Department of Marine Resources
Site Review

Bailey Coffin
68 Grover Lane
Harpswell, ME 04079

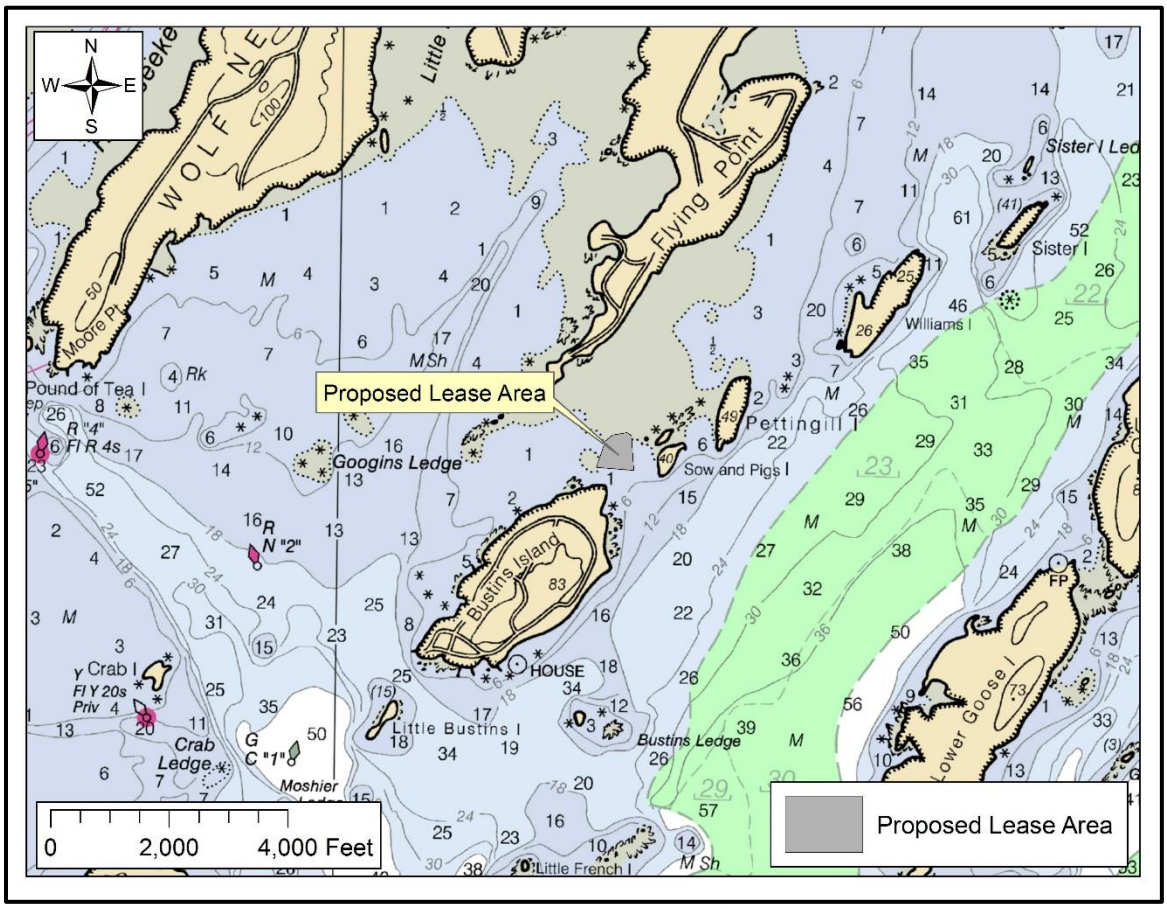

Figure 1: Vicinity map[1]

Location: West of Sow and Pigs Island, Freeport, Cumberland County, Maine

Purpose: Standard lease for the bottom and suspended culture of American/eastern oysters (*Crassostrea virginica*), northern quahogs (*Mercenaria mercenaria*), Arctic surf clams (*Mactromeris polynyma*), razor clams (*Ensis leei*), European oysters (*Ostrea edulis*), bay scallops (*Argopecten irradians*), and soft shell clams (*Mya arenaria*)

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

Report Submitted: January 22, 2022

[1]Unless otherwise noted, all figures in this report were created in ArcMap version 10.6 or 10.8 using digitized NOAA Nautical Charts or geo-referenced aerial photographs provided by The Maine Office of GIS (*orthoCoastalCascoBay2018*).

Application Summary

The applicant is requesting 6.83[2] acres west of Sow and Pigs Island in Casco Bay for the bottom and suspended culture of American/eastern oysters (*Crassostrea virginica*), northern quahogs (*Mercenaria mercenaria*), Arctic surf clams (*Mactromeris polynyma*), razor clams (*Ensis leei*), European oysters (*Ostrea edulis*), bay scallops (*Argopecten irradians*), and soft shell clams (*Mya arenaria*). Although not explicitly stated in the application, it appears that bottom culture would occur throughout the proposed lease site. Bottom planted shellfish are proposed to be harvested by hand, snorkeling, scuba diving, clam hoe, bull rake, or small drag (34" x 10").[3] Gear proposed for the site includes, at a maximum, 700 semi-rigid floating mesh bags (18"x36"x3") and 800 semi-rigid mesh bottom bags with wire feet (400 would measure 18"x36"x9" and 400 would measure 18"x36"x6") (Figure 2).[4] Bottom bags, which would be onsite throughout the year and would be used to culture all proposed species, would be deployed in up to (8) 150-foot lines located along the boundary of the northern half of the proposal. Floating bags, which are proposed to be onsite throughout the year unless there are ice-related concerns, would contain American/eastern oysters and northern quahogs.[5] Floating bags would be deployed on up to (6) 150-foot lines in the northeast corner of the proposal.[6]

A 10' x 20' covered float is proposed to be located near the northeast corner of the proposal. According to the application, no oil, gasoline, or other hazardous material would be stored on the site.[7]

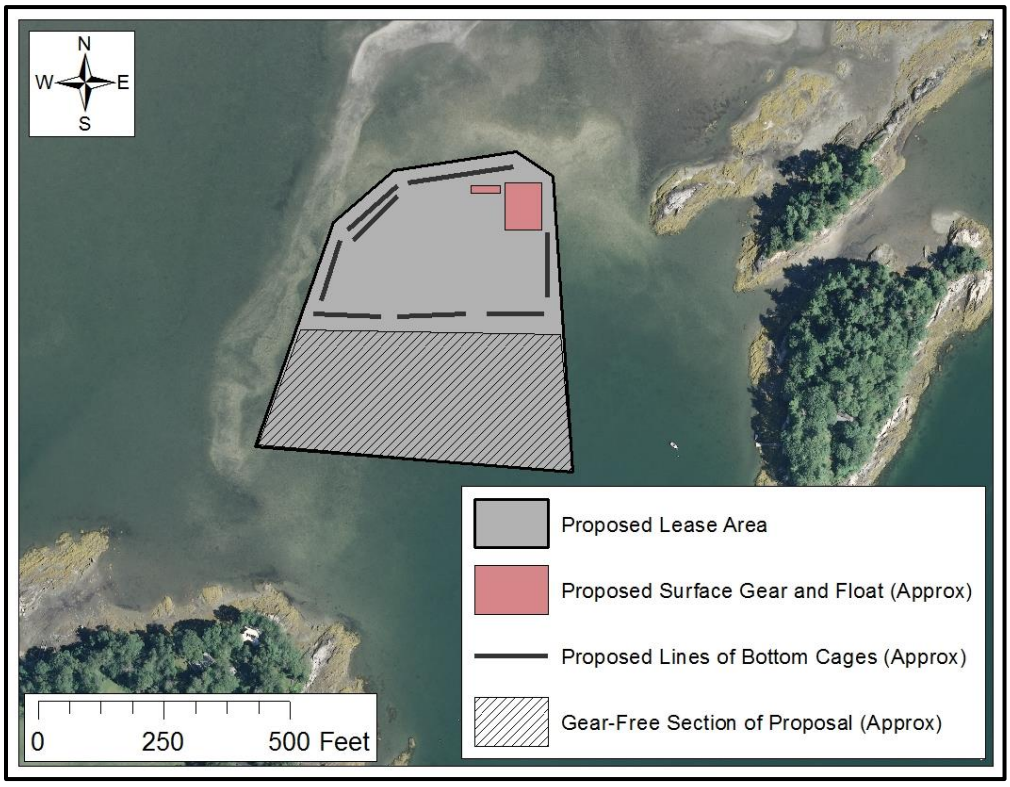

Figure 2: Approximate proposed gear configuration.

