STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
Standard Aquaculture Lease Application
Suspended culture of shellfish
Damariscotta River

Mook Sea Farms, Inc.
Lease DAM PP2
Docket # 2011-08

May 14, 2012

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION

Mook Sea Farms, Inc. applied to the Department of Marine Resources ("DMR") for a standard aquaculture lease on two sites in the coastal waters of the State of Maine in the Damariscotta River in the Town of Newcastle in Lincoln County: 24 acres located on the applicant's existing lease site DAM PP, east of Perkins Point, and 2.68 acres in the northwest tract of its existing lease site DAM EL2, east of Little Point, for the purpose of cultivating American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) using suspended culture. The applicant currently holds leases on both sites for bottom culture of the same species.

The application was accepted as complete on February 25, 2011. No one intervened in this case. A public hearing on this application was held on September 19, 2011, in Newcastle; the hearing was recessed and continued on November 2, 2011.

1. THE PROCEEDINGS

Notices of the hearing and copies of the application and DMR site report were sent to numerous state and federal agencies for their review, as well as to various educational institutions, aquaculture and environmental organizations, the Town of Newcastle and the Newcastle Harbormaster, members of the Legislature, representatives of the press, riparian landowners, and others on the Department's mailing list. Notice of the hearing was published in the *Lincoln County News* on August 11 and September 8, 2011 and in the *Commercial Fisheries News* September, 2011 edition.

Sworn testimony was given at the hearing by: Bill Mook, on behalf of the applicant; Jon Lewis, DMR Aquaculture Environmental Coordinator; Newcastle Harbormaster Paul Bryant; and by Karen Benner, Joseph Griffin, Rob Nelson, James Sparrell, Andrew Stevenson, and Lucas Wegman. Mr. Mook described his proposed project and answered questions. Mr. Lewis described the site visit and presented a videotape of the bottom. Mr. Bryant asked questions and presented concerns on behalf of himself and the Damariscotta-Newcastle Joint Harbor Committee about the effect of the project on navigation and access to moorings. Mr. Stevenson

testified in support of the project. The other witnesses testified to their concerns about the effect of the lease on their uses of the river, primarily for navigation.

Each witness was subject to questioning by the Department, the applicant, and members of the public. The hearing was recorded by DMR. The Hearing Officer was Diantha Robinson.

The evidentiary record before the Department regarding this lease application includes 17 exhibits introduced at the hearing (see exhibit list below), and the record of testimony at the hearing itself. The evidence from all of these sources is summarized below.[1]

LIST OF EXHIBITS[2]

Hearing on 9-19-11

1. Case File, Docket 2011-08

2. Application dated 2-2-11

3. Site Report dated 7-8-11

4. Aerial photo showing leases EL and EL2 (DAM EL2 site report, Figure 3), 17" x 22" William Vaughan's dock labeled "WV" by Mr. Mook at 9-19-11 hearing

5. Photo of OysterGro cages close-up, including pontoons (DAM EL2 and PP site reports, Figure 6) 17" x 22"

6. Photo of OysterGro cages flipped with pontoons beneath, looking toward western shore from lease DAM EL (DAM EL2 and PP site reports, Figure 5) 17" x 22"

7. Photo of OysterGro cages, flipped and not flipped (not in site reports) 17" x 22"

8. Poster, Chart of Damariscotta River with all lease sites shown, leases DAM EL2 & DAM PP are shaded gray (DAM PP site report, Figures 1, & 7; DAM EL2 site report, Figure 1)

9. Poster, Aerial photo of Damariscotta River with all lease sites shown, leases DAM EL2 & DAM PP are shaded ray (DAM PP site report, Figure 2)

10. Poster, Chart of Damariscotta River showing lease DAM PP only (not in site report)

11. Poster, Aerial photo of Damariscotta River showing lease DAM PP only (not in site report)

12. Document, Damariscotta-Newcastle Harbor ordinance, page 6

13. Document, statement of Newcastle Harbormaster Paul Bryant, 1 page

Hearing on 11-2-11

[1] In references to testimony, "Smith/Jones" means testimony of Smith, questioned by Jones. References are to testimony at the September 19, 2011 hearing, unless the November 2, 2011 hearing is indicated.

[2] Cited as CF, App, SR, with page numbers or item numbers indicated. Other exhibits are cited by exhibit number.

14. Document, color copy of NOAA chart 13293 showing lease DAM PP with small blue numbers indicating water depths as measured by Bill Mook on Sept. 29, 2011

15. Document titled "Additional Testimony: DAM EL2 & DAM PP Conversion from Bottom to Suspension Culture" by Bill Mook, 4 pages

16. Aerial photograph titled "El – EL2 Gear," showing gear as deployed on 11-2-11 on lease DAM EL and as proposed to be deployed on lease DAM EL2 if the application is approved, 1 page

17. Document titled "Appendix 5B, PP Maximum Structure and Mooring System Schematic (Top View)", 1 page

2. DESCRIPTION OF THE PROJECT

A. Overview of Project

Mr. Mook testified that he began his oyster farm in the Damariscotta River in 1986 with the lease DAM EL, a 4.8-acre lease for suspended culture. Lease DAM EL2, an 8.8-acre lease for bottom culture, was granted to Mook Sea Farms in 1998. These two sites lie adjacent to one another east of Little Point in a shallow area of the upper river, west of the main navigational channel. The company holds a third lease, DAM PP, granted in 1990 and located approximately a mile downriver from the other two lease sites. This is also a bottom lease for shellfish on 24 acres; it lies east of Perkins Point along the western edge of the river's main channel, also in shallow water (Mook, testimony).[3]

Mr. Mook has grown American oysters and other shellfish on these lease sites since they were granted, using floating mesh bags on DAM EL and bottom-planting oysters on the other two leases. In 2010, Mr. Mook changed the gear he uses on the DAM EL site, substituting wire mesh cages (referred to in the application and the hearing as "OysterGro" cages) for the floating mesh bags. Satisfied with the performance of the cages and concerned about the economics and environmental effects of bottom planting, he has now applied to use the cages on the DAM PP site and on the northwest tract of the DAM EL2 site (Mook, testimony). He submitted a single application to do this on both existing lease sites.

The Department accepted the application for review after requiring some modifications in the proposed layout of gear to accommodate navigation. Department biologists subsequently visited both sites and prepared two separate site reports. A single hearing was held at which the proposal to use cages on both sites was described and discussed. The proposed operations are the same for both sites, although the layout of the gear will be different. The Department is issuing two separate decisions on the application, one pertaining to lease DAM PP, the other to lease DAM EL2.

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[3] "Suspended culture" means that the authorized species are grown on the lease site using aquaculture gear which floats at or below the surface or rests on the sea bottom; " bottom culture" means that the species are free-planted on the sea bottom and no gear other than marker buoys is placed on the lease site.

The layout of gear was the main focus of concern during the hearing because of concerns that the floating cages could interfere with navigation in the river. Although Mr. Mook revised his original gear plans at the Department's request before the application was accepted for review, testimony and questions at the hearing indicated a need for additional revisions. The hearing on Sept. 19 was recessed to allow Mr. Mook to make such revisions and to consult with Mr. Bryant, the Newcastle Harbormaster, and with the Damariscotta-Newcastle Joint Harbor Committee. At the reconvened hearing on November 2, 2011, Mr. Mook presented revised plans for the layout of gear on the northwest tract of DAM EL2 and on DAM EL, as well as on DAM PP. These revised plans are described in Exhibit 15 and depicted in Exhibit 16 (DAM EL2 and DAM EL) and Exhibit 17 (DAM PP). The evidence on these issues is described below in sections 3 A, Riparian Access, and 3 B, Navigation.

