Figure 1: Vicinity map

Location: East of Stage Island, Stage Island Bay, Georgetown, Sagadahoc County, Maine

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

Site Review by: Jon Lewis, Marcy Nelson and Flora Drury
Report Preparation by: Flora Drury, Marcy Nelson, and Jon Lewis

October 29, 2019
The applicant, High Tide Shellfish Farm, is requesting 2.25\(^2\) acres off the eastern shore of Stage Island, in Georgetown, for the suspended culture of American/eastern oysters (*Crassostrea virginica*). The applicant proposes to deploy up to 400 GoDeep™ oyster bags along a total of five longlines, each line measuring two hundred feet in length.\(^3\) Maine Department of Marine Resources (MDMR) staff Jon Lewis, Marcy Nelson, and Flora Drury assessed the proposed lease site on September 13, 2019. MDMR arrived on site at approximately 10:00 am.

**General Characteristics**

The proposed lease is located east of Stage Island, in Stage Island Bay, Georgetown (Figure 1 and Images 1-6). The Stage Island shoreline is composed primarily of ledge, and the uplands are dominated by a mixed forest. Although no residential buildings were observed on Stage Island, MDMR staff observed houses, docks, and moorings on or nearby Kennebec and Indian Points, which are located to the north of the proposal on Georgetown Island (Figure 2).

![Figure 2: Proposed lease area with approximate dive transect conducted on September 13, 2019.](image-url)

\(^2\) Applicants originally requested 2.06 acres. DMR calculations, based on the coordinates provided by the applicants, indicate the area is 2.25 acres.

\(^3\) App, page 10
Image 1: Looking west at Stage Island from the SE Corner of the proposed lease site (September 13, 2019).

Image 2: Looking northwest at Kennebec Point from the SE Corner of the proposed lease site (September 13, 2019).
Image 3: Looking northeast at Indian Point and Sagadahoc Bay from the SE Corner of the proposed lease site (September 13, 2019).

Image 4: Looking east, between Indian Point and Salter Island, from the SE Corner of the proposed lease site (September 13, 2019).
Image 5: Looking southeast at Salter Island from the SE Corner of the proposed lease site (September 13, 2019).

Image 6: Looking south from the SE Corner of the proposed lease site (September 13, 2019).

Depth

At the time of MDMR’s site assessment, depths at the corners of the proposed lease site ranged from 20.5 to 24.5 feet, as measured with a transom-mounted depth sounder. MDMR staff observed the depths of the proposed lease site at approximately 10:00 am. High tide, with a height of 8.31 feet, was
predicted to occur at 11:41 am. Correcting for tidal variation derives water depths approximately 1.3 feet higher at the nearest high water (21.8-25.8) and 7 feet lower (13.5-17.5 feet) at mean low water (0.0 feet).

**Table 1:** Tide predictions: Fort Popham, Hunniwell Point, Kennebec River, Maine
(43.7550° N, 69.7850° W)\(^4\)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Height (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/13/19</td>
<td>5:30 AM</td>
<td>0.40 L</td>
</tr>
<tr>
<td>9/13/19</td>
<td>11:41 AM</td>
<td>8.31 H</td>
</tr>
<tr>
<td>9/13/19</td>
<td>5:38 PM</td>
<td>0.81 L</td>
</tr>
</tbody>
</table>

**Bottom Characteristics**

MDMR staff observed the bottom characteristics of the proposed lease site via a SCUBA transect on September 13, 2019 (Figure 2). 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; no sediment samples were taken or grain size analysis performed. The bottom of the proposed lease is composed primarily of sand (Image 7).

*Image 7: Sand bottom of proposed lease site (September 13, 2019).*

**Table 2:** Bottom characteristics of proposed site

<table>
<thead>
<tr>
<th>Substrate Origin</th>
<th>Substrate Class</th>
<th>Substrate Subclass</th>
<th>Substrate Group</th>
<th>CMECS Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologic Substrate</td>
<td>Unconsolidated</td>
<td>Fine Unconsolidated</td>
<td>Sand</td>
<td>1.2.2.2</td>
</tr>
</tbody>
</table>

\(^4\) [http://tbone.biol.sc.edu/tide/tideshow.cgi](http://tbone.biol.sc.edu/tide/tideshow.cgi)
Position and Distances to Shore

POSAID Positioning Software was 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 – 2.25 Acres (Figure 2)

