

Figure 1. Vicinity map¹

Location: Southeast of Moshier Island, Casco Bay, Yarmouth, Cumberland County, Maine

Purpose: Experimental lease for suspended culture of Sugar Kelp (*Saccharina latissima*), Skinny Kelp (*Saccharina angustissima*), Winged Kelp (*Alaria esculenta*), Horsetail/Fingered Kelp (*Laminaria Digitata*), Shotgun Kelp (*Agarum clathratum*)², Dulse (*Palmaria palmata*), Irish Moss (*Chondrus crispus*), Nori/Laver (*Porphyra spp.*), *Gracilaria tikvahiae*, and Sea Lettuce (*Ulva lactuca*)

Site Review: Geoffrey Shook and Molly Waters

Report Preparation: Geoffrey Shook, Meryl Grady, and Amanda Ellis

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.

² Application lists the scientific name for “Shotgun Kelp” as *Agarum cribosum*. Accepted species name is *Agarum clathratum*.



Application Overview

The applicant, Caitlin Gerber, is requesting a 3.90³ acre experimental lease for the suspended culture of marine algae southeast of Moshier Island in Casco Bay. Seeding operations would begin after November 1st and harvesting would be completed by May 30th. All gear, except moorings and lease corner markers, would be removed from the site from June 1st through October 31st.⁴

General Characteristics

Scientists from the Maine Department of Marine Resources (MDMR) assessed the proposed lease site on July 19, 2023, beginning at 10:18 AM. The proposal is in subtidal waters approximately 230 feet, at mean low water (MLW), southeast of Moshier Island and approximately 1,200 feet west of a marked navigational channel. At the time of the site assessment, there were two houses observed on Moshier Island within 1,000 feet of the proposal. The shoreline of Moshier Island is rocky with forested uplands.

Depth

On July 19, 2023, MDMR scientists assessed depths at the site beginning at 10:20 AM. The tide was flooding with the next high tide predicted at 1:20 PM (Table 1). Depths were recorded at corners of the proposal and determined to be between 32.2 and 36.9 feet. Correcting for tidal variations derives depths to be a range from 35.9 to 40.6 feet at the next high tide and between 27.3 and 32 feet at mean low water (MLW, 0.0 feet).

Table 1. Tide observations at Portland Station 8418150, Portland, Maine.⁵

Date	Time	Height (ft)
07/19/2023	12:41 AM	9.8 H
07/19/2023	07:08 AM	0.2 L
07/19/2023	01:20 PM	8.6 H
07/19/2023	07:06 PM	1.4 L

³ Application requests 4.0 acres but MDMR measurements indicate the proposal is 3.90 acres.

⁴ Application page 6

⁵ <https://www.ussharbons.com/harbor/maine/portland-harbor-me/tides/>



Bottom Characteristics

MDMR scientists observed the bottom characteristics of the area by collecting video with a remotely operated vehicle (ROV). There were two transects conducted using the ROV. Observed 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). The observed sea floor was primarily composed of soft mud.

Table 2. Bottom characteristics of the proposed site.

Substrate Origin	Substrate Class	Substrate Subclass	Substrate Group
Geologic Substrate	Unconsolidated Mineral Substrate	Fine Unconsolidated Mineral 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) –3.90 Acres

<u>Corner</u>	<u>Latitude</u>	<u>Longitude</u>					
NW	43.782367	-70.091969	then	171.8	feet at	140°	True to
NE	43.782003	-70.091556	then	996.7	feet at	230°	True to
SE	43.780236	-70.094436	then	172.6	feet at	325°	True to
SW	43.780617	-70.094803	then	982.5	feet at	50°	True to NW

Table 3. Approximate distances from proposed lease to surrounding features.