B. Proposed Operations

Mr. Mook testified that there are three reasons for his proposal to change from bottom to suspended culture on the two lease sites. First, he said, bottom culture is unpredictable; survival rates for oysters range from 25% to 90%, with average survival for bottom-planted oysters below 50%. Second, he harvests bottom-planted oysters by dragging, which he said is inefficient in both labor and fuel costs. Third, dragging stirs up suspended particulates in the water column; he is concerned about the effects of turbidity on shellfish growth, especially on soft-bottom sites (Mook, testimony).

Mr. Mook said he thought suspended culture would not be cost-effective until he tried the OysterGro system and found it to be profitable. In 2010, he switched to OysterGro cages on his DAM EL lease (his only lease site currently authorized for gear) and had a 90% survival rate for oysters. With suspended culture, he said, he knows how many oysters he has, which is not the case with bottom-planted oysters (Mook testimony).

The pontoons attached to the wire-mesh cages are the key, according to Mr. Mook. For growing shellfish, the pontoons are filled with air and the cages float beneath them, just below the surface, where they do not collect floating seaweed and other debris as the floating mesh shellfish bags do. To control the growth of fouling organisms, the cages are flipped over every seven to ten days for 24 hours, to float with the pontoons underneath and the cages above, exposed to the air. The fouling material dries out and falls off the wire mesh. In winter, the pontoons are filled with water to sink the cages to the bottom (Mook testimony). Oysters inside the cages are contained in mesh shellfish bags.

The cages will be deployed in groups of parallel "strings" of no more than 50 cages (App 3). Although the drawings of the layout of cages contained in the application indicate that spacing between the lines of cages will be 30 feet, Mr. Mook testified at the November hearing that he reduced this to 20 feet in his revised gear plans (Exhibits 15, 16, 17). He said that he has used 20-

foot spacing between the cages on DAM EL site and found this space adequate for tending the cages (Mook, testimony 11-2-11).

The cages in each string are connected to a 3/8" poly "system line" which is attached at each end to a 1" poly/nylon "headline". The headlines lie perpendicular to the rows of cages on the system lines; they are moored at each end by three helix anchors and in the middle by four additional helix anchors (App 23 & 24; Mook testimony). The headlines are approximately 300 ft. long, depending on location (App 25).

According to the application,

> Cages are attached to each other as well as to a "system" line which runs from head line to head line. This grid system is currently holding 450 cages on our lease (EL) adjacent to Little Point and has withstood several severe storms including the October 15th [2010] northeaster with storm force winds and the most recent storm with winds over 60 mph. It has also held over 2000 floating bags prior to its use with cages. It should be noted that the OysterGro system offers the advantage of being "sinkable" to avoid extreme wind and wave conditions (App 4).

This mooring arrangement successfully held the cages on DAM EL in Hurricane Irene (August-Sept. 2011), Mr. Mook said. If a severe storm threatened, he would assess the situation and sink the cages most vulnerable to the highest wind, if he had time, but the cages have held against 60-knot winds (Mook/Nowak).

Equipment that will be visible on the lease sites if suspended culture is permitted will include: OysterGro wire cages containing mesh oyster bags, small boats (under 24 ft.) with outboard motors, and a 40' x 14' work raft (Mook, testimony; App 5,). The raft will be moved among the lease sites to tend the gear as needed (App 3). There is a fiberglass wheelhouse on the raft. A "cylindrical seed grading machine powered by a small gasoline engine" is located outside the wheelhouse on the raft (App 3). "Plastic mesh bags containing oysters will be transported to the raft by outboard boats where the seed will be graded in the drum grader and restocked in the mesh bags" (App 3). The bags are then placed in the wire cages.

Maximum development is proposed to be 600 cages on the northwest tract of DAM EL2 and 3600 cages on DAM PP. DAM EL, south of and adjacent to the northwest tract of DAM EL2, now has 800 cages in use (Mook, testimony). The remainder of lease DAM EL2, which lies just to the east of the northwest tract and adjacent to DAM EL, will remain available for bottom culture only. Mr. Mook originally proposed 650 cages for the DAM EL2 northwest tract in the application, but he testified that he had since reduced it to 600. With another 3600 cages on the DAM PP lease site, the total is 5,000 cages over Mr. Mook's three lease sites (Mook/Lewis).

Operations at the lease site will consist of flipping the cages periodically, thinning the number of oysters in the bags and grading them, and harvesting oysters on the day of shipment. Harvesting is done by pulling the cages out of the water into a small boat and removing the oyster bags inside. The cage is flipped upside down in the water until it is re-stocked. The bags of

market-size oysters are taken by boat either to the applicant's wharf and packing facility in Walpole or to the Damariscotta Town Landing (Mook testimony). Bags of seed oysters are taken to the work raft for thinning and grading. The bags are re-stocked and replaced in the cages, which are then flipped back into the normal growing position (App 5).

Work will occur on the lease sites on most days during the growing season, with less or no activity on weekends. "By the time temperatures drop in the fall, most of the grading and thinning will be done, and only cage drying and harvesting will occur" (App 7). In December, the cages will be sunk to the bottom for overwintering, to be brought up again in April for the new season.

Approximately 600,000 oysters will be grown initially in cages on the northwest tract of DAM EL2 and 3.6 million on DAM PP, less than the number that would have been seeded on the bottom in those locations, according to Mr. Mook, because there is no need to overplant in order to ensure that an adequate number survive to be harvested (Mook testimony). According to the application, the applicant's initial experience with OysterGro cages indicates that optimal stocking density per cage for the final growth phase (before harvest) is 1200 to 1400 oysters per cage (App 5). The application states, "If the final stocking density were 1400 oysters per cage, *theoretically*, DAM PP could hold up to 6.9 million at any one time and DAM EL2 would be just under 1.5 million" (App 6). The application continues:

> The rate and extent of scale up will ultimately depend on the cost effectiveness of the OysterGro system, and market conditions for Damariscotta River oysters as well [as] what we determine to be optimal stocking and thinning procedures for the oysters. The maximum stocking density for each site using OysterGro cages will be less than for bottom culture, for which 0.5 million oysters per acres [*sic*] is a standard planting density (App 6).

C. Site Characteristics

As noted above, the DAM PP site has been leased to the applicant since 1990 for bottom culture of American oysters and other shellfish. The Department's site report describes the lease site and its surroundings in light of the proposal to use gear on the site as follows:

> The proposed aquaculture lease site is located approximately 2.0 miles to the south of the Damariscotta/Newcastle Bridge. It occupies an area of shallow water, adjacent and to the west of the main navigation channel and to the east of mainland tidal mudflats. Tidal mudflats are extensive along the western shore of the upper Damariscotta River (Figures 1 and 3). Bottom sediments are a mixture of mud and silt over firm sand. Divers could insert their gloved hand approximately 6-8 inches before meeting resistance. Occasional rock outcrops were noted. The southeastern 1/3rd of the proposed lease is characterized by deeper water and firmer sediments. ...
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> Based on historical observations the area of the proposed lease is expected to ice over in some winters; drift ice from the upper reaches of the river is expected to

> flow through the lease site. During winter months, structures such as OysterGro cages, work rafts, bags, ropes and buoys may have to be removed and reset in the spring (SR 2-3).