[2] DMR calculations, based on the application coordinates, indicate the area is 6.83 acres.
[3] Application, page 11.
[4] Application, pages 5 & 6
[5] Application, page 28
[6] Application, page 28
[7] Application, page 7

General Site Characteristics

Maine Department of Marine Resources (MDMR) Scientists Marcy Nelson and Cheyenne Adams conducted an initial assessment of the proposal on July 8, 2021. Staff arrived on site at 2:48 pm that day, the tide was ebbing. MDMR staff returned at low tide on July 28, 2021 to collect additional videos of the bottom of the proposed lease via snorkel and scuba transect. A third visit by Flora Drury and Cheyenne Adams was conducted on September 13, 2021.

The proposed lease occupies subtidal waters between Sow and Pigs and Bustins Islands in Casco Bay (Figures 1 & 3, Images 1-8). Sow and Pigs Island, located east of the proposal, hosts a rocky shoreline and a wooded upland (Images 1 & 2). At least one residential building is located on Sow and Pigs Island. Bustins Island, to the south and southwest of the proposal, hosts a rocky shoreline; the uplands are forested and at least five residential buildings are located along the shoreline facing the proposal (Image 7). A shallow bar made of sand and shell borders the proposal's north and northwest boundaries.

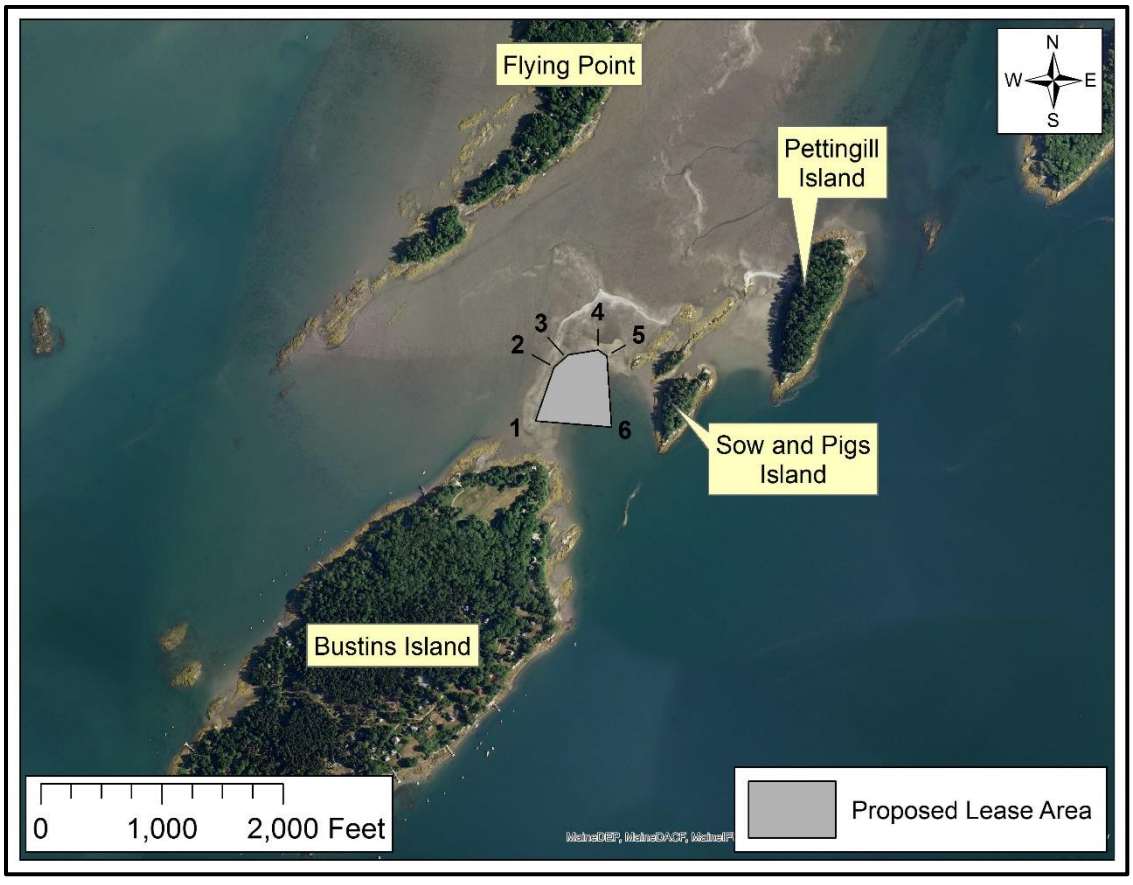

Figure 3: Proposed lease area.

Image 1: Looking southeast toward Sow and Pigs Island from near Corner 5 of the proposed lease (July 8, 2021).

Image 2: Looking east toward Sow and Pigs Island and Sow and Pigs Island Ledge from near Corner 5 of the proposed lease (July 8, 2021).

Image 3: Looking northeast toward Flying Point and Sow and Pigs Island Ledge from near Corner 5 of the proposed lease (July 8, 2021).

Image 4: Looking north toward Flying Point from near Corner 5 of the proposed lease (July 8, 2021).

Image 5: Looking northwest toward Flying Point and Wolf Neck from near Corner 5 of the proposed lease (July 8, 2021).

Image 6: Looking west from near Corner 5 of the proposed lease (July 8, 2021).

Image 7: Looking southwest toward Bustins Island from near Corner 5 of the proposed lease (July 28, 2021).

Image 8: Looking southeast from near Corner 5 of the proposed lease (July 8, 2021).

Depth

MDMR collected depths at the proposed lease site on July 8, 2021. Measurements were taken at approximately 2:50pm; high tide was predicted to occur at 11:23 am with a height of 8.18 feet (Table

1). Depths at the corners of the proposed lease area ranged from 3.9 feet at Corners 1 and 5 to 9 feet at Corner 6. Correcting for tidal variation derives depths between 0.4 and 5.5 feet at mean low water (MLW, 0.0 feet). MDMR returned at 9:00 am on July 28, 2021 to assess the proposed lease at low water. Low tide was predicted to occur at 9:12 am on this date, with a height on -0.23 feet (Table 2). The entirety of the proposed lease was subtidal during this visit. Given these depths, it is likely that the proposed float and lines of floating bags would rest on the seafloor, and that some lines of bottom cages would be partially exposed at some lower tidal stages.

Table 1. Tide predictions for South Freeport, Casco Bay, Maine (43.8200° N, 70.1033° W)[8]

Date	Time	Height (ft)
7/8/2021	5:10 AM	0.54 L
7/8/2021	11:23 AM	8.18 H
7/8/2021	5:05 PM	1.59 L

Table 2. Tide predictions for South Freeport, Casco Bay, Maine (43.8200° N, 70.1033° W)[9]

Date	Time	Height (ft)
7/28/2021	3:54 AM	10.11 H
7/28/2021	9:12 AM	-0.23 L
7/28/2021	3:32 PM	9.38 H

Bottom Characteristics

MDMR staff observed the bottom characteristics of the proposed lease site via boat-based drop camera transects on July 8, 2021 and by snorkel and scuba transect on July 28, 2021 (Figure 4). The sediment was classified using the Coastal and Marine Ecological Classification Standard,[10] a national standard for describing features of the marine environment (Table 3). Sediments were categorized based on visual analysis; no sediment samples were collected, or grain size analyses performed. The shallower sections of the proposed lease, which are located along the boundaries to the west and north, are dominated by shell hash (Image 9), while the deeper, southeast section of the proposed lease is composed of semi-firm mud (Images 10 & 11).

[8] https://tidesandcurrents.noaa.gov
[9] https://tidesandcurrents.noaa.gov
[10] https://www.fgdc.gov/standards/projects/cmecs-folder/CMECS_Version_06-2012_FINAL.pdf