Feature	Distance
NW corner to green navigational aid “1”	~3,626 feet to the northeast
NE corner to French Island nearest point (~MLW)	~4,716 feet to the east
SW corner to Moshier Island nearest point (~MLW)	~264 feet to the northwest
SE corner to red navigation aid “Green Island Ledge”	~5,121 feet to the southeast

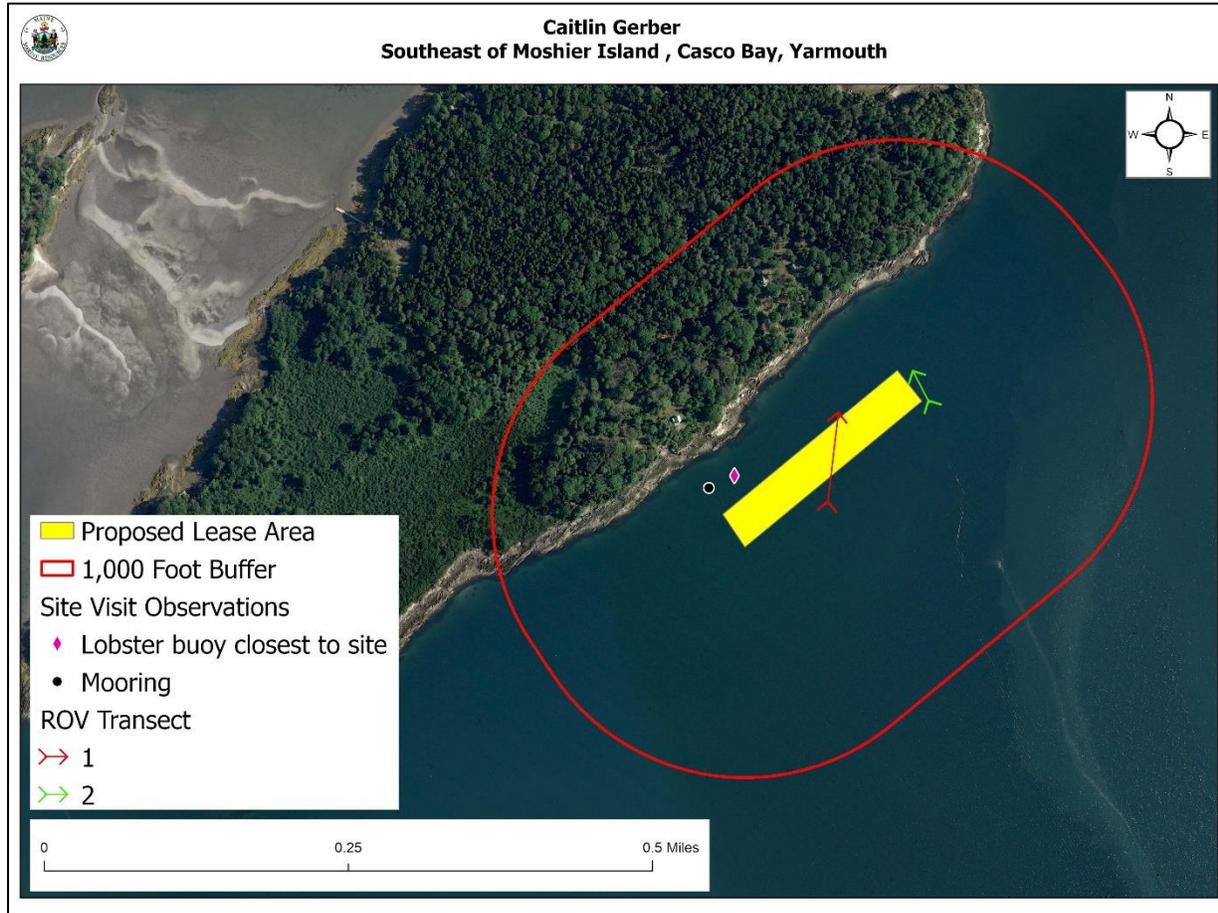


Figure 2. ROV transects and site visit observations.

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

(1) Riparian Ingress and Egress

The proposal is located within 1,000 feet of two houses on the eastern shore of Moshier Island. There are no docks or piers within 1,000 feet of the proposal. The nearest docks are approximately 1,250 feet north of the proposal on the northern side of Moshier Island. At the time of MDMR’s site assessment, a house located at the southwestern end of the proposal was observed to have a small wooden landing with a set of stairs that led to the shoreline. At MLW, the boundary of the proposed site is approximately 250 feet from this shoreline. The house at the northern end of the proposal did not have an observed pier, dock, stairs, or other structure for access to the shoreline. At MLW, the boundary of the proposed site is approximately 340 feet from this shoreline. MDMR scientists also observed an empty mooring located



approximately 128 feet northwest of the southwestern corner of the proposed lease area (Figure 2).