The report notes that water depths at mean low water on the DAM PP site range from approximately one to ten feet. The effect of this range of depths is noted:

> The cages proposed by the applicant measure 1.67' in height. Within the shallower, northern and western portions of the proposed lease the cages would presumably sit on the bottom sediments at MLW (0.0') and any minus tides. During winter months cages would need to be submerged in the deeper, eastern portions of the lease and adequately marked to prevent prop strikes (SR 2).

The issue of minimum water depths above submerged cages on DAM PP is addressed below in section 3 B, Navigation.

The area around the site is currently classified by the Department's Water Quality Classification program as "open/approved for the harvest of shellfish" (SR 11).

The lease site lies parallel to the western shore of the river in relatively shallow water, out of the main navigational channel. Extensive mud flats separate the lease from the nearest upland shore, restricting navigation and shore access in this area at lower tidal stages. Two U.S. Coast Guard aids to navigation mark the westerly edge of the main navigational channel: the green day marker "19" lies 504 ft. north of the lease, and the green can buoy "17" lies 146 ft. east of the lease. The 12-ft. depth contour is approximately 80 – 100 ft. to the east. The nearest mudflats lie approximately 60-90 ft. to the west (SR 1, 4, Figures 1 & 2).

In the course of the site visit, Department scientists noted a discrepancy between the lease coordinates contained in the application and those used in the existing lease for the site (SR 3). That discrepancy was resolved with the applicant using the coordinates shown below, which increase the acreage from 23.8 to 24 acres.[4]

3. STATUTORY CRITERIA & FINDINGS OF FACT

Approval of standard aquaculture leases is governed by 12 M.R.S.A. §6072. This statute provides that a lease may be granted by the Commissioner of DMR upon determining that the project will not unreasonably interfere with the ingress and egress of riparian owners; with

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[4] **These coordinates appear in the DMR Site Report for Lease DAM PP, Docket # 2011-08, p. 3: DMR/DAM PP Corner Coordinates (Datum WGS84) – 24.0 acres T**

Corner	Latitude	Longitude	
NW	44° 00' 22.03"N	69° 32' 43.87"W	thence 359 feet at 112.7° True to
NE	44° 00' 20.66"N	69° 32' 39.34"W	thence 1,590 feet at 166.4° True to
ME	44° 00' 05.40"N	69° 32' 34.22"W	thence 731 feet at 193.5° True to
SE	43° 59' 58.38"N	69° 32' 36.56"W	thence 640 feet at 282.5° True to
SW	43° 59' 59.75"N	69° 32' 45.10"W	thence 908 feet at 18.8° True to
MW	44° 00' 08.24"N	69° 32' 41.10"W	thence 1,411 feet at 351.8° True to NW.

navigation; with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in an area; with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna; or with the public use or enjoyment within 1,000 feet of beaches, parks, docking facilities, or conserved lands owned by municipal, state, or federal governments. The Commissioner must also determine that the applicant has demonstrated that there is an available source of organisms to be cultured for the lease site; that the lease will not result in an unreasonable impact from noise or lights at the boundaries of the lease site; and that the lease will be in compliance with visual impact criteria adopted by the Commissioner relating to color, height, shape and mass.

A. Riparian Access

According to the site report, the nearest dock and mooring lie approximately 165 ft. and 147 ft., respectively, south of the southern boundary of the DAM PP lease site (SR 4, Figure 2). While the site has been leased for over twenty years, aquaculture gear has not been used there before. Installation of 3600 floating oyster cages will be a major change in that area of the river, as the cages will clearly impede most forms of navigation in the areas where they are deployed on the lease site. As noted above, however, the wide span of mud flats between the western edge of the site and the shore already inhibits access to and from the shore at lower stages of the tide.

> The site report notes that, with cages deployed as proposed, there appears to be sufficient room for access to and from the existing dock and mooring, although the report observes that "access to and from the north (through the lease site) obviously would be restricted [by the oyster cages]. Any interference by the proposed lease site would be somewhat dependent on the size and type of vessel accessing the dock and mooring. Water depths around the mooring are approximately six feet at mean low water" (SR 7).

While the addition of floating gear to the lease site will restrict access by water from north of the existing dock and float, ample open water remains to the east and south through which access can be gained. The navigation corridors that Mr. Mook will maintain as gear-free areas on the DAM PP lease site are also intended to provide access to the shore to the west, across the lease site. They are depicted in Exhibit 17 and described in more detail in the following section, 3 B, Navigation.

The DAM PP lease has been subject since its inception in 1990 to the following condition regarding moorings for certain riparian landowners to the west of the site:

> 1. Riparian owners in Newcastle of lots 59, 60, 63, and 65A shall have the right of single vessel mooring spaces off their properties. The lessee shall have the right to temporarily displace and relocate these moorings during harvesting of its shellfish.

The applicant has requested that moorings no longer be permitted on the DAM PP lease site. The application says:

> "Moorings on either of the proposed tracts would interfere with Mook Sea Farms' ability to efficiently use the spaces for cage culture. We would like these conditions removed if the proposed lease is approved. ...In the more than 20 years of operating on the Perkins Point site we have had no requests for moorings. ... Both proposed lease tracts are adjacent to mudflats ranging from 330 to over 500 feet wide at low water. This restricted access makes the sites undesirable for moorings" (App 11).

It became apparent in the course of the hearing that accommodation for moorings for riparian properties continues to be an important issue regarding this lease site. Newcastle Harbormaster Paul Bryant testified that he expects that there will be requests for additional moorings in the vicinity of the DAM PP lease site (Bryant, testimony). Mr. Nowak, a riparian landowner, asked at the hearing if there would be any provision for moorings on the lease site (Mook/Nowak). Mr. Bryant advised that the widest navigation corridor shown on the site plan on p. 24 of the application be moved south, nearer to the center of the lease site (Mook/Bryant).

As a result of the consultations between Mr. Bryant, Mr. Mook, and the Harbor Committee following the September hearing, Mr. Mook revised the gear layout plan for the DAM PP site for a second time (Exhibits 15 & 17; the latter is reproduced below). As Mr. Bryant requested, the widest corridor (290 feet) is now proposed for the approximate center of the DAM PP lease site. This area is to be maintained free of aquaculture gear and provides a space where a maximum of four single vessel moorings can be set, as designated by the Newcastle Harbormaster, one each for the riparian lots 59, 60, 63, and 65-A, as provided in the original lease. As Mr. Mook noted, it makes sense to limit the number of moorings that can be placed in this corridor in order to allow it to serve its primary purpose of facilitating navigation in the river (see additional discussion under section 3 B, Navigation, below).

Although Mr. Mook is changing the use of the site from bottom planting to surface gear, he retains the right to plant shellfish on the bottom. Given this, and in view of the large amount of gear to be installed on the site, it appears practical to retain the provision that the leaseholder "shall have the right to temporarily displace and relocate" any moorings on the lease site as necessary to facilitate operations on the lease site, but to allow this to be done only after reasonable notice to and authorization from the Newcastle Harbormaster.

Based on this evidence, it appears that adding gear to the DAM PP lease will not interfere to an unreasonable extent with the ability of riparian landowners to gain access to and from their property by water.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner, provided that (1) the navigation corridors on the site are maintained free of aquaculture gear as shown on Exhibit 17;

(2) a maximum of four single-vessel moorings are allowed for riparian landowners of lots 59, 60, 63, and 65-A as designated by the harbormaster in the widest navigation corridor on the lease site; and (3) the leaseholder may temporarily displace and relocate any moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster, as further described above.