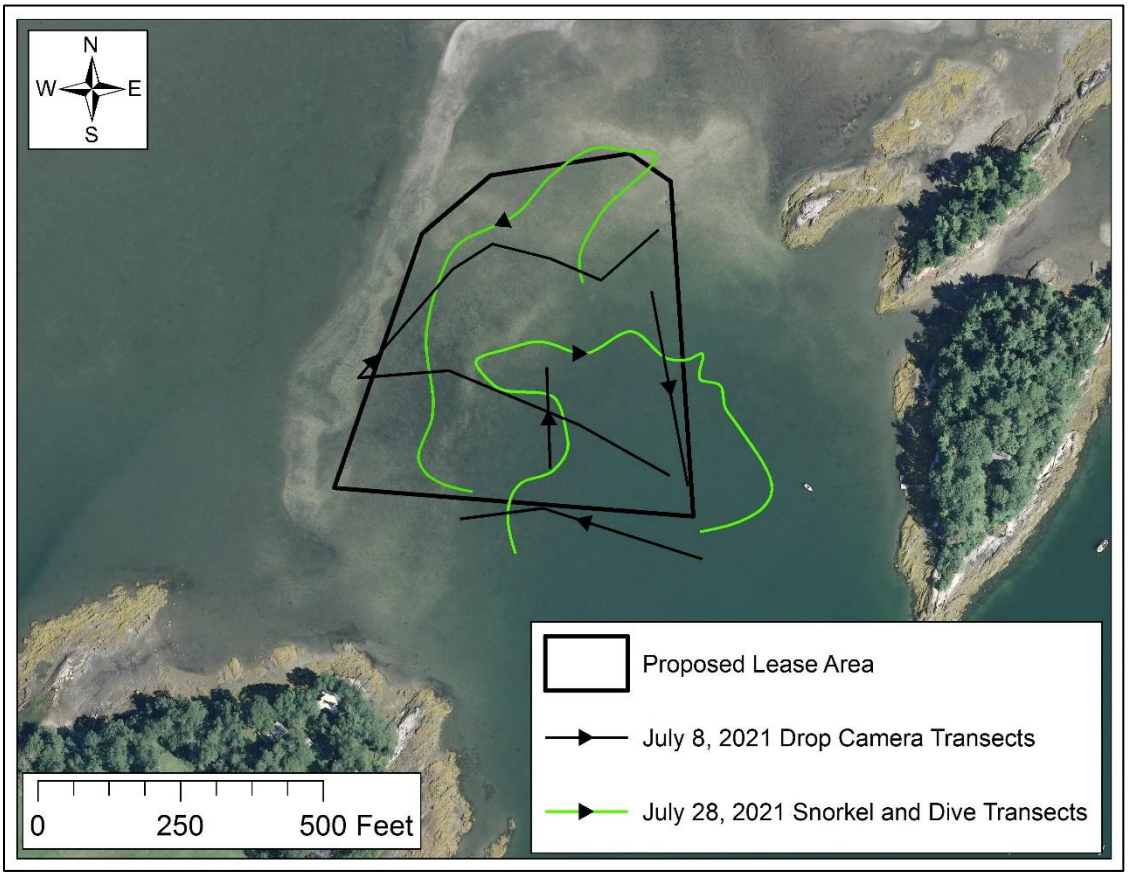

Figure 4: Underwater drop camera, snorkel, and dive transects conducted within and nearby proposed lease boundaries.

Table 3. Substrate classification on proposed lease site.

Substrate Origin	Substrate Class	Substrate Subclass	Substrate Group
Geologic Substrate	Unconsolidated Mineral Substrate	Fine Unconsolidated Substrate	Sandy Mud
Biogenic Substrate	Shell Substrate	Shell Hash	--------

Image 9: Shell hash on the bottom of the proposed lease (July 8, 2021).

Image 10: Mud bottom within the proposed lease (July 28, 2021).

Image 11: Mud bottom within the proposed lease (July 28, 2021).

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.

Application Coordinates – 6.83 Acres (Figure 3)

Corner	Latitude	Longitude
1	43.805285° N	70.066859° W then 471.10 feet at 19.09° True to
2	43.806512° N	70.066297° W then 158.17 feet at 49.69° True to
3	43.806797° N	70.065845° W then 246.32 feet at 81.03° True to
4	43.806911° N	70.064925° W then 87.04 feet at 124.57° True to
5	43.806778° N	70.064651° W then 587.53 feet at 176.12° True to
6	43.805171° N	70.064472° W then 631.33 feet at 274.51° True to 1.

Table 4. Approximate distances from the proposed lease to surrounding features (Figures 1 & 3). Measurements were made using digital orthophotography provided by the Maine Office of GIS (*orthoCoastalCascoBay2013*) and NOAA Nautical Charts.[11]

Feature	Distance
Corner 1 to Bustins Island, nearest point (~MLW)	~275 feet to the south
Corner 2 to Flying Point, nearest point (~MLW)	~1,240 feet to the northwest
Corners 1, 2, 3, 4, & 5 to subtidal bar made of sand and shell	Bordering
Corner 5 to Sow and Pigs Island Ledge, nearest point (~MLW)	~205 feet to the east
Corner 5-6 to Sow and Pigs Island Ledge, nearest point (~MLW)	~185 feet to the east
Corner 6 to Sow and Pigs Island, nearest point (~MLW)	~360 feet to the southeast
Corner 6 to 18-foot contour line east of Sow and Pigs and Bustins Island	~1,250 feet to the southeast

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

(1) Riparian Ingress and Egress

The proposed lease is located in Casco Bay between Sow and Pigs and Bustins Islands. Sow and Pigs Island is located approximately 360 feet to the east of the proposal at the closest point and hosts at least one residential building. A raft with a small outboard boat tied to it was observed moored off the western shore of Sow and Pigs Island, approximately 285 feet from the proposed lease, during the July 8, 2021 visit (Figure 5 & Image 12). Although not observed during any of MDMR's site visits, historical aerial imagery show a dock extending from the western shore of Sow and Pigs Island, approximately 375 feet from the proposed lease, and a boat moored nearby.[12] During both the July 8 and July 28, 2021 site visits, an individual launched a kayak from the western shoreline of Sow and Pigs Island.

Bustins Island, which is approximately 275 feet from the proposal at the closest point, also hosts residential buildings. Two moorings and three outhauls were observed along Bustins Island's northeastern shoreline during the July 8, 2021 site visit (Figure 5). Kayaks, outboard boats, and sailboats were observed either moored, or hauled out on Bustins Island's northeastern shoreline. Stairs leading to the shoreline from the island's uplands were also observed and comments submitted to MDMR indicate a boat launch owned by the Bustins Island Village Corporation is located on the northwest tip of the island.[13]

The infrastructure and activity observed shows that some riparian owners access Sow and Pigs and Bustins Islands via the cove in which the proposed lease is located. Although at mean low water the proposed lease is approximately 275 and 360 from Sow and Pigs and Bustins Islands,

[11]Distances to shore were measured with aerial photograph *orthoCoastalCascoBay2013*, which was taken August 11 and 12, 2013 at low tide. Low tide was 0.12 feet above MLW on the 11th and 0.21 feet above MLW on the 12th (http://tbone.biol.sc.edu/tide/tideshow.cgi). This service is provided by The Maine Office of GIS. *orthoCoastalCascoBay2018*, which is used as the basemap for some figures in this report, was taken during low tides with heights of -1.66 feet on the 16th and -1.48 feet, and therefore wasn't used for measuring distances to shore.

[12] Historic aerial imagery from Google Earth and The Maine Office of GIS

[13] Bailey Coffin, case file

respectively, gear is only proposed to be deployed in the northern, shallower portion of the proposed lease (Figure 5). As a result, the distance between Sow and Pigs and Bustins Islands and the proposed gear would be roughly 355 and 510 feet, respectively. Other than during times when the southern half of the site is being tended[14], the proposed bottom culture activities in the southern half of the proposed area are unlikely to impact riparian access.

The distances between the proposed gear and Sow and Pigs and Bustins Islands are likely adequate for most vessels to access surrounding riparian shorelines from the south without impediment. Vessels approaching the cove between Sow and Pigs and Bustins Islands from the north, however, might have to alter course when approaching the islands if the proposal were approved. According to comments received by MDMR, some riparian owners have a parking lot at the end of Flying Point, Freeport, and access their properties from the north via a narrow channel between Flying Point and the islands.

It should be noted that the applicant proposes to deploy (8) 150-foot lines of bottom bags along the boundary of the northern half of the lease, including through the center of the lease (Figure 5).[15] At low tide, bottom cages (which are proposed to be 9" and 6" in height) deployed along the boundaries between Corners 1-5 (which range in depth from approximately 4.8" to 9.6" at MLW) would be covered by a small amount of water, or partially exposed. Bottom cages deployed through the center of the lease and along the proposal's eastern boundaries would be covered by slightly more water at low tide. At certain tides, some vessels could likely navigate over these cages, however, during lower or mid tidal stages the presence of bottom cages would likely deter riparian owners, especially those operating propeller-driven vessels, from navigating through the northern section of the lease. It should be noted that the shallow bar that borders the proposal to the north also poses a natural constraint to navigation in the area. If the applicant were to consolidate these lines on one section of the lease, more space would be available for riparian access.