<table>
<thead>
<tr>
<th>Corner</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW</td>
<td>43° 45' 01.53” N</td>
<td>69° 45' 44.17” W then 314.07 feet at 86.30° True to</td>
</tr>
<tr>
<td>NE</td>
<td>43° 45' 01.73” N</td>
<td>69° 45' 39.90” W then 311.46 feet at 172.55° True to</td>
</tr>
<tr>
<td>SE</td>
<td>43° 44' 58.68” N</td>
<td>69° 45' 39.35” W then 301.96 feet at 263.84° True to</td>
</tr>
<tr>
<td>SW</td>
<td>43° 44' 58.36” N</td>
<td>69° 45' 43.44” W then 325.43 feet at 350.52° True to NW.</td>
</tr>
</tbody>
</table>

Table 3: Approximate distances from proposed lease to surrounding features (Figures 1 & 2). Measurements were made using digital orthophotography provided by the Maine Office of GIS (orthocoastalcentralcoast2003and2005).

<table>
<thead>
<tr>
<th>Feature</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NW Corner to nearest point, Stage Island (MLW)</td>
<td>~330 feet to the southwest</td>
</tr>
<tr>
<td>Northern Boundary to ledges south of Kennebec Point</td>
<td>~850 feet to the north</td>
</tr>
<tr>
<td>NE Corner to Nearest Point, Indian Point (MLW)</td>
<td>~970 feet to the northeast</td>
</tr>
<tr>
<td>SE Corner to Nearest Point, Salter Island (MLW)</td>
<td>~1,660 to the southeast</td>
</tr>
<tr>
<td>SW Corner to nearest point, Stage Island (MLW)</td>
<td>~280 feet to the west</td>
</tr>
</tbody>
</table>

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

(1) Riparian Ingress and Egress

During MDMR’s site assessment on September 19, 2019, no docks or moorings were observed in the immediate vicinity of the proposed lease site. The closest infrastructure was observed to the north of the proposal, off Kennebec and Indian Points. These docks and moorings were located more than 1,000 feet from the proposal and are therefore unlikely to be impacted by the proposed operations.

No houses, docks, or moorings were observed on the east side of Stage Island, adjacent to the proposed lease. It should be noted, however, that a sand beach is located immediately west of the proposal, and because the majority of the island’s shoreline is composed of ledge, it is possible that this location is used as a landing site. With more than 280 feet between the western boundary of the proposed lease and the nearest point of land on Stage Island at MLW, access to this sand beach would not be prevented by the proposed lease, if granted.
(2) **Navigation**

The proposed lease is located between Stage, Salter, and Georgetown Islands in the Town of Georgetown (Figure 1). The proposed lease is located over 1,000 feet from Salter Island to the southeast and east and is located over 800 feet from Georgetown Island and the surrounding ledges to the north and northeast. Due to these distances, it is unlikely that navigation north, south, and east of the proposed lease would be obstructed.

It is possible that larger vessels might opt to avoid navigating between the lease and the Stage Island shoreline to the west, if the proposal were to be granted. However, it is likely that most motorized or hand-powered vessels would be able to navigate between the proposal and the shoreline to the west without hinderance.

(3) **Fishing and Other Uses**

During MDMR’s site assessment on September 13, 2019, lobster fishing was the only commercial or recreational fishing activity observed within or near the proposed lease site. During the visit, four lobster boats were observed in operation in the general vicinity of the proposal. MDMR staff estimated that approximately 50 lobster buoys were observed between Stage and Salter Islands at this time. The majority of these buoys were observed to the south and east of the lease, although buoys were also observed between the proposal and Stage Island to the west; only one buoy was observed within the proposed lease boundaries. During the SCUBA transect, MDMR divers observed an abundant number of American lobsters (*Homarus americanus*) within the proposed lease boundaries (Image 8).

![Image 8: Lobster on bottom of proposed lease site (September 13, 2019).](image-url)
(4) Other Aquaculture Uses

There are no other existing or proposed aquaculture leases or licenses within one mile of the proposed lease.

(5) Existing System Support

On September 13, 2019, MDMR staff conducted a SCUBA transect within the proposed lease site to assess the epibenthic ecology of the area (Figure 2). The bottom of the proposed lease is composed of sand. Epibenthic macro flora and fauna observed during the dive transect are described in Table 4. American lobster (*Homarus americanus*) and sand dollar (*Echinarchnius parma*) were dominant faunal species observed along the transect.