B. Navigation

The DAM PP lease site lies about two miles downriver (south) of the bridge between the towns of Newcastle and Damariscotta. The lease site stretches roughly north-south between broad tidal mudflats to the west and the main channel of the Damariscotta River to the east. The site report summarizes the effect of placing oyster cages on the lease site as follows [*numbers in brackets show changes resulting from revised site plan, Exhibit 17*]:

> The proposed lease area would occupy 23.8 acres [*since revised to 24 acres, see Sec. 2 (C), above*]. Based on Appendix 5B in the application and the graphic depiction of gear layout, approximately 20 *[9.5]* acres of floating cages and lines would be placed in the water. Therefore, a minimum of 20 [*9.5*] acres would be removed from navigable waters.
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> Historically, the bottom lease allowed navigation over the farm at high water and the installation of up to 3,600 OysterGro surface cages would remove that option. Currently, south of the Sugarloaf Ledges to the east, approximately 2,000 feet of water is available for navigation at high tide. Between the mainland and Sugarloaf Ledges, approximately 1,800 feet of navigable water currently exists at high tide. Floating cages as proposed would reduce that navigable water to approximately 1,450 feet in each location [*1,650-1,680 and 1,600 feet, respectively*]; a reduction of 27% [*17%*] and 19% [*11%*],respectively.

The site report also notes the concerns expressed by the Newcastle Harbormaster and the Town of Newcastle after their review of the application:

> A "Harbormaster Questionnaire" was mailed to Mr. Paul Bryant, Harbormaster for the town of Newcastle, on March 1, 2011. A response from Mr. Bryant with an accompanying letter from the Town Administrator, Mr. Ron Grenier, was received by the Department on April 4, 2011. According to that letter and subsequent comments by Mr. Bryant, the location of the proposed lease and oyster cages at Perkins Point could create a navigational problem for sailboats tacking upstream against the wind at high tide conditions. The applicant subsequently modified the gear arrangement to allow separation between arrays of gear. How well this modification addresses the Town's and Harbormaster's concerns has yet to be determined (SR 5).

Navigation in this area of the river includes clam harvesters crossing the site to reach the mudflats to the west, although access to those flats is also gained by land, according to Mr. Mook.

Mook Sea Farms personnel work at the existing site approximately from Mondays through Fridays, 8 am to 5 pm, except at low drain tides. They have observed one or two clammers harvesting on the nearby flats one or two days per week at DAM EL2, more often at DAM PP (Mook testimony).[5]

Mr. Mook testified that the volume of recreational sailing around both his proposed lease sites is "light". Small sailboats heading upriver against a northerly wind have to tack, he said, and although this does not occur frequently, it does happen. Kayak traffic has "exploded" on the river, according to Mr. Mook, and oyster farms are attractive points of interest to many kayakers (Mook testimony).

Newcastle Harbormaster Paul Bryant testified to the difficulties faced by small boat sailors in the river and the need for adequate space within which to navigate:

> Having sailed on the Damariscotta River for over 60 years, I am very aware of the challenges faced by small boat sailors whose only propulsion would be sails and paddle. Clawing one's way to windward with an opposing tide can be most challenging when the wind is failing. The ability to make multiple tacks even hugging the shore to dodge some of the stronger current is sometimes the only way to return home when wind and tide don't cooperate. These are well known challenges to small boat sailors but possibly not as well known to power boaters (Bryant, testimony, Exhibit 13).

James Sparrell, who lives across the river from the EL & EL2 sites, disagreed with Mr. Mook's characterization of the use of the river for recreational boating as "light".[6] Mr. Sparrell noted that there is significant boating activity in the upper river in late afternoons, early evenings, and on weekends. The harbor (by which he said he meant the upper part of the river above Cottage Point, which includes the waters east of the DAM EL and DAM EL2 lease sites) is being gradually taken up by obstructions, he said, making it hard to tack a sailboat. He asked what would be the consequences of hitting an oyster cage with a sailboat. Small boats returning upriver on a southwest wind have to follow the shore, Mr. Sparrell said, which takes them closer to the Little Point lease sites, in particular. There will be more boats on the river in future, he believes, and this additional gear on the northwest tract of the DAM EL2 site would interfere with

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[5] Two comments made at the hearing appear to pertain not to the DAM PP lease site but rather to a different lease, DAM PPN, located just to the north.

David Belknap noted that the lease "by the day marker" extends into the channel, creating a hazard for divers on the lease site. Boats go through the area at full speed, he said, and the channel should be clear (Mook/Belknap). The day marker, labeled "19" on the chart in Figure 1 of the site report, is located within the outer portion of the DAM PPN bottom lease, which is for bottom and suspended culture of oysters.

Karen Benner read a message from A. Wray Fitch, a non-resident riparian landowner of both lease DAM PP and lease DAM PPN. Mr. Fitch wrote that the lease restricts the waterway already and should not be allowed to restrict it further. Since there has been no gear on DAM PP, and gear is used on DAM PPN, after brief discussion among those at the September hearing, it was concluded that it is likely the latter lease that is the cause of Mr. Fitch's concern.

[6] Although his testimony focused mainly on the area of the river north of Cottage Point (listed on the NOAA chart as Hall Point), Mr. Sparrell's comments are included here for their relevance to boating activity in the upper river in general.

their ability to navigate. Aquaculture gear should not be allowed in the harbor area, Mr. Sparrell (Sparrell, testimony).

Mr. Mook responded, saying that the previous day he had observed two large sailboats sailing past his leases on a northwest wind and that such larger vessels sometimes tack or reach in that part of the river. He said he kept and sailed a 25-ft. sailboat in the Damariscotta River with no difficulty. He also said that an oyster cage weighs approximately 60 pounds with empty pontoons; when filled with bags of shellfish, it weighs about 200 lbs. (Mook/Sparrell).

Rob Nelson testified to the importance of accommodating small boat sailing in the river. Mr. Nelson said the 50-ft. navigation corridor proposed in the application for the DAM EL2 lease site, in particular, is inadequate for this purpose and that more maneuvering space for sailboats is critically needed (Nelson, testimony).

David Belknap echoed the Harbormaster's concerns about the difficulty of sailing near the DAM PP site with oyster cages deployed on it. He asked if a lease site "in the cove" would be more appropriate. Mr. Mook said that he needs the deeper water on the PP lease site in order to winter over the cages away from ice, even on a low drain tide (Mook/Belknap).

Joseph Griffin testified that he supports aquaculture in the river, but said it is "sad that the inner harbor is getting filled up" with gear. It is hard to come upriver by boat at night and avoid buoys and aquaculture gear, Mr. Griffin said (testimony 11-2-11).

Navigation corridors. Mr. Mook described three access corridors that he proposes to maintain on the DAM PP site where moorings could be placed and that would be kept free of gear for clammers to use to reach the western shore and for navigation in general. As proposed in the application, the northernmost corridor would be 360 ft. wide, the middle corridor would be 100 ft. wide, and the southern corridor would be 54 ft. wide, he said (see App 24 for site plan).

The floating oyster cages will be kept as far west as possible on the site, to leave additional open space along the east side of the lease for navigation, particularly sailboats that need to tack across the river (Mook, testimony). The water on DAM PP is too shallow to overwinter the cages on the western part of the lease, however, so Mr. Mook said they will be sunk in deeper water on the eastern side for the winter. Otherwise, the eastern portion of the site, which is nearest to the channel, will be kept free of gear. The total area of the lease site that would be gear-free, he said, was 10.6 acres out of 24 (Mook, testimony).

Mr. Bryant said that the widest corridor on DAM PP should be placed nearer to the center of the site, to better meet the need for space for sailboats to tack to the west when sailing up or down the river against the prevailing wind. Mr. Mook agreed to revise his site plan and move the wider corridor to the middle (Mook/Bryant).

