Received: 2.25.22
Revised: 3.11.22
Revised: 3.28.22
Complete: 4.6.22

APPLICATION FOR CHANGE IN AUTHORIZATION FOR SPECIES and/or GEAR

Lease Acronym	FREN P14
Leaseholder	Springtide Seaweed LLC, James West
Contact Person	Sarah Redmond
Address	14 Factory Rd
City	Gouldsboro
State, Zip	ME 04607
Telephone	207-841-3221
Email	sarah@springtideseaweed.com

What type of amendment are you requesting (check one)?
☐ Gear amendment only
Instructions: Review and complete sections 2, 3 and 4 of this application

☐ Species amendment only
Instructions: Review and complete sections 1, 3 and 4 of the application

x Gear and species amendment
Instructions: Review and complete each section of the application

1. SPECIES CHANGES

SPECIES INFORMATION: Indicate the species you wish to add or remove from your lease and list the source of stock for each species you wish to add.

Indicate "Add" or "Remove" from Lease	Species (common and Latin name)	Source of Stock (Name, address, & phone number)
ADD	Green Sea Urchin (*Strongylocentrotus droebachiensis)*	University of Maine Center for Cooperative Aquaculture Research Salmon Farm Rd, Franklin, ME 04634 ph. (207)422-8918 Springtide Seaweed, LLC 14 Factory Rd Gouldsboro ME 04607 (207)841-3221
ADD	American Oyster (*Crassostrea virginica*)	Muscongus Bay Aquaculture, Inc PO Box 204 Bremen ME 529-4100 Mook Sea Farm 321 Rt 129 Walpole ME 563-1456
ADD	Quahog (*Mercenaria mercenaria*)	Muscongus Bay Aquaculture, Inc PO Box 204 Bremen ME 529-4100 Downeast Institute 39 Wildflower ln Beals ME
ADD	Winged Kelp (*Alaria esculenta*)	Springtide Seaweed, LLC 14 Factory Rd Gouldsboro ME 04607 (207)841-3221
ADD	Irish Moss (*Chondrus crispus*)	Springtide Seaweed, LLC 14 Factory Rd Gouldsboro ME 04607 (207)841-3221
ADD	Horsetail Kelp (*Laminaria digitata*)	Springtide Seaweed, LLC 14 Factory Rd Gouldsboro ME 04607 (207)841-3221

CULTURE PLAN: Please describe how you intend to cultivate each of the species you proposed to add to the lease using the table below. Please attach a separate table for each species you propose.

Description of Current Operations:
The FREN P14 lease is a deep water seaweed farm in Frenchman's Bay. The site is located over 1,000 feet from Preble Island, over muddy bottom, in water 69-83 feet MLW. The site was formerly permitted and used for the cultivation of Atlantic Cod from 2009-2012, but since 2013 the site has been utilized for the cultivation of macroalgae (kelp, nori, and dulse). Currently, the site is permitted for five submerged horizontal longlines for the cultivation of macroalgae, and for one nori system (see Army Corps permit). FREN P14 is currently permitted for the following species: blue mussels (*Mytilus edulis*), sea scallops (*Placopecten magellanicus*), sugar kelp (*Saccharina latissima*), nori (*Porphyra umbilicalis*), and dulse (*Palmaria palmata*). Macroalgal crops are currently cultivated on the site from Fall (September/October) to Spring (April-July).

The proposed amendments would maintain the same submerged horizontal longline system utilized for seaweed farming, with the request to add more moorings to allow for more lines on the site. In addition, the amendment requests the addition of lantern nets, bags, and cages to be hung on the submerged longlines, for the deep water (>10ft depth) cultivation of sea urchin and shellfish species. New seaweed crops are being requested for addition to the lease (Winged kelp, Horsetail kelp, Irish Moss), as well as new echinoderm (green sea urchin) and shellfish (American oyster, quahog) species. The lease is, and will continue to be, primarily a seaweed farm. The proposed additions are intended to allow for the research and development of deep water cultivation systems that can be integrated into a seaweed farm, without the use of surface gear.

Sea Urchins
Green Sea Urchins are a new potential species for cultivation, and the proposed amendments would enable research and development of incorporation of sea urchins within a seaweed farm for a diversified crop. Proposed culture method takes advantage of the deep water site, with all long lines and cages suspended below 10 ft deep, to avoid any surface conflicts, and to take advantage of the colder water at depths. Green sea urchins will feed on natural settlement of diatoms and other algal species, as well as native macroalgae species produced on the seaweed farm. The main crop of this farm is seaweed, with the proposed addition of deep water lantern nets to diversify the potential crops utilizing the deep water column. Urchin seed will be produced at the nearby University of Maine Center for Cooperative Aquaculture Research in Franklin, and at the Springtide Seaweed nursery in Gouldsboro. While the proposed work will initially be focused on research and development, it is designed to potentially move to commercialization if successful.