A Harbormaster Questionnaire was sent to the town of Yarmouth and the local harbormaster responded on September 10, 2022, stating that the proposal could impact access or ease of access for riparian owners within 1,000 feet of the proposed lease.⁶

(2) Navigation

The location of the proposal is approximately 1,200 feet to the west of a marked navigational channel that leads to the town of Freeport and the Harraseeket River. Nearby navigation aids are located approximately 3,626 feet to the northeast and 5,121 feet to the southeast (Table 3).

At the time of MDMR's site assessment, scientists observed 12 recreational boats heading south in the channel and four lines of small recreational racing sailboats being towed north. One kayaker was observed inside the boundaries of the proposal paddling north.

The local harbormaster indicated that the location of the proposal could be a navigational hazard as this is a highly traveled area year-round between the Harraseeket River and Casco Bay. The harbormaster also indicated that fishing vessels may travel through this area close to shore during twilight.⁷

⁶ Harbormaster questionnaire received by MDMR on September 10, 2022.

⁷ Harbormaster questionnaire received by MDMR on September 10, 2022.

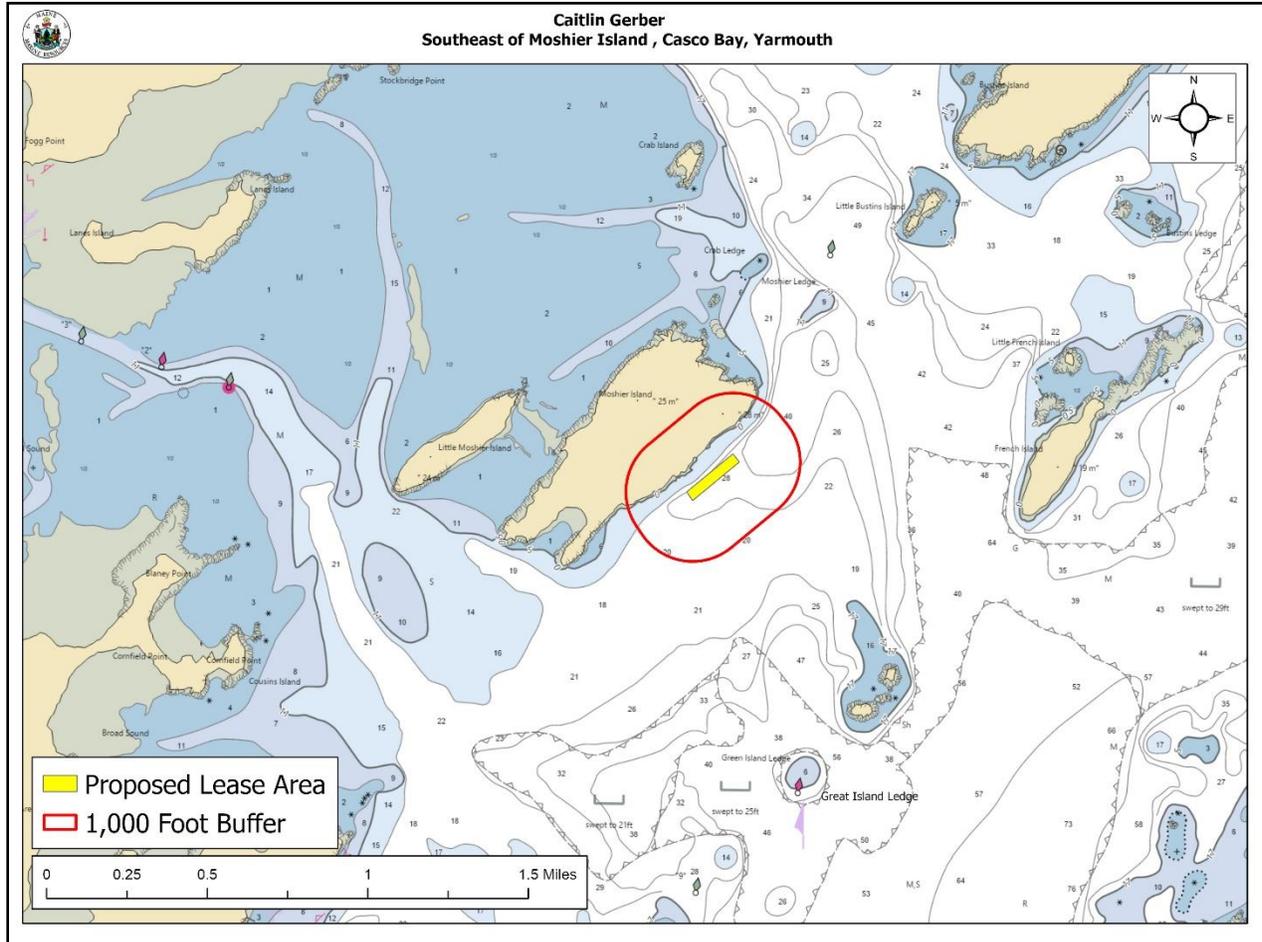


Figure 3. Proposed lease area and navigation channels.

(3) Fishing and Other Uses

During MDMR's site assessment, scientists observed four lobster buoys within 1,000 feet of the proposal. All observed lobster buoys were located between the proposal and Moshier Island. The closest lobster buoy to the proposal was located approximately 97 feet to the north of the western boundary (Figure 2). MDMR scientists also observed two recreational fishing boats within 1,000 feet of the proposal fishing along the shoreline of Moshier Island.

The local harbormaster indicated that the area around the proposal is used heavily for commercial and recreational lobstering. The shoreline of Moshier Island is popular for recreational fishing.⁸

⁸ Harbormaster questionnaire received by MDMR on September 10, 2022.



(4) Other Aquaculture Uses

There are no aquaculture leases or Limited Purpose Aquaculture (LPA) licenses within 1,000 feet of the proposal (Figure 4).