Vernon Rhodes requested the Department to create a legal requirement to keep gear out of the eastern side of the DAM PP site. Mr. Mook noted that the Department normally does this by placing conditions on a lease. He said that the revised plan he would create with the Damariscotta-Newcastle Joint Harbor Committee will "honor the outside lane" (Mook/Rhodes).

At the end of the September 19, 2011 hearing, it was agreed that Mr. Mook would revise the gear layout plans for both proposed lease sites, in consultation with Mr. Bryant, the Harbormaster, the Joint Harbor Committee, and Mr. Lewis. At the resumed hearing on November 2, 2011, Mr. Mook presented the revised plans, and Mr. Bryant testified that they were acceptable to the Harbor Committee. As described below ("Sinking cages for winter"), Mr. Mook testified that the water depths on the DAM PP site are actually deeper than those shown on the navigation chart (Mook, testimony 11-2-11).

In revising the gear plans, Mr. Mook said he decreased the distance between the strings of cages from 30 ft. to 20 ft., "reduced the number of cages in two of the lower grids at the south end", and, "as suggested by Paul Bryant, shifted the large gap in gear from the north end to the middle of the tract." "These changes have allowed for an additional access lane through the site", Mr. Mook testified. They have also "increased gear-free space along the outer margin of the tract by an average of about 40 ft. for an additional 0.6 acres of open space" (Mook, testimony 11-2-11; Exhibit 15, p. 4; Exhibit 17).

Exhibit 17, the revised plan presented at the November 2 hearing and reproduced below, indicates that approximately 40% of the lease site, or 9.5 acres out of 24, will be occupied by gear. In consultation with Mr. Bryant and the Harbor Committee, Mr. Mook created four navigation corridors running east-west across the lease site and measuring, from north to south respectively, 76 ft., 290 ft., 61 ft., and 100 ft. The gear-free space as now proposed along the entire eastern side of the lease site, as shown on Exhibit 17, is wider than that proposed on the gear layout plan included in the application (App 24).

Mr. Mook testified at the November hearing that these changes mean that there will be more room to navigate between the green day marker "19" at north end of the DAM PP lease site and can buoy "17" at the south end. He will mark the lease boundaries in the same way as he described at the September hearing (see discussion below under "Marking"). Mr. Mook said he had reviewed these changes with Paul Bryant and Alan McKinnon, chairman of the Joint Harbor Committee, and that they accepted the revised plan. He said the changes resulted in an additional 40 ft. of mooring corridor space and an additional 0.6 acres of open space along the east side of the DAM PP lease (Mook, testimony 11-2-11). Mr. Bryant also testified that the Harbor Committee accepted the revised plan (Bryant, testimony 11-2-11).

Appendix 5B. PP Maximum Structure and Mooring System Schematic (Top View)

Scale: 1" = 415' +/-

Maximum Cages = 3640

Sea Farm Buoy Key

- White with retroreflective tape
- White with retroreflective tape and radar reflector
- Yellow ball

Mooring Schematic:

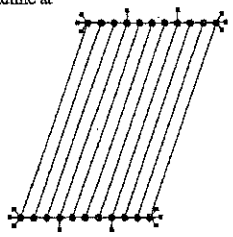
Each line and pair of circles equals 50 cages with 20' between each line. (50 cages is about 315' long.)

Each square represents a helix mooring

The lines of cages are connected at each end to a 1" poly/nylon "headline" moored at each end by 3 helixes and in the middle by an additional 2 helixes.

No less than 16 helixes will be used per 11 strings of cages.

Cages are attached to each other and to a "system line" (3/8" poly) attached to the headline at each end.



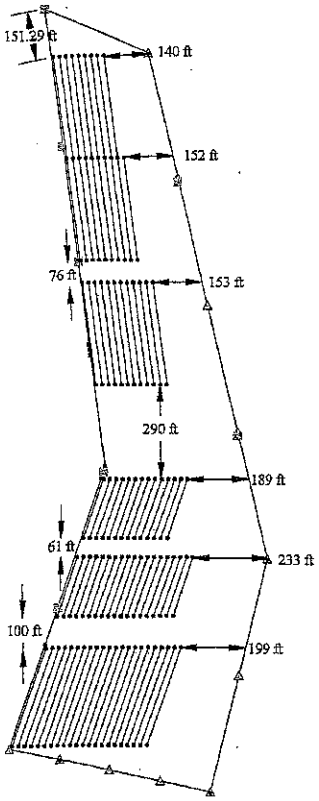


EXHIBIT 12 2011-28

Total Acres: 23.8

Acres occupied by gear: 9.5 (~40%)

Sinking cages for winter. Mr. Lewis testified that if oyster cages are submerged for overwintering on the bottom with only two or three feet of water above them, passing boats could wreck their propellers or centerboards by colliding with the cages. He said it would be wise to maintain a minimum water clearance requirement above the sunken cages (Lewis, testimony).

Mr. Mook testified that cages overwintered on the DAM PP site would be placed in the deeper water on the east side of the site, rather than in the shallower water to the west, where the cages will be located when at the surface during the growing season (Mook, testimony). He noted that he did this on the DAM EL site during the winter of 2010-11. He said that cages submerged for winter on the east side of the DAM PP site would rest in six to eight feet of water, with four feet of water clearance at low tide (Mook/Rhodes). He testified that it would be difficult to mark the submerged cages, because ice in the river would be likely to dislodge the marking buoys (Mook/Lewis).

At the November 2 hearing, Mr. Mook presented Exhibit 14, a copy of the NOAA chart for the area around the DAM PP lease site. He testified that he measured the water depths at the DAM PP site on September 29, 2011, at mean low water on a minus-1.1 ft. tide. He adjusted the measured depths to reflect conditions at mean low water; these results are depicted in very small numbers on Exhibit 14 (in blue on the original, but black on photocopies).

Mr. Mook testified that his depth measurements show that the charted depths are inaccurate and that "much of the outer portion of the [DAM PP] tract and essentially the entire southern end are deep enough to sink cages" (Exhibit 15, p. 2; Mook, testimony 11-2-11). Exhibit 14 shows charted depths on the DAM PP site from north to south of 2, 3, 5, 4, and 2 ft. Mr. Mook's measurements, in contrast, show from north to south as 6.5 (near northwest corner), 4.5, 5.5, 4.0, 5.4, 6.0, 4.0, 7.5, 3.6 (west side), 4.0 (west side), 10.1, 6.6, and 7.0 feet, the last measurement being just south of the southern boundary of the lease. These measurements are consistent with the site report's finding of a range of depths at mean low water of between one and ten feet.

The OysterGro cages measure 5.7 ft x 3.6 ft. x 1.67 ft. high, including the pontoon floats on top (App 22). Thus, it appears that on the DAM PP site, sinking cages that are less than two feet high in the eastern and southern parts of the site will result in actual water depths above them at mean low water of between 2.5 and 8.1 feet, depending on where the cages are placed. This is substantially more than the zero to 2.5 ft. of clearance indicated by the chart. Four feet is sufficient to avoid propeller strikes by most types of smaller boats that would be likely to navigate in this shallow area of the river at low tide. In light of this and of Mr. Mook's testimony that 4 ft. of minimum water clearance would remain above the cages, it appears reasonable to require that the cages be sunk for winter only in areas where a minimum of 4 feet of water will remain above them at mean low water and that they be marked when ice is not present.