Table 4: Species observed by MDMR divers within the proposed lease site, on September 13, 2019.

<table>
<thead>
<tr>
<th>Species Observed</th>
<th>Abundance</th>
</tr>
</thead>
<tbody>
<tr>
<td>American lobster (<em>Homarus americanus</em>)</td>
<td>Abundant</td>
</tr>
<tr>
<td>Sand dollar (<em>Echinarchnius parma</em>)</td>
<td>Abundant</td>
</tr>
<tr>
<td>Hermit crab (<em>Pagurus sp.</em>)</td>
<td>Common</td>
</tr>
<tr>
<td>Sea lettuce (<em>Ulva sp.</em>)</td>
<td>Common</td>
</tr>
<tr>
<td>Rockweed (<em>Fucus sp.</em>)</td>
<td>Common</td>
</tr>
<tr>
<td>Irish moss (<em>Chondrus crispus</em>) and various species of filamentous algae</td>
<td>Common</td>
</tr>
<tr>
<td>Sugar kelp (<em>Saccharina latissima</em>)</td>
<td>Rare</td>
</tr>
<tr>
<td>Crab (<em>Cancer sp.</em>)</td>
<td>Rare</td>
</tr>
</tbody>
</table>

Eelgrass (*Zostera marina*)

Historical eelgrass (*Zostera marina*) data collected by The Maine Department of Marine Resources indicates that, in 2005, the closest observed eelgrass bed to the proposed lease was located approximately 310 feet to the west (Figure 4). The presence of eelgrass well to the west of the proposed lease was confirmed by MDMR divers during the SCUBA transect conducted on September 13, 2019. The proposed lease operations are unlikely to shade or disrupt existing eelgrass beds.
Wildlife

During MDMR’s site review on September 13, 2019, double-crested cormorants (*Phalacrocorax auritus*), herring gulls (*Larus argentatus*), and great blue herons (*Ardea herodias*) were observed near the proposed lease site.

According to GIS (Geographic Information System) data maintained by MDIF&W and available through the Maine Office of GIS, the proposed lease overlaps with the 1/4-mile buffer associated with a bald eagle (*Haliaeetus leucocephalus*) nest. Essential Habitat for the roseate tern (*Sterna dougallii*), Tidal Wading Bird and Waterfowl Habitat, and eider duck (*Somateria mollissima*) habitat, is also located in the immediate vicinity of the proposed lease (Figure 5).

In an email dated June 26, 2019, Becca Settele, a Wildlife Biologist for MDIF&W, responded to a “Request for Agency Review and Comment” stating:

> Minimal impacts are anticipated. However, the proposed lease intersects with a bald eagle protective buffer. Until recently, bald eagles were listed as a Species of Special Concern in Maine. However, eagles continue to be protected under the federal Bald Eagle and Golden Eagle Protection Act (“Eagle Act”) as well as other federal laws, and will defer to any recommendations the USFWS may have.

---

5 Data obtained from Maine Department of Marine Resources Open Data “MaineDMR – Eelgrass 2010”.

---

**Figure 4:** Historical records of eelgrass (*Z. marina*)\(^5\) in the vicinity of the proposed lease site.
Figure 5: Tidal Wading Bird and Waterfowl\(^6\); Shorebird\(^7\); Endangered, Threatened, or Species of Special Concern\(^8\); and Essential Habitat\(^9\) near the proposed lease site.

(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 6). The closest publicly-owned property to the proposed lease is South Sugarloaf Island, which is located over 2,000 feet to the west of the proposed lease at mean low water.

---

\(^{6}\) Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.Twwh”

\(^{7}\) Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.Shorebird”

\(^{8}\) Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.ETSC”

\(^{9}\) Data obtained from MDIWF maintained SDE Feature Class “GISVIEW.MEIFW.EhplvtrnPoly” and “GISVIEW.MEIFW.Ehrtern”
(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**

According to the application, lights would only be used on the proposed lease site during emergency situations.\(^\text{11}\)

(9) **Noise**

The proposed lease would be accessed and serviced by a 17-foot skiff, powered by a 40 horsepower, 4-stroke engine and a 20-foot skiff, powered by a 90 horsepower, 4-stroke engine.\(^\text{12}\)

(10) **Visual Impact**

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

---

\(^{10}\) Data obtained from SDE Feature Class sourced from The Maine Office of GIS “GISVIEW.MECONSLANDS.Conserved_Lands”

\(^{11}\) App page 26

\(^{12}\) App page 24