Information Requested	**Proposed Species: Green Sea Urchin**
Seed Size	>10 mm
Number of Organisms to be Cultured	1,000-50,000
Stocking Density	10 urchins per tier in a 7 tier lantern net
Method of Culture and Dates (ex: April-Dec)	Submerged longlines 10 ft deep with 7 tier lantern nets suspended from deep longlines, deployed year-round

Method of Harvest and Timing (ex: Fall)	Hand removal from lantern nets, September-April
Predator Control Methods	Mesh lantern nets
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, year-round deep water suspended cultivation

American Oyster

The proposed amendments would allow for the research and development of incorporation of shellfish species into a deep water seaweed farm to allow for crop diversification. The amendment would allow for growth of the oysters at over 10 feet of depth to determine the feasibility of growing shellfish year round in the deep water column, and utilizes the same horizontal longline suspended net/bag system as proposed for Green Sea Urchin cultivation.

Information Requested	**Proposed Species: American Oyster**
Seed Size	20 mm
Number of Organisms to be Cultured	1,000-200,000
Stocking Density	200 oysters per unit (bag/cage)
Method of Culture and Dates (ex: April-Dec)	Submerged longlines over 10 ft deep with submerged oyster grow bags/nets, suspended from deep longlines, deployed year-round
Method of Harvest and Timing (ex: Fall)	Hand removal from bags/cages, year round
Predator Control Methods	Suspended bags and nets
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, year-round deep water suspended cultivation

Quahog

The proposed amendments would allow for the research and development of incorporation of shellfish species into a deep water seaweed farm to allow for crop diversification. The amendment would allow for growth of quahogs at over 10 feet of depth to determine the feasibility of growing shellfish year round in the deep water column, and utilizes the same horizontal longline suspended bag/cage system as proposed for oyster cultivation.

Information Requested	**Proposed Species: Quahog**
Seed Size	20 mm
Number of Organisms to be Cultured	1,000-200,000
Stocking Density	200 oysters per bag/cage
Method of Culture and Dates (ex: April-Dec)	Submerged longlines over 10 ft deep with submerged grow bags/cages, suspended from deep longlines, deployed year-round
Method of Harvest and Timing (ex: Fall)	Hand removal from bags/cages, year round
Predator Control Methods	Suspended bags and nets
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, year-round deep water suspended cultivation

<u>Winged Kelp (*Alaria esculenta*)</u>
The proposed amendments would add winged kelp as an approved seaweed species on the farm site, using the same existing horizontal submerged seaweed lines as currently used for sugar kelp. Winged kelp is cultivated from November - May.

Information Requested	**Proposed Species: Winged Kelp (Alaria esculenta)**
Seed Size	1 mm
Number of Organisms to be Cultured	5-40 seed spools (130’ each)
Stocking Density	Horizontal longlines spaced at least 100 feet apart

Method of Culture and Dates (ex: April-Dec)	Submerged horizontal longlines, November-May
Method of Harvest and Timing (ex: Fall)	Spring harvest (March-May), hand harvest by boat
Predator Control Methods	None
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, cultivation takes place Nov-May

Horsetail Kelp *(Laminaria digitata*)
The proposed amendments would add horsetail kelp as an approved seaweed species on the farm site, using the same existing horizontal submerged seaweed lines as currently used for sugar kelp. Horsetail kelp is cultivated from September-July.

Information Requested	**Proposed Species: Horsetail Kelp (Laminaria digitata)**
Seed Size	1 mm
Number of Organisms to be Cultured	5-40 seed spools (130'each)
Stocking Density	Horizontal longlines spaced at least 100 feet apart
Method of Culture and Dates (ex: April-Dec)	Submerged horizontal longlines, September-July
Method of Harvest and Timing (ex: Fall)	Spring harvest (May-July), hand harvest by boat
Predator Control Methods	None
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, cultivation takes place September-July

Irish Moss (*Chondrus crispus*)
The proposed amendments would add Irish moss as an approved seaweed species on the farm site, using the same existing horizontal submerged seaweed lines as currently used for sugar kelp. Irish is cultivated from September-July.

Information Requested	Proposed Species: Irish Moss
Seed Size	1 mm
Number of Organisms to be Cultured	5-40 seed spools
Stocking Density	Horizontal longlines spaced at least 100 feet apart
Method of Culture and Dates (ex: April-Dec)	Submerged horizontal longlines, September-July
Method of Harvest and Timing (ex: Fall)	Spring harvest (May-July), hand harvest by boat
Predator Control Methods	None
Overwintering Plans/Dates (ex. Nov – Mar)	N/A, cultivation takes place September-July

GEAR CHANGES

Gear changes include the addition of suspended lantern nets and mesh shellfish bags and cages. While longlines are already permitted on the site, the amendment requests the allowance of deepwater longlines year round for the suspension of lantern cages and bags and nets. Deepwater longlines for suspended cultivation would be present only on the southern half of the lease site year round.