Cage moorings. Mr. Bryant said he is concerned that the helix anchors used for mooring the headlines could allow the strings of cages to swing sideways, beyond the lease boundaries or into the open spaces intended to be kept for navigation corridors or mooring spaces on the lease sites. He asked how this could be prevented. Mr. Mook said he will need to figure this out, possibly by using diagonal lines on the moorings (Mook/Bryant).

Mr. Mook also said that he is willing to change the mooring system to eliminate headlines and use helix moorings directly on the ends of the strings of cages, instead. This would not require more mooring tackle than he uses now, but he would need to prevent the strings of cages from swinging outward, possibly by using diagonal lines, to make it easier to navigate between the rows of cages. He proposed to use helix moorings on all new cage lines and to make the same change on the mooring grid on the DAM EL site (Mook/Lewis).

At the November 2 hearing, Mr. Bryant again raised the issue of gear swinging with the wind, noting that Exhibit 16, an aerial photograph showing the proposed gear layouts on the DAM EL and EL2 lease sites, clearly shows lines of gear on the EL site bowing outward to the east, rather than staying in straight lines, although it remains within the lease boundaries. Mr. Mook agreed with Mr. Bryant that he will promptly alter or remove gear on the lease sites at the Harbormaster's request in order to prevent the cages from impeding navigation either in the navigation corridors or outside the lease boundaries (Mook/Bryant).

Marking the lease site. Mr. Mook testified that all markers on the south boundary of the DAM PP site will be white buoys with reflective tape; reflective tape will also be used on other buoys, and radar reflectors will be used, as well.

Exhibit 17, the revised layout plan, depicts the marking scheme for the DAM PP site. Four white buoys with retroreflective tape and radar reflectors are shown, one at the northeast corner, one at the mid-east corner, one at the southeast corner, and one on the south boundary, just east of the southwest corner. Yellow ball buoys are shown being used at five points along the west boundary of the lease, including the northwest and midwest corners, and at two points on the east boundary. White buoys with retroreflective tape are indicated at two points on the east boundary, two points along the south boundary, and at the southwest corner.

Mike Herz, a sailor, testified that some of the existing lease buoys are missing the reflective tape, and some are not well marked. He asked if the corners of the lease site would be marked with lighted buoys. Mr. Mook said that DMR does not require reflecting tape, just the words "Sea Farm" on the buoys. He noted that the DAM EL site has 3 Coast Guard type buoys, which are long spars with tape and radar reflectors. The marker buoys are black balls with "Sea Farm" lettering and reflective tape. Mr. Mook said he will use reflective tape on all the outer markers on the DAM PP site (Mook/Herz).

Bill Hill said that he could not navigate behind (west) of can "17" at the southeast corner of the DAM PP lease site in his power boat and that he needs any radar reflectors to be located high enough above the water so that he can distinguish them. Mr. Mook said he will line up the reflectors at the south end of the site and that there will be room to navigate west of can "17" (Mook/Hill).

Leaseholders are required to mark their sites in accordance with U. S. Coast Guard requirements. DMR marking requirements are not intended for navigational purposes, as DMR does not have legal authority to require navigation marking. DMR markings are intended to

delineate the boundaries of lease sites or the portions thereof that are being used (see section C, Fishing & Other Uses, below). The marking plan appears to do this. The Coast Guard will review the proposed navigational marking.

While it is clear that placing 3600 oyster cages on DAM PP will create obstacles to navigation where there were none before, it appears that the layout plan shown in Exhibit 17 mitigates the effects of the change. The Department appreciates the participation of the Harbormaster and the Harbor Committee in this process. Mr. Mook has developed a plan for arranging the gear on DAM PP that appears to reasonably accommodate the needs of riparian landowners for moorings, the needs of shellfish harvesters for routes to the western shore across the lease site, and the needs of sailors for space to navigate in accordance with winds and tides in the river. The criteria for granting an aquaculture lease do not prohibit any interference with navigation but instead require that such interference not rise to an unreasonable level. Based on the evidence and on the revised site plan shown in Exhibit 17 and agreed to by the Harbor Committee, it appears that this criterion has been met.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with navigation, provided that (1) navigation corridors are maintained free of aquaculture gear as shown on Exhibit 17; (2) oyster cages are sunk to the bottom of the lease site only in areas where a minimum of 4 feet of water will remain above them at mean low water and marked when ice is not present, and (3) the lessee promptly alters or removes gear on the lease site at the harbormaster's request if it is outside the lease boundaries or is interfering with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 17. The lease site must be marked in accordance with U. S. Coast Guard requirements.

C. Fishing & Other Uses

The site report notes that "No commercial fishing is anticipated in the area of the proposed lease site as the bottom does not support commercially exploitable quantities of any species" (SR 8). The report observes that it is likely that recreational fishing takes place on the nearby mud flats and in the deeper waters of the DAM PP lease site. It goes on to note that "The harvest of soft-shell clams (*Mya arenaria*) and cultched American oysters (*Crassostrea virginica*) is common in the intertidal areas to the west and north. The proposed lease activities will not preclude the continued harvest of intertidal species of shellfish" (SR 8). As noted above, Mr. Mook testified that his company's personnel have observed one or two clammers harvesting on the nearby flats more often than one or two days per week (Mook testimony).

The evidence indicates that some level of recreational fishing is likely to occur within the DAM PP lease site. Mr. Mook testified that recreational fishing can continue on the open parts of the site (Mook/Lewis). Under the revised gear plan, these open areas are larger than originally proposed. The lease activities themselves will not interfere with shellfish harvesting on the flats to the west, and the provision of navigation corridors on the lease site means that access by water

to those flats will not be unreasonably impeded by the presence of the oyster cages on the lease site. Thus, it appears that allowing gear to be used on the DAM PP lease site will not interfere significantly with the fishing activities that take place on and around the site.

The lease must be marked in accordance with DMR Rule 2.80.[7] As indicated in the previous section, the marking arrangement proposed by Mr. Mook meets the requirement of the rule.

Other aquaculture leases. According to the site report, while there are some 18 leases in the upper Damariscotta River for suspended and/or bottom culture of oysters, "The proposed activities are unlikely to impact existing aquaculture operations in the area" (SR 9). This application will not add to the number of acres leased for aquaculture in the river, since it provides for the use of gear on a site that is already leased for bottom culture.

Exclusivity. According to the application, "In the portions of the tracts holding cages, any uses which could interfere with the gear would be excluded. Access lanes to the shore by motor boats, sailboats, kayaks, canoes, etc. will be provided. Kayaks and canoes would be able to navigate throughout the site" (App 11). As noted above, Mr. Mook testified that recreational fishing can continue on the open parts of the site (Mook/Lewis). Based on this evidence, navigation and recreational fishing will be permitted in the open areas of the lease.

Therefore, considering the number and density of aquaculture leases in the area, I find that the aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area. Navigation and recreational fishing will be permitted in the open areas of the lease. The lease must be marked in accordance with DMR Rule 2.80.

D. Flora & Fauna

Species of marine flora and fauna observed by Department biologists during the site visit on May 3, 2011 included horseshoe crabs (*Limulus polyphemus*), frilled anemone (*Metridium senile*), American oysters (*Crassostrea virginica*), green crabs (*Carcinus maenus*), rock crabs

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[7] **2.80 Marking Procedures for Aquaculture Leases**

1. When required by the Commissioner in the lease, aquaculture leases shall be marked with a floating device, such as a buoy, which displays the lease identifier assigned by the Department and the words SEA FARM in letters of at least 2 inches in height in colors contrasting to the background color of the device. The marked floating device shall be readily distinguishable from interior buoys and aquaculture gear.