[14] For the purposes of this report, "tending" includes harvesting, seeding, or other onsite activities.
[15] Application, page 28

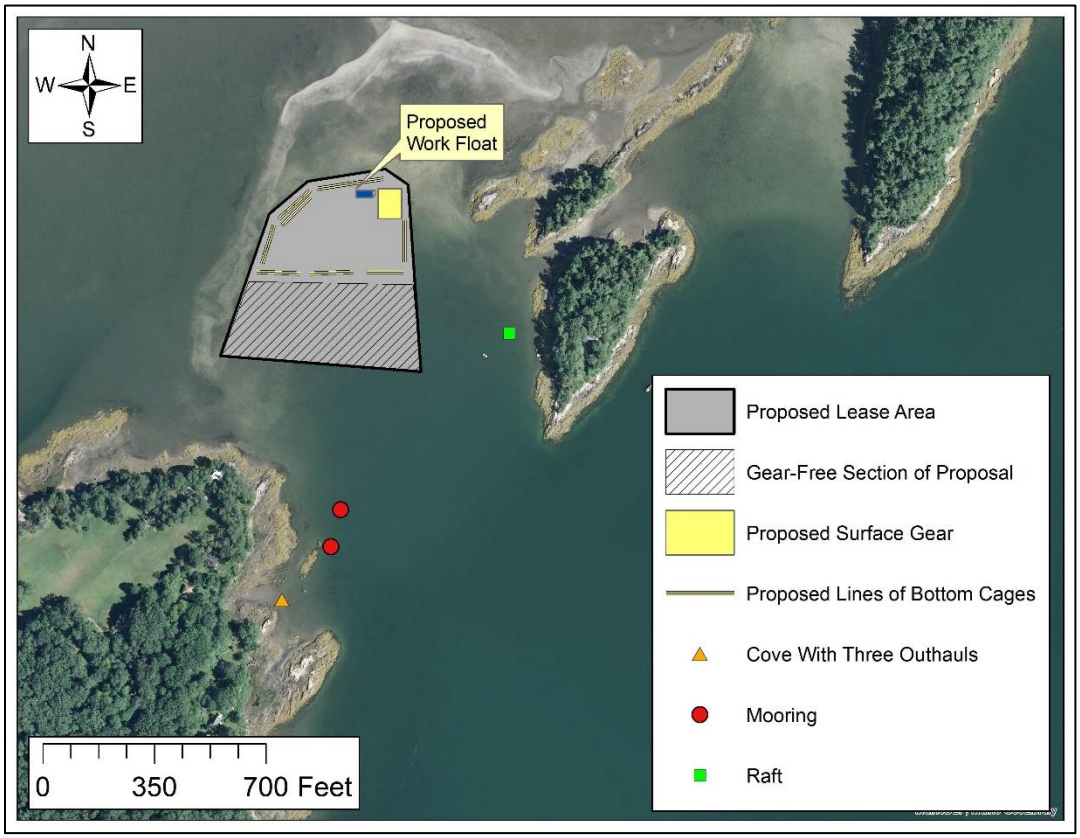

Figure 5: Proposed gear deployment and existing riparian access infrastructure.

Image 12: Moored raft and outboard boats near and on Sow and Pigs Island (July 8, 2021).

(2) Navigation

The proposed lease is located in shallow water between Sow and Pigs and Bustins Islands. Due to this location, the proposal is unlikely to impact boating activity in the frequently navigated waters southeast of Sow and Pigs and Bustins Island, which are delineated by an 18-foot contour line on the NOAA Chart. This contour line is located ~1,250 from the proposed lease at the closest point. Furthermore, the proposal is unlikely to interfere with navigation in the marked channel southwest of Bustins Island as it is located over 4,000 feet from the proposal.

During the site visit conducted on July 8, 2021 two motored vessels and one kayak were observed navigating in the vicinity of the proposal. These vessels all launched from, or landed on, either Bustins or Sow and Pigs Islands. During the site visit on July 28, 2021, a kayak launched from Sow and Pigs Islands.

As previously stated in *Section (1): Riparian Ingress and Egress*, because gear is not proposed for the southern half of the lease, approximately 355 feet would remain available for navigation between the proposed gear and Sow and Pigs Island and approximately 510 feet would remain available for navigation between the proposed gear and Bustins Island at mean low water. These distances would be adequate for most small vessels to navigate in the area. Although it is possible that the distances available for navigation would decrease when the gear-free portion of the proposal is being tended, small vessels are unlikely to be prevented from navigating in the area. However, according to comments received by MDMR, a commercial ferry operation utilizes a boat ramp owned by the Bustins Island Village Corporation on the northwestern tip of Bustins Island.[16] According to these comments, the traditional route of this ferry cuts through the proposed lease area and extends into the portion of the proposed lease that would contain gear.

Due to the shallow depths of the area within the lease that would host gear, the ability of vessels, especially those with propellors, to navigate over the proposed lines of bottom cages could be impacted. If the applicant were to consolidate these lines on one section of the lease, the impact to navigation would decrease as the proposed gear would encompass less space.

(3) Fishing and Other Uses

Lobstering

During the site visit conducted on July 8, 2021, two lobster buoys were observed between Sow and Pigs and Bustins Islands (Figure 6). On July 28, 2021, five lobster buoys were observed between Bustins and Sow and Pigs Islands, one of which was within the proposal, and two of which were less than 150 feet from the proposal (Figure 6). On September 13, 2021, five lobster buoys were observed between the islands, three of which were within the proposed lease area and one of which was within 150 feet of the proposal (Figure 6). No lobster buoys were observed within the section of the lease where gear is proposed on these dates. As long as individuals harvesting in the deeper sections of the lease do not obstruct lobster boats fishing in the area, it appears that the proposed activities in the southern section of the lease could coexist with lobstering fishing.

[16] Bailey Coffin, Case File.

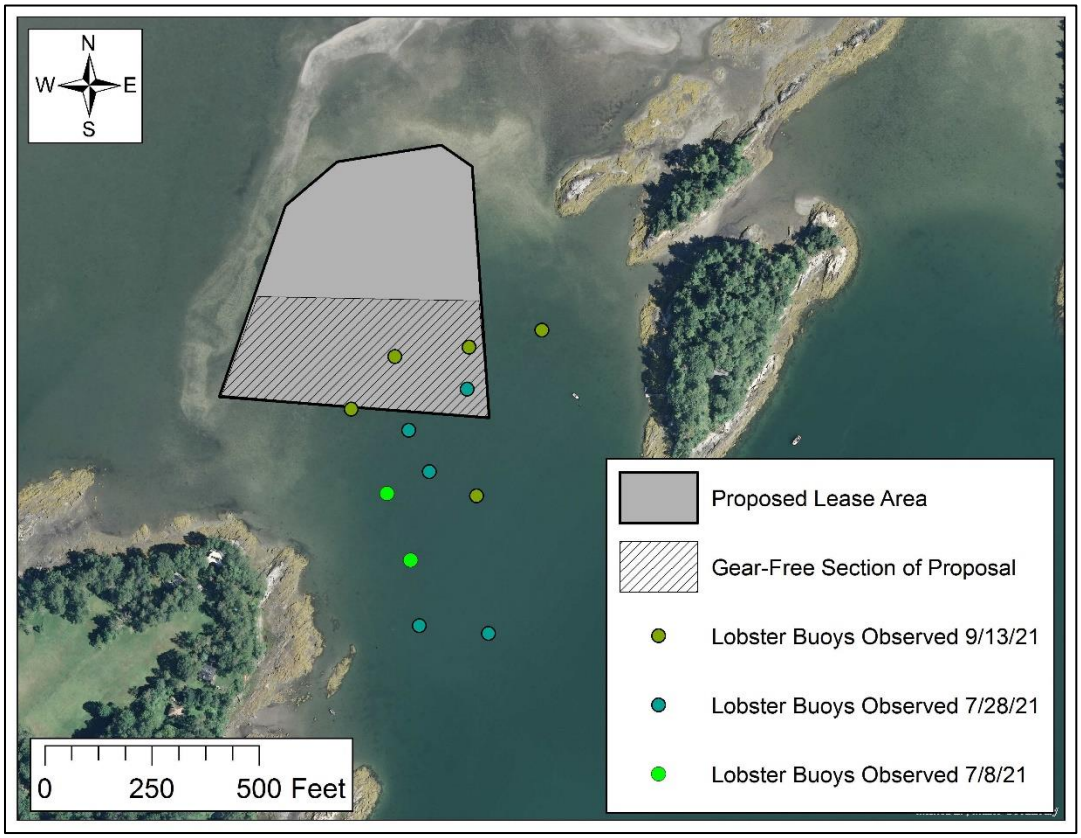

Figure 6: Lobster buoys observed between Bustins and Sow and Pigs Islands on July 8, July 28, and September 13, 2021.

Shellfish Harvest

The applicant is requesting that commercial dragging, raking, and digging of shellfish be excluded from the lease boundaries if the proposal is granted. European oysters (*Ostrea edulis*) and northern quahogs (*Mercenaria mercenaria*) were occasionally observed within the proposed lease, with the highest density of European oysters observed near the proposal's northern boundary (near Corners 2, 3 and 4) during MDMR's underwater video transect conducted on July 28, 2021 (Image 13). According to outreach conducted by MDMR's Bureau of Public Health, a local shellfish warden and Marine Patrol Officer indicated there is little to no shellfish harvest within the bounds of the proposal.[17]

[17] Email from the Bureau of Public Health to DMR Aquaculture Program (3/8/2021).