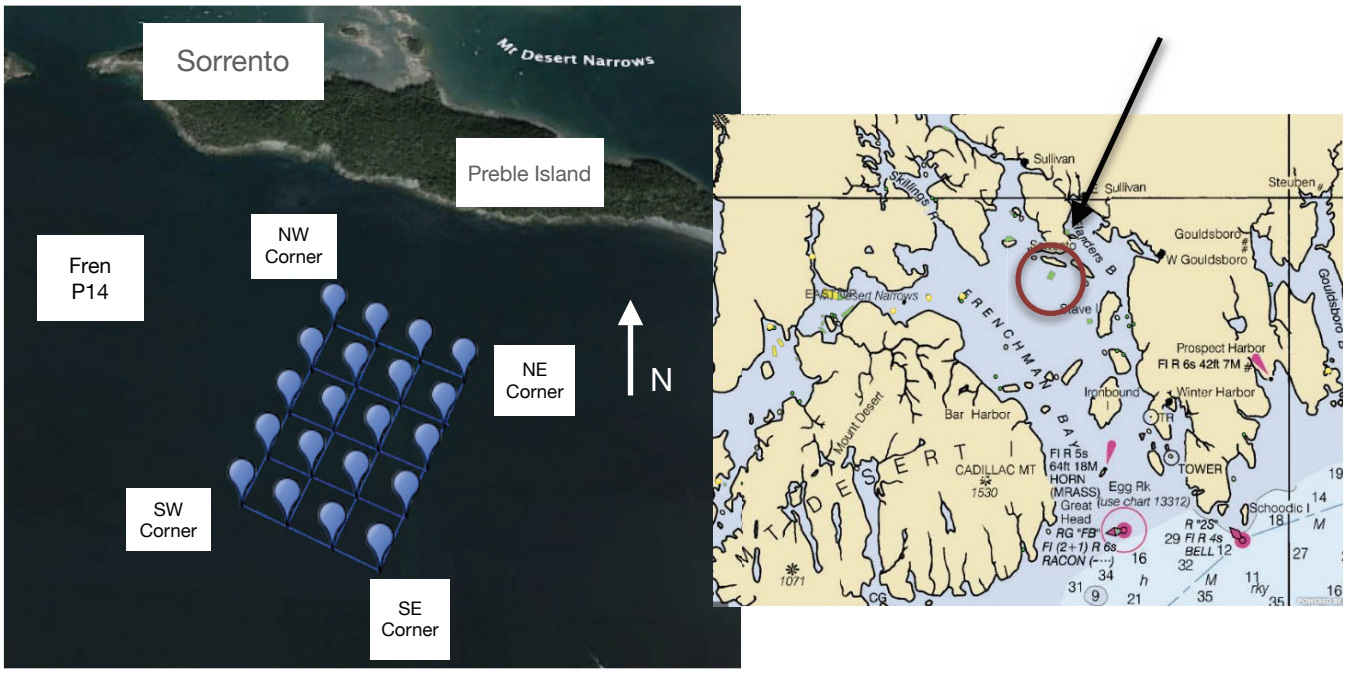
GEAR INFORMATION: Describe each gear type you wish to add to or remove from your current gear plan.

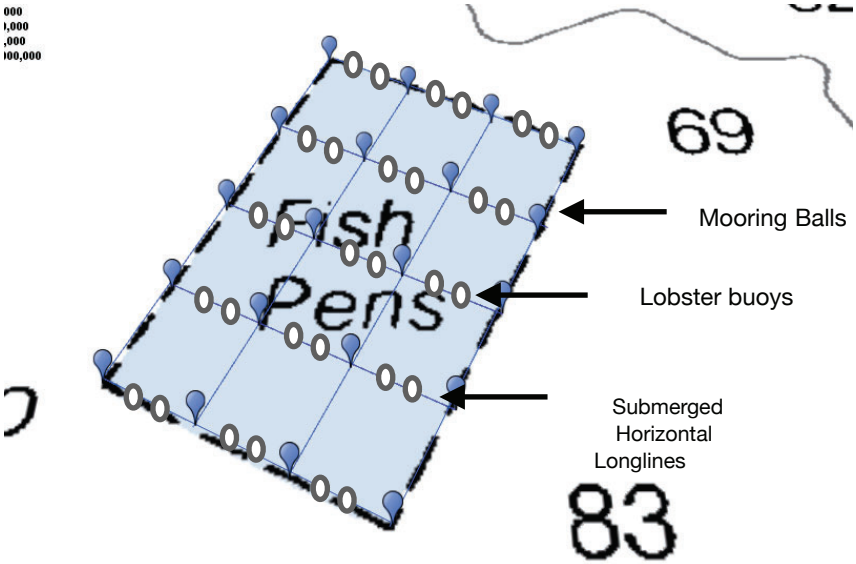
Specific Gear Type *(e.g. soft mesh bag)*	**Add or Remove**	**Dimensions of Gear Added or Removed** *(e.g. 16”x20”x2”)*	**Dates That Gear Will Be in The Water** *(Added gear only)*
Lantern Nets	Add	20”diameter and 50” tall	Year round
Shellfish Mesh Bags	Add	35”x18”x4”	Year Round
Shellfish cages	Add	33”x10”	Year Round

