



## Department Site Review 2004-41

### A. On Site Inspection

Date: September 28, 2005

The site proposed for an aquaculture lease for the suspended culture of Blue Mussels (*Mytilus edulis*) located east of Hope Island, in the town of Cumberland Maine has been evaluated. The area was inspected by underwater video for the local flora and fauna and bottom composition; and proximity to shore, local fisheries, and other uses of the area were determined.

The proposed acreage of the site in the application is 2.00 acres. Coordinates described in the application were not accurate. The northeastern corner was shifted to the west. POSAID positioning software was used to reposition that point, as well as the northwestern and southeastern point, to describe a rectangle of 696 feet by 125 feet (2 acres). Figure 1 shows the general area from NOAA Chart 13292, datum NAD83/WGS84, imported into Garmin MapSource.

### 1. Bottom Composition, Depth, Features and Currents

#### Bottom topography and composition

On September 28, 2005, a SCUBA diver survey, utilizing an underwater video camera to document the bottom characteristics and local flora and fauna, was performed. The dive/video transect started at the northern edge of the proposed lease boundary, continued southward under the center of the lease site and continued to the south and west toward the nearshore slope on the eastern side of Hope Island.

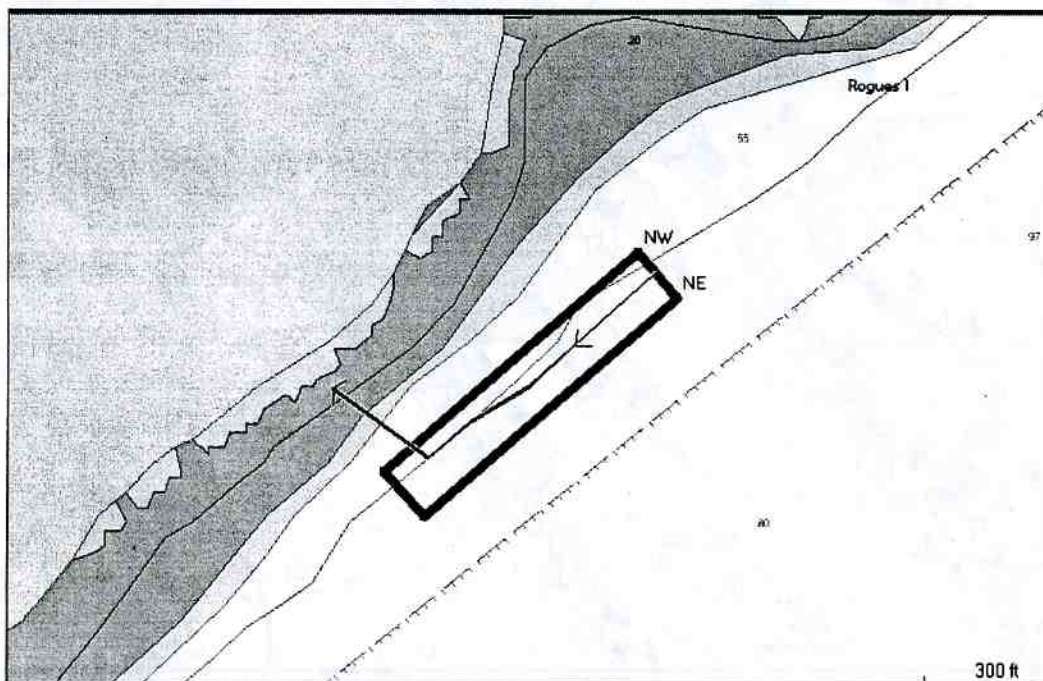


Figure 2 – proposed lease site and dive track

The bottom of the proposed aquaculture lease site consists primarily of a very soft flat mud bottom. The thickness of the mud layer was measured by having one of the divers insert an arm into the sediment until firm bottom was reached. The thickness was found to be a minimum of 12 inches. The bottom topography is flat and mostly barren. Depth throughout the northern 2/3<sup>rd</sup>s of the proposed lease site was constant and no breaks in the topography were observed. The site deepened slightly to the east. The area to the west of the proposed lease is

comprised of firmer sediments and a long gentle slope toward Hope Island. This area contained small boulders and ledge outcrops.