2. The marked floating devices shall be displayed at each corner of the lease area that is occupied or at the outermost corners. In cases where the boundary line exceeds 100 yards, additional devices shall be displayed so as to clearly show the boundary line of the lease. In situations where the topography or distance of the lease boundary interrupts the line of sight from one marker to the next, additional marked floating devices shall be displayed so as to maintain a continuous line of sight.

3. When such marking requirements are unnecessary or impractical in certain lease locations, such as upwellers located within marina slips, the Commissioner may set forth alternative marking requirements in an individual lease.

4. Lease sites must be marked in accordance with the United State's Coast Guard's Aids to Private Navigation standards and requirements.

(*Cancer irroratus*), common sea stars (*Asteris* spp.), hard clams (*Mercenaria mercenaria*), and Mermaid's tresses (*Chorda filum*) (SR 10). No eel grass (*Zostera marina*) was observed (SR 10).

The application includes a copy of a letter to the applicant from the Maine Department of Inland Fisheries and Wildlife (MDIF&W) dated December 1, 2010. The letter states that no Essential or Significant Wildlife Habitats are within the area of the proposed lease. The Department mailed a copy of the application and a "Request for Review and Comment" to MDIF&W on March 1, 2011. No response has been received from that Department. It is usual for MDIF&W to respond if they foresee a conflict between the proposed aquaculture lease and a wildlife resource in the area; the absence of a response generally indicates that no conflict is expected.

Mr. Lewis testified that oysters, being filter feeders, improve the quality of the water where they grow, filtering as much as 15-30 gallons of water per day per oyster. He noted that no feed or other substances are added to the waters where oysters are grown. In fact, he said, oysters help to filter out some of the excess nutrients that wash into the water from lawn fertilizers, overboard sewage discharges, and other land-sourced pollutants. He said he has no biological concerns about the effect of the proposed lease on the environment of the Damariscotta River, (Lewis, testimony).

While some disturbance of the river bottom can be expected in the course of raising and lowering the cages in the spring and fall, the combined lease site has experienced repeated dragging in the past when the bottom-planted oysters were harvested. The bottom in this area is firm sand beneath a six-to-eight-inch layer of mud and silt. The effect on the bottom of lifting and depositing the cages twice a year is likely to be much less than the effects of repeated dragging.

Based on this evidence, it appears that the use of oyster cages on the lease site will not have any negative effects on the environment of the lease and the surrounding area.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.

E. Public Use & Enjoyment

According to the site report, no public facilities are located within 1000 feet of the proposed lease (SR 10). The site report notes that the Damariscotta Town Landing is approximately 8,000 ft. to the north and the Dodge Point Preserve (public lands) is approximately 2,700 ft. to the south of the DAM PP site.

Therefore, I find that the aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities or certain conserved lands owned by municipal, state, or federal governments.

F. Source of Organisms

The application indicates that the source of American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) for this proposed lease site is Mook Sea Farm in Walpole, Maine (App 2); this is the applicant's shellfish hatchery on the Damariscotta River.

The Department has declared both European and American oysters to be "Restricted" species in certain instances under DMR Rule 24.05 in order to prevent the spread of disease. Moving European oysters from any source anywhere in Maine requires a permit from the Department. Movement of American oysters from within the waters north of a line between Ocean Point, Linekin Neck, Boothbay and Pemaquid Point, Bristol (including the entire Damariscotta and Johns Rivers) to any other coastal waters is also restricted and requires a permit from the Department.

To the Department's knowledge, Mr. Mook is well aware of these restrictions, since he deals with them regularly in the course of his hatchery work.

Therefore, I find that the applicant has demonstrated that there is an available source of stock to be cultured for the lease site.

G. Light

The application states that "No lighting will be necessary for either of the proposed tracts...Night time work on the site would only occur in emergencies. This might include work to prevent or repair damage to gear by storms" (App 7).

Therefore, I find that the aquaculture activities proposed for these sites will not result in an unreasonable impact from light at the boundaries of the lease site.

H. Noise

The application says that:

> ...a small engine will be used to power either a generator or hydraulic pump to run a grading machine....The power source for the grading machine will be a small (<10 hp) engine (App 7).

The site report notes:

> A < 10 horsepower engine would be used to power a grading machine used in separating oysters of different sizes. No description of noise production, noise reduction, or muffling on this less than ten horsepower engine is provided in the application. A typical chainsaw produces less than 10 horsepower; presumably, the grading machine would operate at much lower engine speed and significantly lower noise levels. Clarification of this should be provided during the public hearing process (SR 10).

At the hearing, Mr. Mook testified that noise generated at the site will be minimal, particularly since there will be no dragging. Compared to the previous noise level of his operations at the lease site, there will be no increase in noise, he said (Mook, testimony). An air-cooled pump of four to five horsepower will be used to wash the oysters and bags at the site. The pump will not operate all day, Mr. Mook said, just when the oyster bags are washed. The pump has a muffler, he said, but he was told that the muffling cannot be increased. He said he is considering using a propane generator for the pump and for other equipment, similar to one he uses at his hatchery; it can be enclosed more easily to muffle its sound (Mook/Robinson).

The application also states:

> Outboards are either 4-stroke or "E Tec" engines, both of which are quieter than older 2-stroke outboards, especially when they are operated at relatively low RPMs as will be the case on the proposed leases (App 7).

The site report observes that both of these motors "are significantly quieter than two-stroke outboards or diesel powered boats frequently seen in the surrounding area" (SR 10).

Based on this evidence, it appears that equipment at the site will be muffled as much as possible. Any noise generated by operations on the site will not differ significantly from previous noise levels at the lease site and is unlikely to have a significant effect at the boundaries of the lease.

Therefore, I find that the aquaculture activities proposed for this site will not result in an unreasonable impact from noise at the boundaries of the lease.

I. Visual Impact

The proposal to use floating oyster cages on lease sites that previously did not contain aquaculture gear means that the appearance of the lease sites will change. The application (App 27) and site report (SR Figures 4, 5, 6) contain photographs of the oyster cages deployed on the DAM EL site. The application states that the cages are black or dark green; the pontoons are black. Each string of cages will be marked with a round 12" black buoy at the ends, and the perimeters of the lease tracts will be marked with "Sea Farm" buoys (App 4).

The site report states:

> The OysterGro units proposed for this lease site are not the current standard in the Maine oyster culture industry; they are, however, commonly used in Atlantic Canada for the culture of American oysters. The Department, in the last two years, has observed an increasing level of interest in moving from traditional floating ADPI bags (34" X 20" X 5") to the larger, submersible, OysterGro cages. The proposed individual cage dimensions are 3.6 feet wide X 5.75 feet long X 1.67 feet tall. When stocked the cages would sit submerged with the black plastic floats, 2 per cage, visible above the water surface. According to the applicant, the proposed cages would be "flipped" approximately every 10 days for a period of 24 hours, exposing the wire cages, to remove any fouling that has accumulated. The

applicant has proposed to install a maximum of 3,600 OysterGro cages within the proposed lease area. SR 11

The Department's visual impact rule requires structures and gear on lease sites to blend with the surroundings as much as possible, in order to "minimize the visual impact as viewed from the water" (DMR Rules, Chapter 2.37 (AA) (10)).

When the cage is floating normally in the water, only the black plastic floats are visible, 8" high above the surface. When the cage is "flipped", the approximately 14" wire mesh cage structure is visible above the water's surface, with the floats beneath.

The presence of the cages on the lease site will be more or less noticeable from the water, depending on the distance of the viewer, the viewing angle, and the number of cages deployed. The cages will appear more or less as individual units or as dim lines of black dots or dashes as the viewer moves nearer to or farther from them.