Image 13: European oysters (*O. edulis*) observed near northern boundary of the proposed lease (July 28, 2021).

Bait Fishing

Although not observed during any of the three site visits conducted by MDMR staff, schools of menhaden (*Brevoortia tyrannus*) have been observed by MDMR staff in the general vicinity of the proposed lease at other times. Bait fishing is common in Casco Bay in the summer months when schooling fish are present and the season is open, and therefore it is likely that the commercial harvest of schooling baitfish occurs in the vicinity of the proposed lease area during these times. However, due to the depths of the proposed lease area, it is likely that the tidal stage influences when bait fishing could occur within the area. With the possible exception of when the gear-free section of the proposal is being tended, bait fishing would be unhindered in the southern section of the lease. The proposed operations would prevent bait fishing from occurring in the northern half of the proposal.

Recreational Fishing

No recreational fishing was observed in the vicinity of the lease during any of MDMR's visits. No impacts to recreational fishing are expected to occur in the southern, gear-free section of the proposal, other than during times when the applicant is actively tending that area of the site. The proposed gear layout could deter recreational fishers from navigating into the northern half of the site to fish.

Sports, Swimming, and Use of Sand Bars

According to comments received by MDMR, paddle sports and swimming occur in the general area. It was also noted that at mid to lower tidal stages the sand bars could be a destination for recreational boaters. Due to the fact that no gear is proposed in the southern half of the site, with the possible exception of when the gear-free section of the proposal is being tended, use of the southern section of the proposal lease by canoers, kayakers, paddleboarders, and swimmers would not be impacted. Shallow draft, hand powered vessels would also be able navigate throughout the remainder of the lease, including over bottom cages, at high and mid tides. At lower tides these

vessels would likely need to avoid lines of bottom cages that are proposed to be deployed in shallow sections of the proposal. Due to the proposed location of bottom cages, access and use of bordering sandbars from the south would be impacted. Access to these bars from the north would not be impacted.

(4) Other Aquaculture Uses

At the time of application, there was one active lease and four Limited Purpose Aquaculture (LPA) licenses, within 1 mile of the proposed lease (Figure 7).

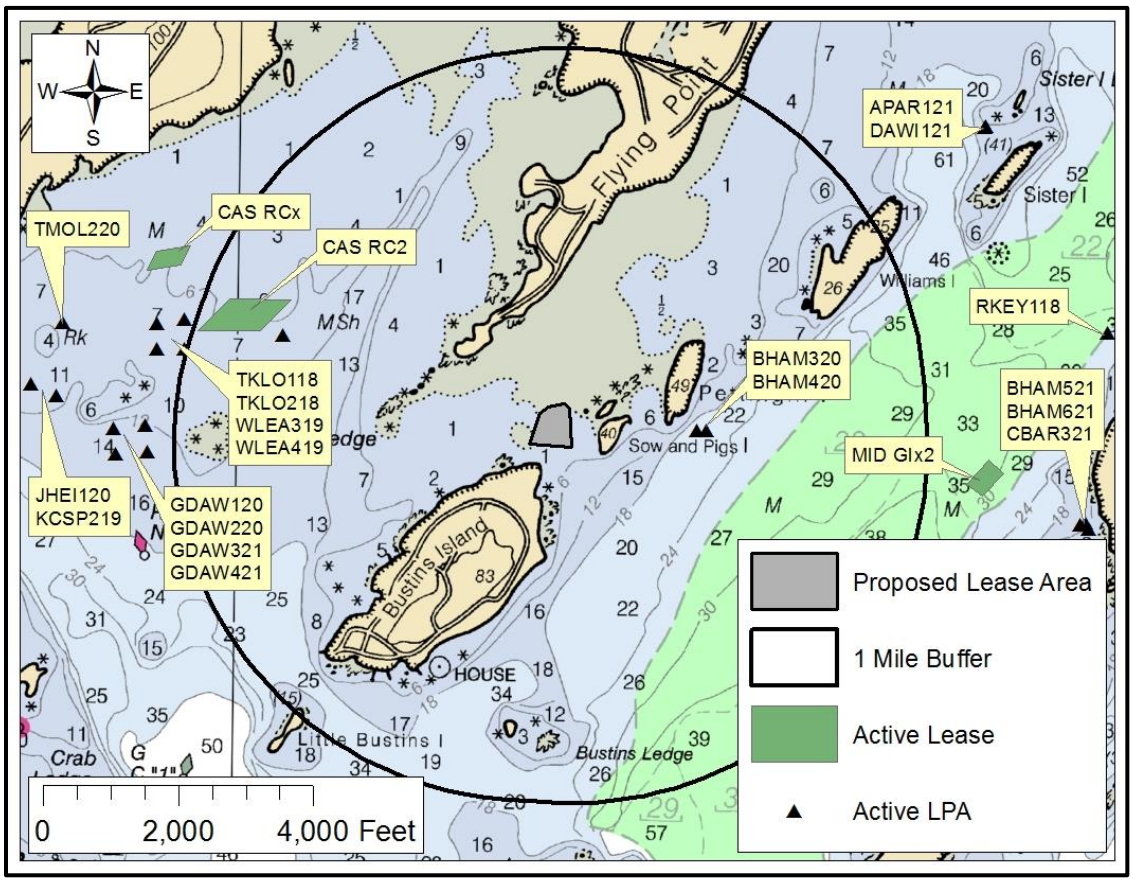

Figure 7: Aquaculture leases and Limited Purpose Aquaculture (LPA) licenses in the vicinity of the proposed lease.

(5) Existing System Support

MDMR staff conducted drop camera transects through the proposed lease to assess the epibenthic ecology of the area on July 8, 2021 and returned on July 28, 2021 to conduct snorkel and scuba transects throughout the site (Figure 4). The bottom of the deeper sections of the proposal are composed of semi-firm mud, while shallower sections are dominated by predominantly softshell clam (*M. arenaria*), northern quahog (*M. mercenaria*) and European oyster (*O. edulis*) shell hash (Images 9 – 11). Epibenthic macro flora and fauna observed during the drop camera, snorkel, and dive transects are described in Table 5 (Images 14-16).

Table 5. Species observed from drop camera, snorkel, and dive transects conducted within the proposed lease site on July 8, 2021, and July 28, 2021.

Species Observed	Abundance
Benthic diatoms	Abundant in sections of proposal with mud bottom
Epiphytic Bryozoan on Eelgrass	Abundant on eelgrass
Eelgrass (*Zostera marina*)	See eelgrass section below
Common Periwinkle (*Littorina littorea*)	Abundant in portions of lease with shellhash bottom
Colonial Tunicate (*Didemnum sp.* and/or *Botrylloides sp.*)	Common
Hermit Crab (*Pagarus sp.*)	Common
European Oyster (*Ostrea edulis*)	Live organisms common along northern boundary, occasional in shallow sections of proposal
Red filamentous algae	Common
Slippersnail (*Crepidula fornicata*)	Common
Barnacles (*Semibalanus balanoides*)	Occasional
Green crab (*Carcinus maenus*)	Occasional
Northern Quahog (*Mercenaria mercenaria*)	Occasionally observed at surface of sediment
Knotted Wrack (*Ascophyllum nodosum*)	Rarely Attached
Horseshoe Crab (*Limulus polyphemus*)	Rare
Terebellid Worm (*Amphripite sp.*)	Rare

Image 14: Slippersnail (*C. fornicata*) and colonial tunicate within the proposed lease site (July 28, 2021).

Image 15: European oyster (*O. edulis*) within the proposed lease site (July 28, 2021).

Image 16: Red filamentous algae within the proposed lease site (July 28, 2021).

Eelgrass (*Zostera marina*)

MDMR observed eelgrass within and nearby the proposed lease area in drop camera, snorkel, and scuba transect video footage collected on July 8 and July 28, 2021 (Figure 8). On these dates, eelgrass beds were observed near Corner 6 of the proposal (Image 17). Exposed eelgrass rhizomes with occasional blades were observed in the center of the southern half of the proposal

and outside of Boundary 5-6 (Image 18 & Figure 8). Exposed rhizomes without blades were observed in the center of the proposal and south of Boundary 6-1 (Images 10 & 19 & Figure 8). Eelgrass was also observed within the proposal during an eelgrass survey conducted in 2018 by the Maine Department of Environmental Protection (MDEP) in cooperation with the Casco Bay Estuary Partnership; the survey transect cut through the southern portion of the proposed lease. According to MDEP, this eelgrass observation was omitted from the MDEP maintained feature layer[18] in error, but underwater video conducted in 2018 as part of this survey shows "sparse but regularly distributed, healthy appearing eelgrass" within the proposed lease area.[19] A 2001 eelgrass survey in the area conducted by the Maine Department of Marine Resources show that in 2001, there was a dense eelgrass bed throughout the entirety of the proposed lease (Figure 9), while a 2013 eelgrass survey conducted by the Maine Department of Environmental Protection (MDEP) in cooperation with the Casco Bay Estuary Partnership show no eelgrass within the proposal (Figure 10).