### Depth

Depth measurements were collected using a vessel mounted depth sounder and depth recording instruments during the SCUBA dive. Maximum depth during the dive was 77 feet. The site deepened to the east and the center of the channel, and rose slightly toward the west until the slope toward Hope Island was encountered. A minimum depth of 70 feet was observed within the lease site. If rafts were to be installed on this site there would be more than adequate distance between dropper ropes containing mussels and the sea floor at all water levels. Minimum water depth under the rafts would be approximately 65-70 feet.

### Features and Currents

The proposed lease site is located along the eastern shore of Hope Island. The site is uniformly flat with very soft sediments. Currents are primarily tidal driven in a northeast/southwest direction depending on tidal stage.

## 2. Typical Flora and Fauna

### Local flora and fauna from underwater video observations

The relative abundance of macroflora and fauna observed throughout the video transect are listed below (Figure 2).

Date: September 28, 2005

Time: 22 min (11:54 – 12:16)

Length: ~850 feet

Visibility: ~5 feet.

Max depth: 77 feet

Direction: north to south (~235°)

### Relative abundance of species

**Abundant:** None

**Common:** Sand Shrimp (*Crangon septemspinosa*).

**Occasional:** American lobster (*Homarus americanus*); lobster burrows (vacant); burrows ~1-2" in diameter – likely created by wry-mouth eels (*Cryptacanthodes maculatus*)

## 3. Observed Fishing Activity

On September 28, 2005, approximately 10-12 lobster buoys were observed within the proposed lease boundaries. It is unknown if these buoys represented single traps or multiple traps per buoy. Approximately 75 trap buoys were observed in the vicinity (both east and west) of the proposed lease. The area obviously sees a substantial amount of lobstering activity.

No other fishing activity was observed in the area. Due to the soft mud bottom little or no other commercial activity is likely (e.g. scalloping, urchining etc). Some recreational fishing may occur in the area closer to Hope Island although this was not substantiated by any on-site observations.

**4. Distances to Shore**

A WAAS GPS was used to navigate to each of the proposed lease corners. It was determined that the northeastern corner coordinates were not accurate. Using POSAID Positioning Software Version 2.0, the distance and bearing between the corners was recalculated to describe a 2.0 acre area. Distances to shore were estimated using NOAA Chart #13292 and the measuring tools provided in Garmin MapSource, Version 4.12, charting software.

**Final Lease Corner Coordinates (NAD83/WGS84)**

<u>Corner:</u>	<u>Latitude:</u>	<u>Longitude</u>
SW	43° 42' 19.000"N	70° 06' 49.000"W
NW	43° 42' 23.487"N	70° 06' 41.822"W
NE	43° 42' 22.552"N	70° 06' 40.711"W
SE	43° 42' 18.065"N	70° 06' 47.889"W

**Metes and Bounds:**

	<u>Distance:</u>	<u>Bearing:</u>
From SW to NW Corner	696 feet	049° True
From NW to NE Corner	125 feet	139° True
From NE to SE Corner	696 feet	229° True
From SE to SW Corner	125 feet	319° True

**Position and distance to shore: See Figures 1 and 2**

NW Corner to Rogues Island	~ 551 feet	024° True
Northern boundary to green can "1"	~ 1,441 feet	041° True
NW Corner to Hope Island	~ 383 feet	299° True
SW Corner to Hope Island	~ 238 feet	318° True
NE Corner to Cliff Island	~ 2,750 feet	094° True
SE Corner to Cliff Island	~ 3,010 feet	126° True
Eastern boundary to east side of navigable water	~ 2,489 feet	127° True

**5. Navigational Channels and Moorings**

**Moorings:** No moorings were observed within the boundaries, or immediate vicinity, of the proposed lease site. Thus, the proposed activities will neither interfere with riparian ingress and egress nor access to moorings.

**Navigation:** The proposed activities are not expected to interfere with navigation in the area. The proposed lease site is located off the eastern shore of Hope Island and vessels transiting through the area are likely to give the ledges to the north (Rogues Island) of the proposed lease site a wide-berth. Choosing this safe route around the ledges also aids in avoidance of the rafts. Little room (238 feet) exists to transit between the proposed lease site and Hope Island however approximately 2,485 feet of navigable waters exists to the east of the proposed rafts.

**B. Documented Information**

**1. Tides**

Tidal range for Cliff Island, Luckse Sound is 9.1 feet mean, 10.4 feet spring. Cliff Island, Luckse Sound corrections are based on Portland, Maine. Tides during the site review are listed<sup>3</sup>. Times are Eastern Daylight Savings Time.