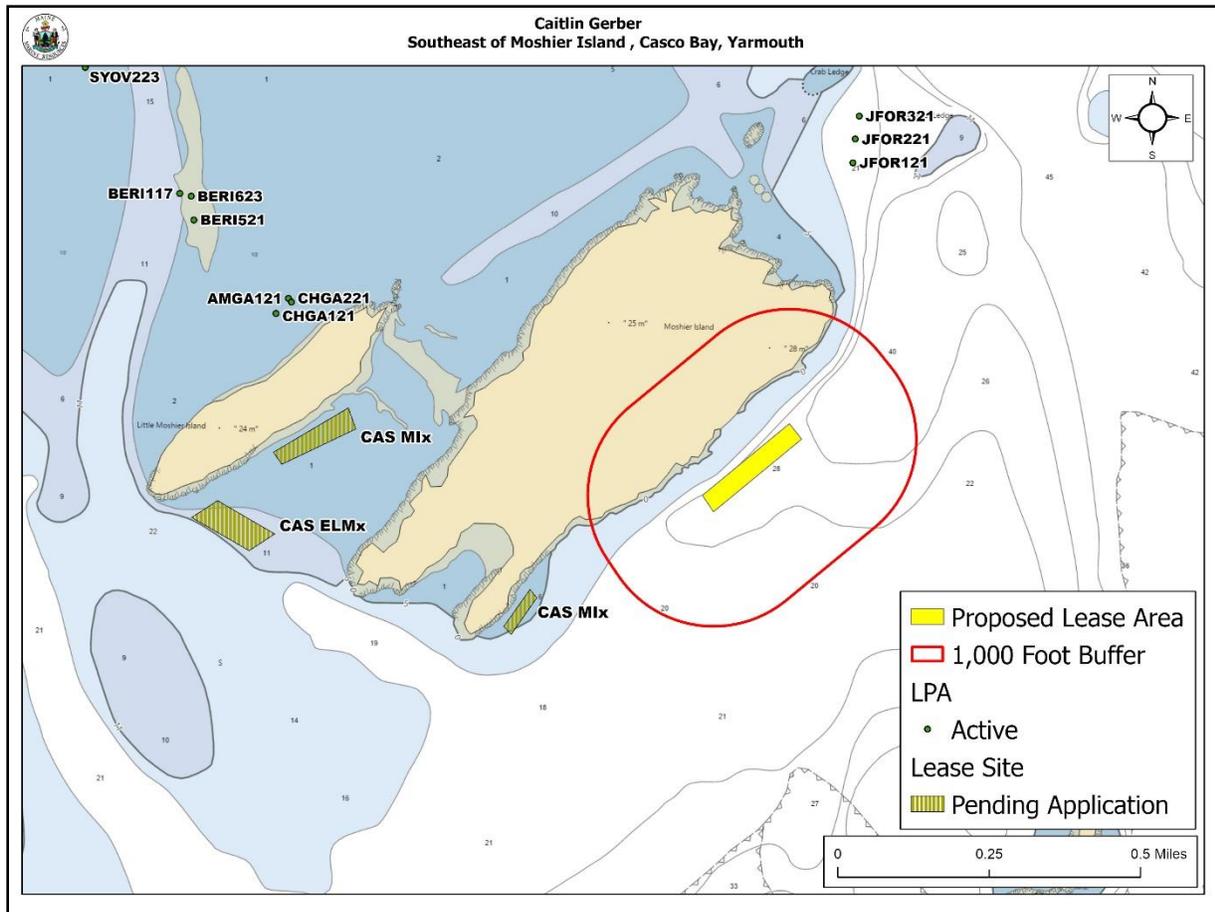


Figure 4. Aquaculture leases and LPA licenses in the general vicinity of the proposal.

(5) Existing System Support

Epibenthic Flora and Fauna

During the site assessment, MDMR scientists collected underwater video footage using an ROV. The observed bottom was soft mud. Numerous lobster (*Homarus americanus*) burrows were observed on underwater footage, but lobsters were rarely observed.

Table 4. Species observed on underwater footage collected by MDMR.

Species Observed	Abundance
Crab (<i>Cancer sp.</i>)	Rare
American lobster (<i>Homarus americanus</i>)	Rare



Eelgrass (*Zostera marina*)

According to data collected by the Maine Department of Environmental Protection (MDEP) and Casco Bay Estuary Partnership (CBEP) in 2022, there is no eelgrass (*Zostera marina*) within 1,000 feet of the proposal (Figure 5). No eelgrass was observed during the ROV transects conducted by MDMR on July 19, 2023.

