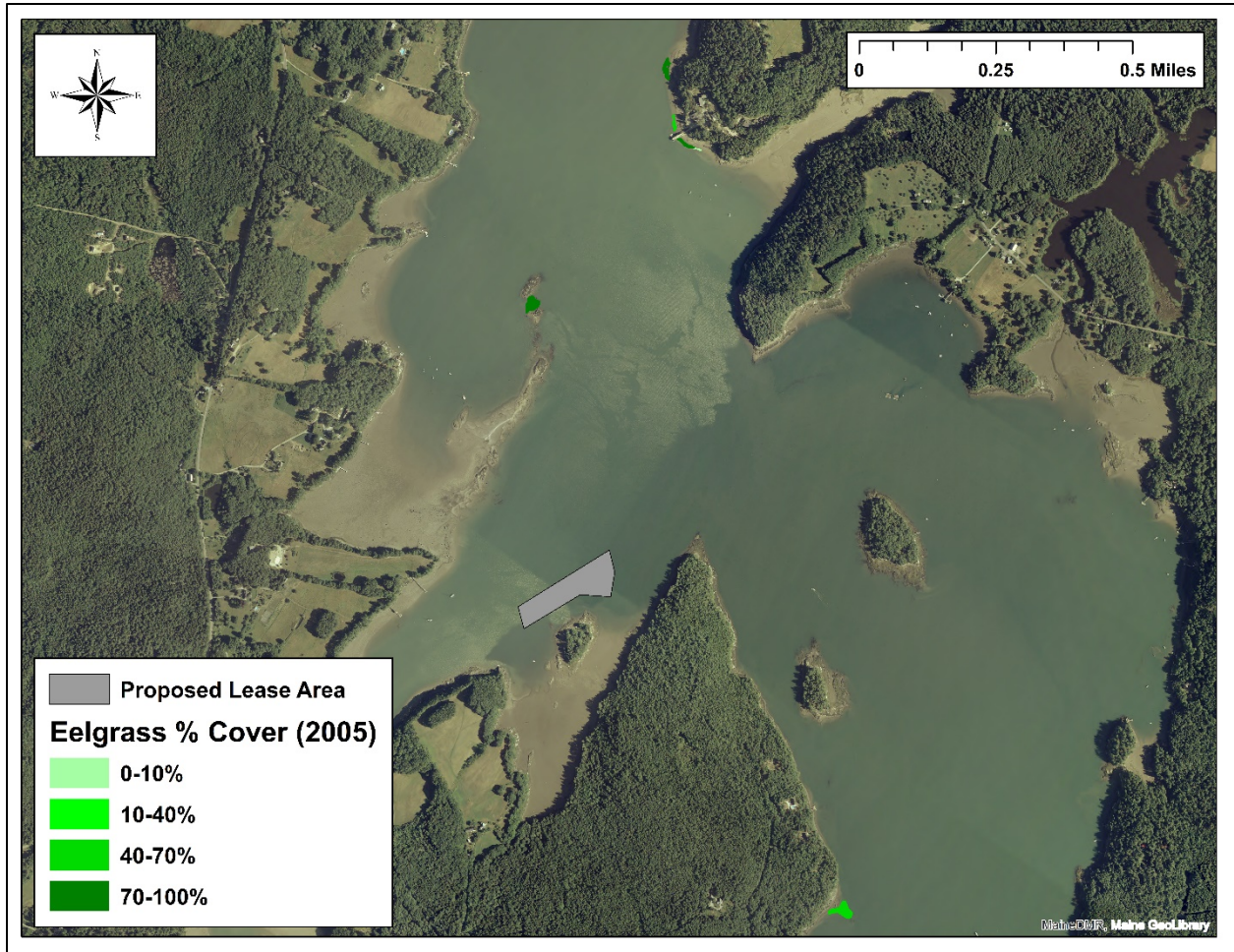


Figure 5: Historical eelgrass (*Z. marina*) in vicinity of proposed lease.¹³

(6) Interference with Public Facilities

There are no beaches, parks, docking facilities, or conserved lands owned by federal, state, or municipal government within 1,000 feet of the proposed lease site (Figure 6). The nearest conserved land, Little Huckleberry Island, is 150 feet to the south of the proposal and is held in private conservation by Coastal Rivers Conservation Trust. Although privately-owned conserved lands are not included in the decision criteria for granting standard leases, as per MDMR Regulations Chapter 2.37(1)(A), access to this island is discussed in “Section 2: Navigation” above.