Although the majority of the area in which eelgrass blades and rhizomes were observed during MDMR site visits is proposed to be free of gear, it appears that the southern three proposed lines of bottom cages, along with the eastern-most proposed line of cages would overlap with areas where DMR observed exposed rhizomes (Figure 11). If the proposed lease is granted no gear should be permitted within 25 feet of areas where eelgrass blades or rhizomes were observed, to ensure that no gear is deployed over existing eelgrass beds or exposed rhizomes and to ensure compliance with the Army Corps of Engineer's recommendation of a 25-foot setback between aquaculture gear, including moorings, and existing eelgrass.

Furthermore, some of the harvest techniques that are proposed to be conducted throughout the lease, including rake, drag, and clam hoe harvest, would pose a threat to the existing eelgrass beds and associated rhizome system via physical disturbance and sedimentation, and should be prevented throughout the lease area, if granted, to ensure that existing eelgrass would not be damaged, and further eelgrass reestablishment throughout the proposed area would not be hampered. Other harvest techniques, including hand, snorkel, and scuba harvest would pose less of a disturbance to existing beds. However, seeding high densities of shellfish over existing eelgrass beds could be detrimental to eelgrass, as well. The results of a 2012 study published by Wagner et al. showed that low densities of Pacific oysters (*Crassostrea gigas*) can be compatible with eelgrass but higher densities (above 20% cover) impacted eelgrass growth.[20]

[18] MEDEP maintained SDE Feature Class "GISVIEW.MEDEP.Eelgrass2018"
[19] Communication between M. Nelson (DMR) and A. Brewer (MDEP), January & July 2021.
[20] Wagner E, Dumbauld BR, Hacker SD, Trimble AC, Wisehart LM, Ruesink JL (2012) Density-dependent effects of an introduced oyster, Crassostrea gigas, on a native intertidal seagrass, Zostera marina. Mar Ecol Prog Ser 468: 149−160

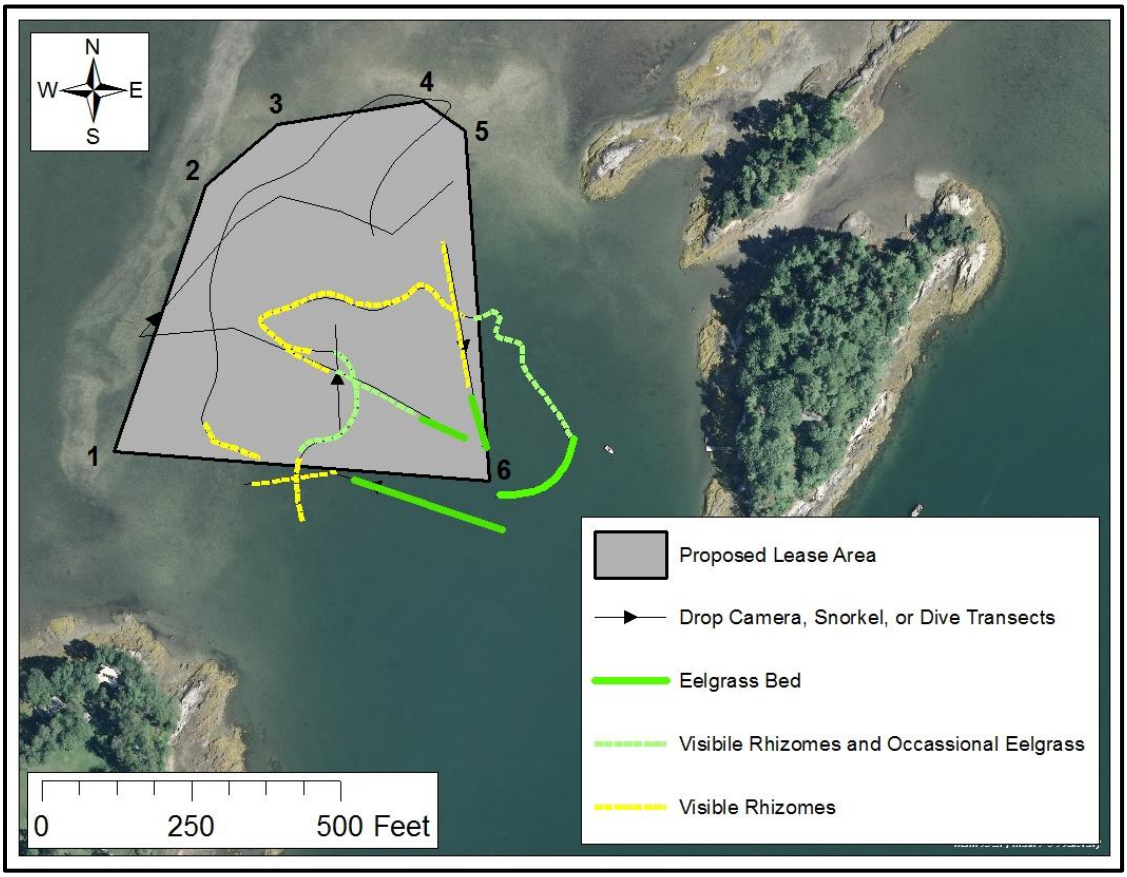

Figure 8: Eelgrass (*Z. marina*) observed within and near the proposed lease site during July 8, 2021 drop camera transects and July 28, 2021 snorkel and scuba transects.

Image 17: Eelgrass beds observed within the proposed lease site (July 8, 2021).

Image 18: Exposed eelgrass rhizomes and occasional eelgrass blades observed within the proposed lease site (July 28, 2021).

Image 19: Exposed eelgrass rhizomes observed within the proposed lease site (July 8, 2021).

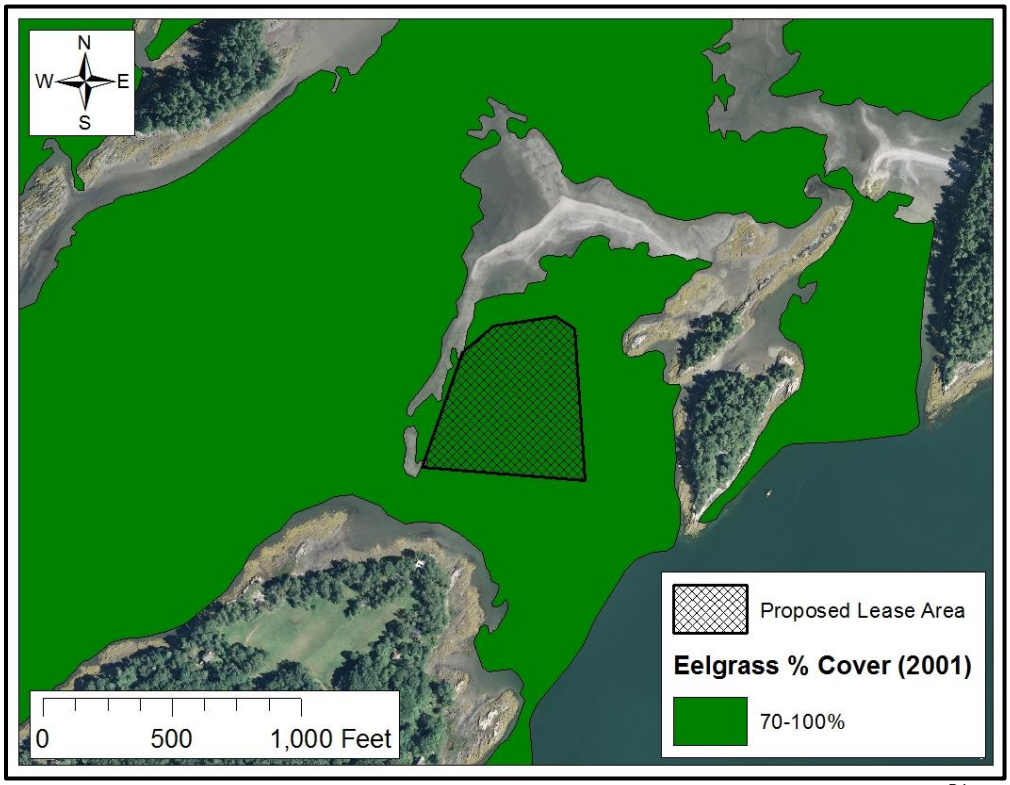

Figure 9: Historical eelgrass (*Z. marina*) in vicinity of proposed lease.[21]