The work raft consists of a wooden deck supported by fiberglass reinforced plastic beams on black plastic pontoons with a fiberglass wheelhouse (App 3). As the site report notes, the raft is less than 20 ft. in height above the water line, as required by the rule. The raft will be moved between the applicant's lease sites as needed for grading, sorting, and stocking oyster bags.

The rule requires that any visual impact be "minimized", not eliminated. The cages are simple pieces of gear made of materials in dark colors that will blend in with the river and surrounding landscape. There is no evidence to suggest that their visible presence can be further reduced. The raft meets the height requirements of the rule. Therefore, it appears that the visual impact of this gear when viewed from the water has been minimized.

Therefore, I find that the equipment, buildings, and watercraft to be used at the proposed lease site will comply with the visual impact criteria contained in DMR Regulation 2.37 (1) (A) (10).

4. CONCLUSIONS OF LAW

Based on the above findings, I conclude that:

1. The aquaculture activities proposed for this site will not unreasonably interfere with the ingress and egress of any riparian owner, provided that:

(1) The navigation corridors on the site are maintained free of aquaculture gear as shown on Exhibit 17;

(2) A maximum of four single-vessel moorings are allowed for riparian landowners of lots 59, 60, 63, and 65-A as designated by the harbormaster in the widest navigation corridor on the lease site; and

(3) The leaseholder may temporarily displace and relocate any moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster, as further described above.

2. The aquaculture activities proposed for this site will not unreasonably interfere with navigation, provided that:

(1) Navigation corridors are maintained free of aquaculture gear as shown on Exhibit 17;

(2) Oyster cages are sunk to the bottom of the lease site only in areas where a minimum of 4 feet of water will remain above them at mean low water and marked when ice is not present; and

(3) The lessee promptly alters or removes gear on the lease site at the harbormaster's request if it is outside the lease boundaries or is interfering with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 17.

The lease site must be marked in accordance with U. S. Coast Guard requirements.

3. The aquaculture activities proposed for this site will not unreasonably interfere with fishing or other uses of the area, taking into consideration the number and density of aquaculture leases in the area. The lease boundaries must be marked in accordance with the requirements of DMR Rule 2.80. Navigation and recreational fishing will be permitted in the open areas of the lease.

4. The aquaculture activities proposed for this site will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna.

5. The aquaculture activities proposed for this site will not unreasonably interfere with the public use or enjoyment within 1,000 feet of beaches, parks, or docking facilities owned by municipal, state, or federal governments.

6. The applicant has demonstrated that there is an available source of American oysters (*Crassostrea virginica*), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) to be cultured for the lease site.

7. The aquaculture activities proposed for this site will not result in an unreasonable impact from light at the boundaries of the lease site.

8. The aquaculture activities proposed for this site will not result in an unreasonable impact from noise at the boundaries of the lease site.

9. The aquaculture activities proposed for this site will comply with the visual impact criteria contained in DMR Regulation 2.37(1)(A)(10).

Accordingly, the evidence in the record supports the conclusion that the proposed aquaculture activities meet the requirements for the granting of an aquaculture lease set forth in 12 M.R.S.A. §6072.

5. BOND

Chapter 2.40 (2) of the Department's rules describes the requirements for performance bonds and includes the following language:

> The Department may prorate the performance bond amount for a structure, no-discharge lease where structures are in excess of 2,000 square feet in order to increase the bonding requirement to satisfy the requirements of these rules.

The proposed lease site will contain 3,600 OysterGro cages, plus mooring and marking gear, and, from time to time, the work raft. 3,600 OysterGro cages at approximately 18 square feet each constitute 64,800 sq. ft. of gear. The stated bonding requirements for leases like that proposed here with "structure, no discharge," are $1,500 for leases with less than 400 sq. ft. of gear and $5,000 for leases with more than 400 sq. ft. of gear. The purpose of the bond is to protect the Department and the State of Maine from bearing any costs for cleaning up the lease site in the event that the leaseholder does not meet his obligations.

While the language of the rule authorizes the Department to pro-rate the amount of the bond for no-discharge leases where structures cover more than 2,000 sq. ft., it contains no information on how that should be done. The gear proposed for the DAM PP lease site exceeds the 2,000 sq. ft. threshold by more than 30 times, but a bond for 30 times $5,000 would be $150,000. The maximum bond required under current DMR rules for an aquaculture site is $25,000 for a "structure, discharge" lease, which is normally a lease containing multiple fish pens. The potential cost of cleaning up 3,600 oyster cages and more than 21,000 oyster bags could well be more than the cost of retrieving two dozen fish pens, depending on the circumstances. In light of the purpose for requiring a bond, it is reasonable to require a $25,000 bond for this lease site.

6. DECISION

Based on the foregoing, the Commissioner grants the requested lease of 24 acres to Mook Sea Farms, Inc. for ten years for the purpose of cultivating American oysters (*Crassostrea*

virginica), European oysters (*Ostrea edulis*), surf clams (*Spisula solidissima*), quahogs (*Mercenaria mercenaria*), and soft-shell clams (*Mya arenaria*) using suspended and bottom culture techniques. The applicant shall pay the State of Maine rent in the amount of $100.00 per acre per year. The applicant shall post a bond or establish an escrow account pursuant to DMR Rule 2.40 (2) (A) in the amount of $25,000.00, conditioned upon performance of the obligations contained in the aquaculture lease documents and all applicable statutes and regulations.

7. CONDITIONS TO BE IMPOSED ON LEASE

The Commissioner may establish conditions that govern the use of the lease area and impose limitations on aquaculture activities, pursuant to 12 MRSA §6072 (7-B)[8] Conditions are designed to encourage the greatest multiple compatible uses of the lease area, while preserving the exclusive rights of the lessee to the extent necessary to carry out the purposes of the lease. The following conditions shall be incorporated into the lease:

1. The lease site must be marked in accordance with both U.S. Coast Guard requirements and DMR Rule 2.80.

2. Navigation corridors must be maintained free of gear as depicted on Exhibit 17.

3. A maximum of four single-vessel moorings may be set within the widest navigation corridor on the lease site as designated by the Newcastle harbormaster, one for each of the riparian lots 59, 60, 63, and 65-A.

4. The lessee may temporarily displace and relocate moorings on the lease site after reasonable notice to and authorization from the Newcastle harbormaster.

5. The lessee must promptly alter or remove gear on the lease site at the harbormaster's request if it is outside the lease boundaries or is interfering with navigation in the open areas of the lease site which are to be left gear-free as shown in Exhibit 17.

6. Oyster cages may be sunk to the bottom of the lease site only in areas where a minimum of four feet of water will remain above them at mean low water and must be marked when ice is not present.

7. Navigation and recreational fishing are permitted in the open areas of the lease site.

[8] 12 MRSA §6072 (7-B) states: "The commissioner may establish conditions that govern the use of the leased area and limitations on the aquaculture activities. These conditions must encourage the greatest multiple, compatible uses of the leased area, but must also address the ability of the lease site and surrounding area to support ecologically significant flora and fauna and preserve the exclusive rights of the lessee to the extent necessary to carry out the lease purpose."

8. REVOCATION OF LEASE

The Commissioner may commence revocation procedures upon determining pursuant to 12 MRSA §6072 (11) and DMR Rule Chapter 2.42 that no substantial aquaculture has been conducted within the preceding year, that the lease activities are substantially injurious to marine organisms, or that any of the conditions of the lease or any applicable laws or regulations have been violated.

Dated: May 14th, 2012

Patrick C. Keliher
Commissioner,
Department of Marine Resources