¹³ Data obtained from MDMR maintained Feature Class “GISVIEW.MEDMR.Eelgrass”

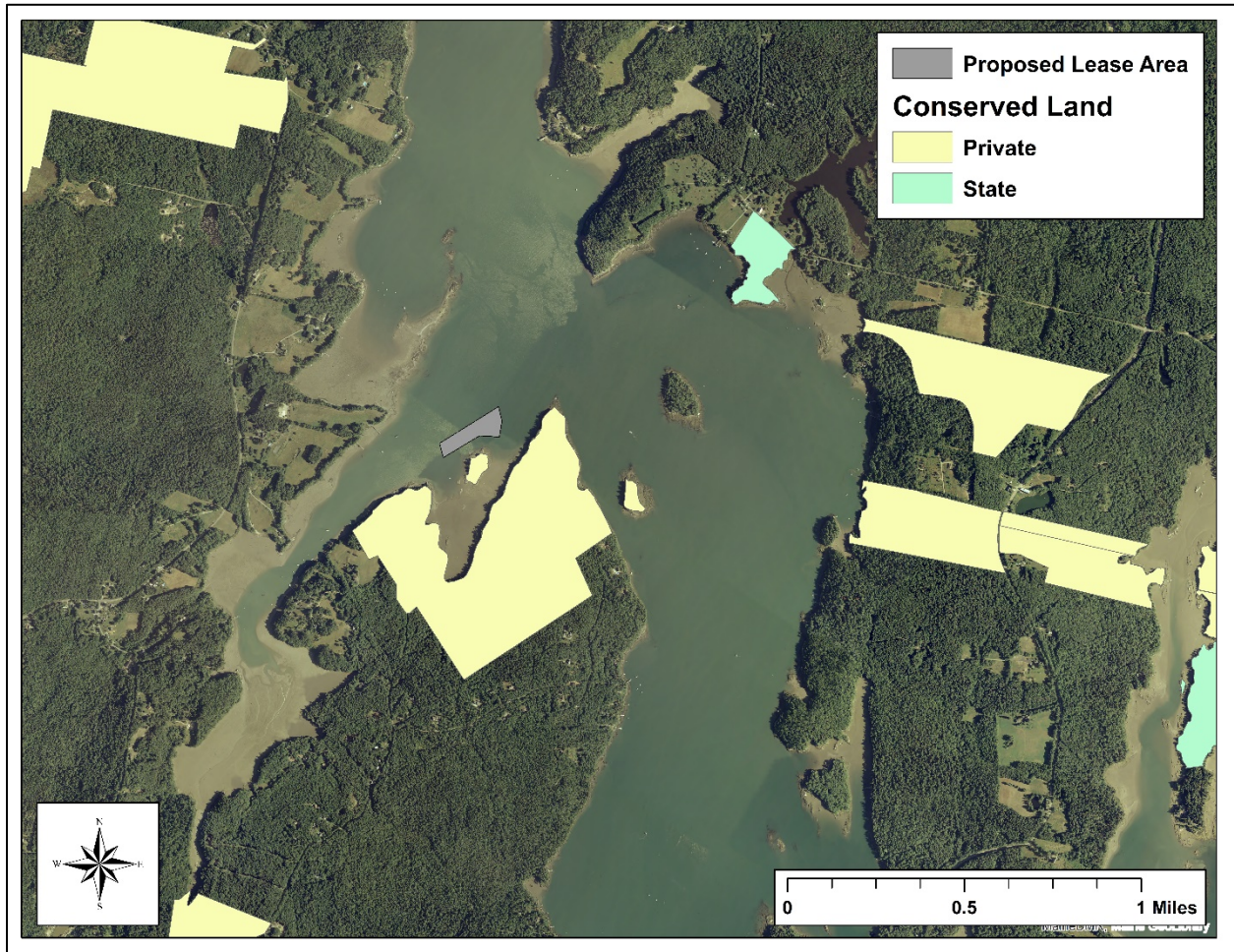


Figure 6: Public facilities near the proposed lease site.

(7) Water Quality

The proposed lease area is currently classified as “Open/Approved” by the MDMR Bureau of Public Health for the harvest of shellfish.

(8) Lighting

Lighting would not be used on the lease site and no work would occur beyond daylight hours, except in emergency situations such as storms and/or damage to the farm equipment.¹⁴

(9) Noise

According to the application, an electric power washer and electric tumbler/grader would be used on-site. Both pieces of equipment would be powered by a 2000-watt generator and used as needed

¹⁴ Application, page 22

throughout the growing season. To reduce noise levels, the applicant intends to store (off site) and operate the generator in a wooden housing.¹⁵

(10) Visual Impact

The proposed aquaculture operations comply with the MDMR's height and visual impact limitations.

¹⁵ Application, page 22