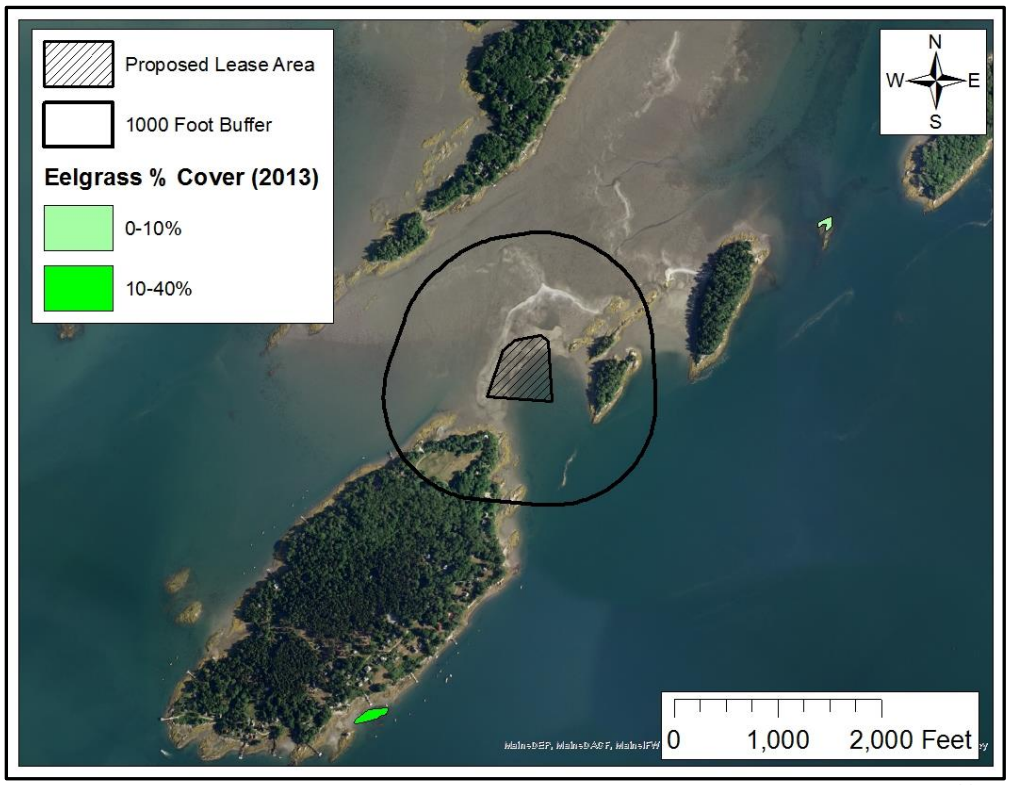

Figure 10: Historical eelgrass (*Z. marina*) in vicinity of proposed lease.[22]

[21] Data obtained from MDMR maintained Feature Class "GISVIEW.MEDMR.Eelgrass"
[22] Data obtained from MEDEP maintained SDE Feature Class "GISVIEW.MEDEP.Eelgrass2013"

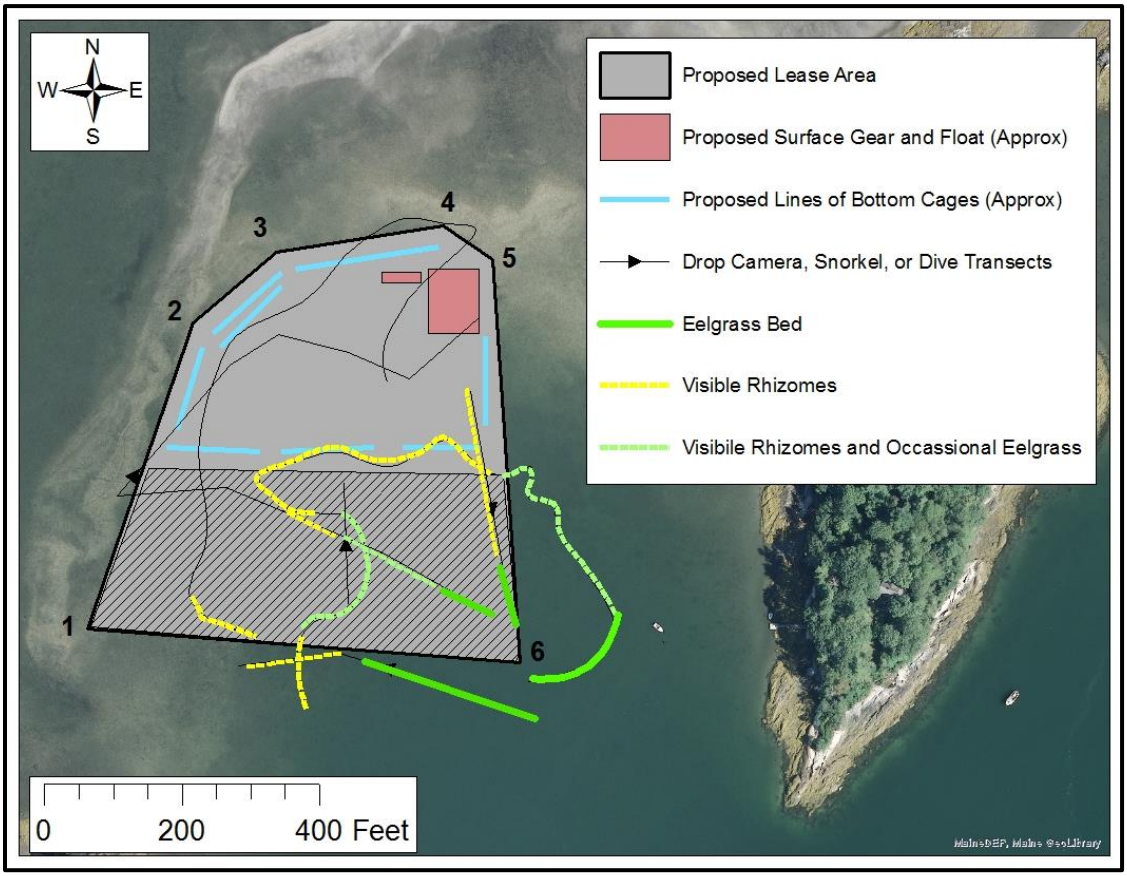

Figure 11: Approximate location of proposed bottom and surface gear on proposed lease site, along with eelgrass (*Z. marina*) observed within and near the proposed lease site during July 8, 2021 drop camera transects and July 28, 2021 snorkel and scuba transects.

Wildlife

According to GIS (Geographic Information System) data maintained by the Maine Department of Inland Fisheries and Wildlife (MDIF&W) and available through the Maine Office of GIS, the northern and western portions of the proposed lease overlap with an area of emergent wetland-mudflat complex that is Tidal Waterfowl and Wading Bird Habitat (Figure 12). Tidal Waterfowl and Wading Bird Habitat is considered a Significant Wildlife Habitat in Maine. Additionally, the proposed lease is located approximately 45 feet from the 660-foot buffer around a bald eagle (*Haliaeetus leucocephalus*) nest located on Sow and Pigs Island that was listed as unoccupied in 2018. The proposed lease is located over 1,000 feet from the 660-foot buffer around a bald eagle nest listed as occupied by a breeding pair in 2018. Bald eagles are no longer recognized in Maine as a Species of Special Concern. However, they are protected by the Federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Email correspondence between MDMR staff and US Army Corps of Engineers[23] indicates that a typical recommendation from the USFWS might include restricting the project activities within 660 feet of the bald eagle nest to between August 16th and January 31st, unless the nest is inactive.

[23] Email from J. Jacobson to C. Adams, received on June 22nd, 2020

On July 16, 2021 a Request for Agency Review and Comment was sent to MDIFW. At the time of this report a response had not been received.