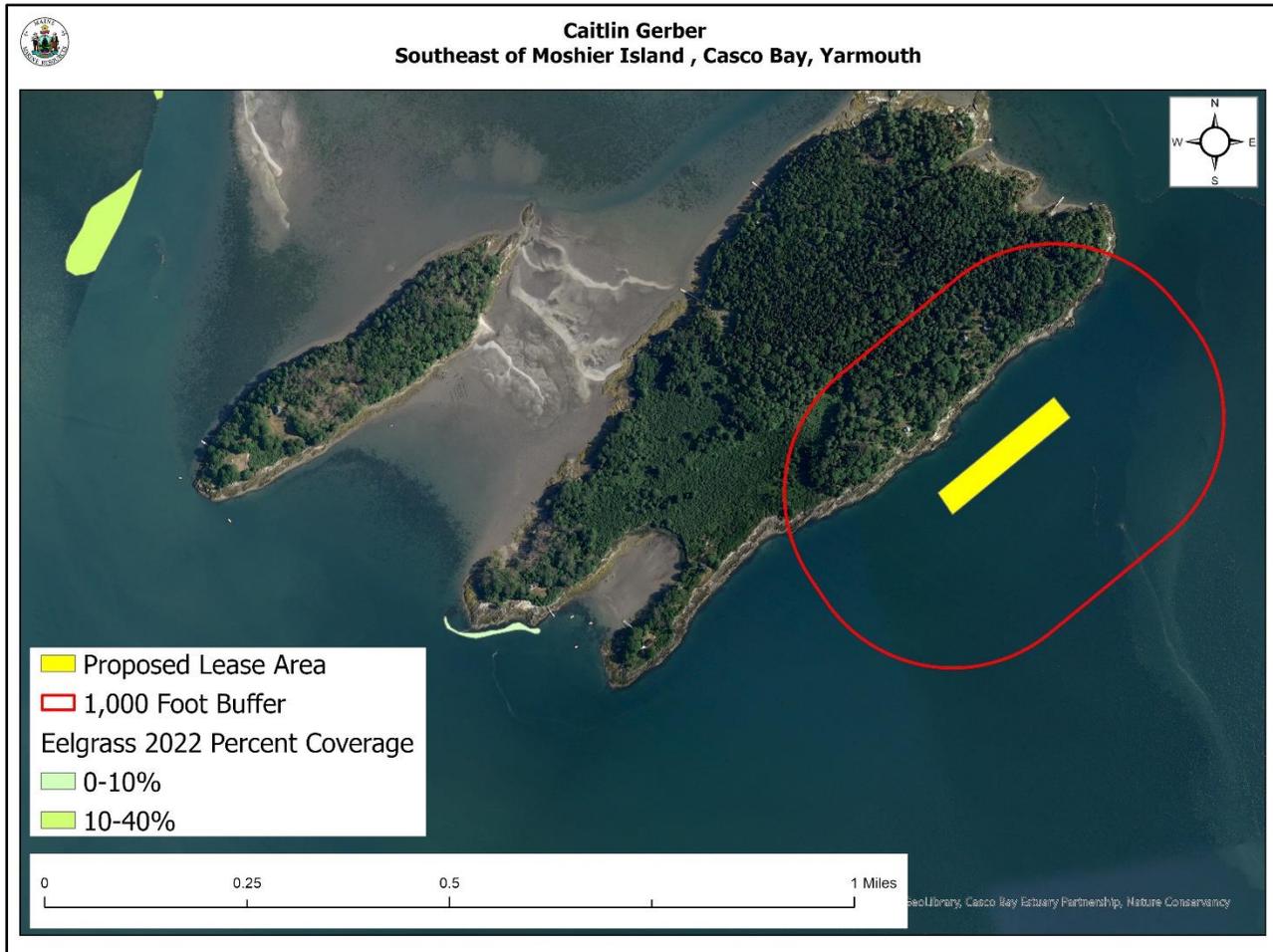


Figure 5. Mapped eelgrass (*Z. marina*) near the proposed lease utilizing 2022 data.⁹

⁹ Data obtained from The Maine Office of GIS "GISVIEW.MEDEP.Seagrass2022_CascoBay". 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, the proposal is not located within tidal waterfowl and wading bird habitat and there is no tidal waterfowl and wading bird habitat within the 1,000-foot buffer area (Figure 6). There are no mapped bald eagle (*Haliaeetus leucocephalus*) nests within 1,000 feet of the proposal. The nearest mapped bald eagle nest is approximately 1.75 miles to the northwest of the proposal.¹⁰ During MDMR’s site assessment, scientists observed seals (*Phocidae sp.*) in the general vicinity of the proposal, as well as ring billed gulls (*Larus delawarensis*) and occasional osprey (*Pandion haliaetus*).

On August 29, 2022, a Wildlife Biologist with MDIFW responded by email to a “Request for Agency Review and Comment”, stating that minimal impacts to wildlife are anticipated.¹¹



Figure 6. Tidal waterfowl and wading bird habitat¹².

¹⁰ Data obtained from USFWS “Bald_Eagle_Nests_-_Maine_2023”.

¹¹ Email correspondence between MDIFW and MDMR

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



Maine Department of Marine Resources
Site Report

Caitlin Gerber
Southeast of Moshier Island, Casco Bay
Yarmouth

(6) Interference with Public Facilities

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

(7) Water Quality

The proposed lease is located in an area that is currently classified as "Open/Approved" by the MDMR Bureau of Public Health.