Tide Corrections for Cliff Island, Luckse Sound			
Time	Height (ft)	Time	Height (ft)
HW	HW	LW	LW
-0:02	*1.00	-0:02	*1.00

28 Sep 2005 (dst) 43° 42.000' N 070° 07.000' W  
Cliff Island, Luckse Sound

Low @ 02:20 of 1.2 Ft. High @ 08:34 of 7.9 Ft.  
Low @ 14:29 of 1.9 Ft. High @ 20:43 of 8.8 Ft.

**2. Current**

See section A.1. Features and Currents.

**3. Ice**

Due to water depth, currents and a large southwesterly fetch, the area of the proposed lease is not expected to ice over solidly with any frequency. This southwesterly fetch may create periods of rough water and icing spray however. Pan ice should be expected to flow through the area from other locations in Casco Bay, and from shelf ice on Hope Island.

**4. Shellfish beds**

The DMR Water Quality project and PSP Monitoring (red tide) Program provided information on testing stations in the proposed lease area.

**Water Quality:** The area of the proposed lease is classified as open/approved to the harvest of shellfish.

**Red Tide:** According to Laurie Bean of the MDMR Water Quality Group, the nearest red tide (Paralytic Shellfish Poisoning) stations sampled by DMR are located at Littlejohn’s Bridge on Littlejohn’s Island/Cousin’s Island, Winslow Park, Mere Point, Basin Point, and Potts Point.

Ms. Bean stated that the area has recently experienced toxic levels of paralytic shellfish poisoning, resulting in the closure of the area to the harvest of shellfish. This area was closed for approximately 10 weeks in 2005. The applicant has provided samples of mussels from his other lease sites to the DMR.

laboratory for PSP testing to ensure the product is safe for human consumption. At any time the DMR Public Health Division detects toxic levels of PSP the applicant would be prohibited from harvesting mussels until the area is reopened by the DMR.

## 5. Existing Aquaculture Sites

The majority of all finfish type leases are located in Washington and Hancock counties. The greatest concentration of shellfish leases is located in the Damariscotta River region. The names and approximate distances to the DMR leases nearest the proposed lease site are listed below. More detailed descriptions of the following lease sites can be found in the 2003 Aquaculture Lease Inventory published by the Maine Department of Marine Resources. Approximate distances were determined by plotting the existing and proposed lease sites onto NOAA Chart #13292 and using the measuring tool in the Garmin MapSource navigational software. In no case would interference with existing shellfish leases be anticipated if this lease were to be granted.

Aqua Farms Limited Liability Company, suspended culture of Blue Mussels (**AFLL CF2**) ~3.8 miles to the west

Aqua Farms Limited Liability Company, suspended culture of Blue Mussels (**AFLL BA2**) ~1.7 miles to the northeast

Eric Horne and Valy Steverlynck, bottom culture of American oysters, European oysters, quahogs, and surf clams (**HSBP CR**) ~6.4 miles to the northwest.

Chance Along Farm, Inc., suspended culture of American oysters, European oysters, quahogs, and surf clams (**CAFI YM**) ~7.0 miles to the northwest

Chance Along Farm, Inc., suspended culture of American oysters, European oysters, quahogs, and surf clams (**CAFI HR**) ~8.0 miles to the north.

Chance Along Farm, Inc., floating and bottom culture of American oysters, soft-shell clams, blue mussels, scallops, quahogs, and surf clams (**CASF MQ1 and MQ2**) ~10.6 miles to the northeast.

## 6. Harbormaster

The town of Cumberland employs Mr. Ted Curtis as Harbormaster. The DMR sent Mr. Curtis a Harbormaster Questionnaire on January 4, 2005 asking for his comments about the proposed lease site. No reply was received by the DMR as of the writing of this report. Continued efforts will be made by the DMR to contact the Cumberland Harbormaster by telephone and if successful, their comments will be included into the administrative record for this lease application.

## 7. Additional

According to the Maine Department of Inland Fish and Wildlife (IF&W) 2005 maps documenting **Essential Habitat for Endangered and Threatened Species**, there are no essential habitats within ¼ mile of the proposed lease area. The applicant provided a letter in his application from IF&W staff dated August 27, 1999 (?), indicating the same. The nearest Essential Habitat is located at the southern end of Clapboard Island, approximately 3.8 miles to the west.