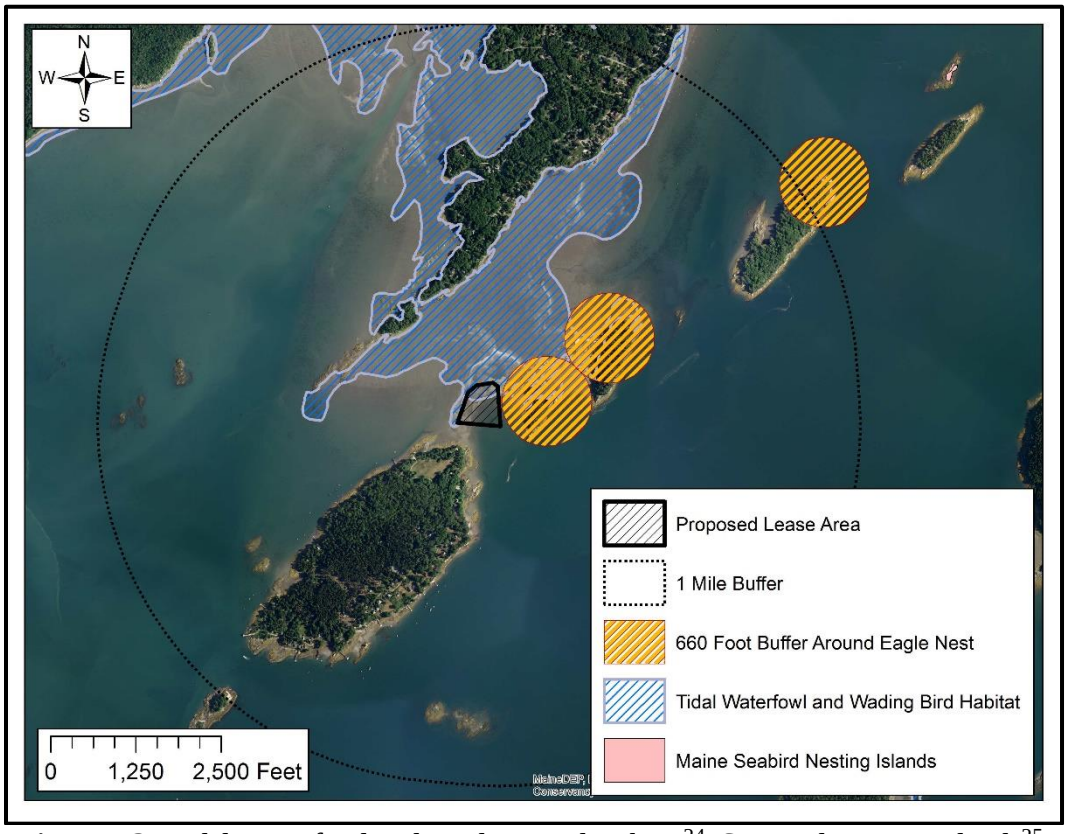

Figure 12: Tidal Waterfowl and Wading Bird Habitat[24], Sea Bird Nesting Islands[25], and bald eagle nests[26] near the proposed lease site.

(6) Source of Organisms to be Cultured

Table 5 details the proposed sources of stock for each species.

Table 5. Proposed seed sources.[27]

Species	Proposed Source(s)
American/eastern oysters (*Crassostrea virginica*)	Muscongus Bay Aquaculture (Bremen, ME) Mook Sea Farm (Walpole, ME) Chad Coffin (Freeport, ME)[28] Downeast Research Institute (Beals, ME)
Northern quahog (*Mercenaria mercenaria*)	Muscongus Bay Aquaculture (Bremen, ME) Downeast Research Institute (Beals, ME)

[24] Data obtained from: https://services1.arcgis.com/RbMX0mRVOFNTdLzd/arcgis/rest/services/MaineDIFW_TWWH/FeatureServer
[25] Data obtained from: https://services1.arcgis.com/RbMX0mRVOFNTdLzd/arcgis/rest/services/SNI/FeatureServer
[26] Data obtained from USFWS: https://services.arcgis.com/QVENGdaPbd4LUkLV/ArcGIS/rest/services ("Maine_Bald_Eagles_2019_with_twn_cnty")
[27] Application, pages 2 and 3.
[28] The application does not indicate from where the stock sourced from Mr. Coffin would originate.

Arctic surf clams (*Mactromeris polynyma*)	Downeast Research Institute (Beals, ME)
Razor clams (*Ensis leei*)	Downeast Research Institute (Beals, ME)
European oysters (*Ostrea edulis*)	Downeast Research Institute (Beals, ME)
Bay scallops (*Argopecten irradians*)	Muscongus Bay Aquaculture (Bremen, ME)
Soft shell clams (*Mya arenaria*)	Downeast Research Institute (Beals, ME)

(7) Interference with Municipal, State, or Federal Facilities

There are no beaches, parks, docking facilities, or conserved lands owned by municipal, state, or federal government within 1,000 feet of the proposed lease site (Figure 13). However, the Bustins Island Village Corporation own parcel(s) on the northern end of the island, within 1,000 feet of the proposal, that host a golf course and a boat launch. Use of this boat launch is discussed in *Section (2): Navigation.* The closest conserved land to the proposed lease is Pettingill Island, the uplands of which are located 1,340 feet to the northeast of the proposed lease. Pettingill Island is held in private conservation by Freeport Conservation Trust.

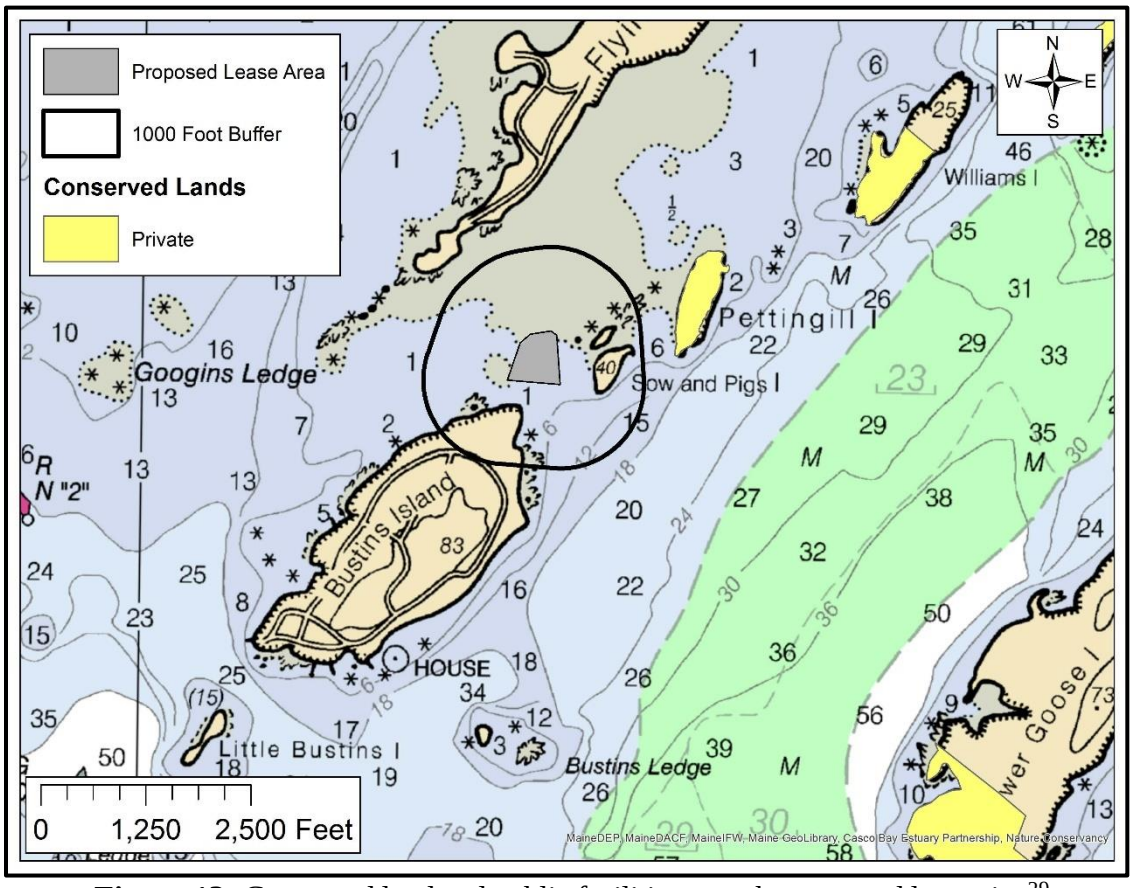

Figure 13: Conserved land and public facilities near the proposed lease site.[29]

(8) Water Quality

[29] Data obtained from SDE Feature Class sourced from The Maine Office of GIS "GISVIEW.MECONSLANDS.Conserved_Lands"

The proposed lease area is currently classified as "Open/Approved" for the harvest of shellfish by the MDMR Bureau of Public Health. At the time this report was published, the nearest closure line was located approximately 125 feet to west and classified as "Prohibited".

(9) Lighting

The applicant proposes to use up to five headlamps on the site during the winter months.[30]

(10) Noise

According to the application, boats proposed for use at the lease site include a 24-foot skiff or similar replacement vessel, powered by outboard motors between 9.9 and 130-horsepower.[31] The boats proposed are consistent with the size and type of vessels routinely used for aquaculture operations, as well as other commercial and recreational uses, along the Maine coast. According to the application, the only other engine-powered equipment used on the site would be a pressure washer powered by a 2500-watt generator, which is proposed to be used up to two days a week, up to three hours at a time.[32] The applicant has four strategies she would employ to reduce noise levels on the proposed lease which are detailed on page 12 of the application.

(11) Visual Impact

The proposal, which includes a float with a 10.5-foot-tall roof, complies with the MDMR's height and visual impact limitations.

[30] Application, page 20 (labelled in application as page 13)
[31] Application, page 12
[32] Application, page 12