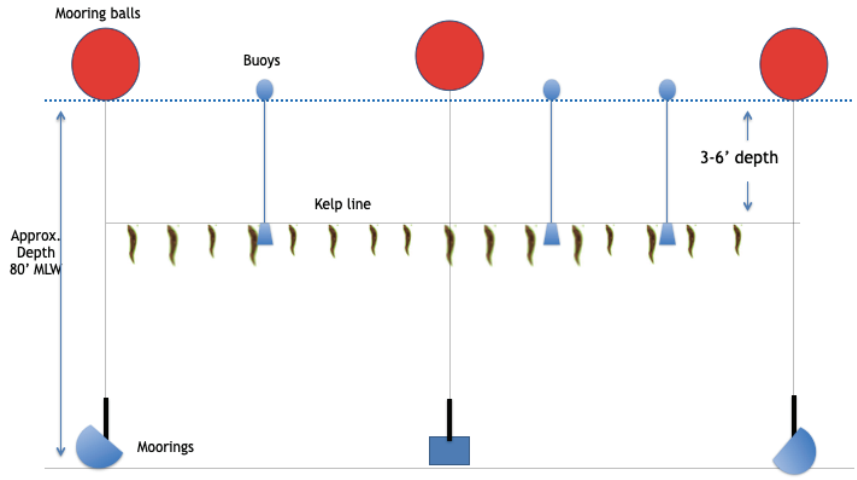
*** Attach the following drawings showing the proposed new gear. Use the plans in your Army Corps permit and/or DMR lease application as a starting point. Be sure to include:

- **Layout plan** showing:
  - placement of existing and new gear on lease site
  - north arrow
  - lease corners labeled

Existing lease:
Aerial Photo







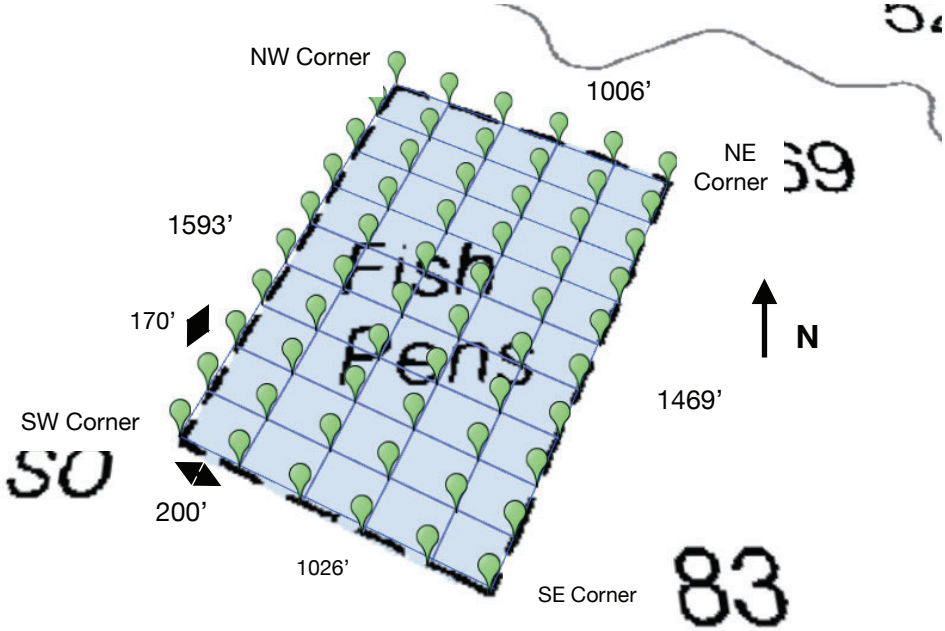
Existing Seaweed farm site, FREN P14, Frenchman Bay, ME. Submerged horizontal cultivation lines, top view, side view.

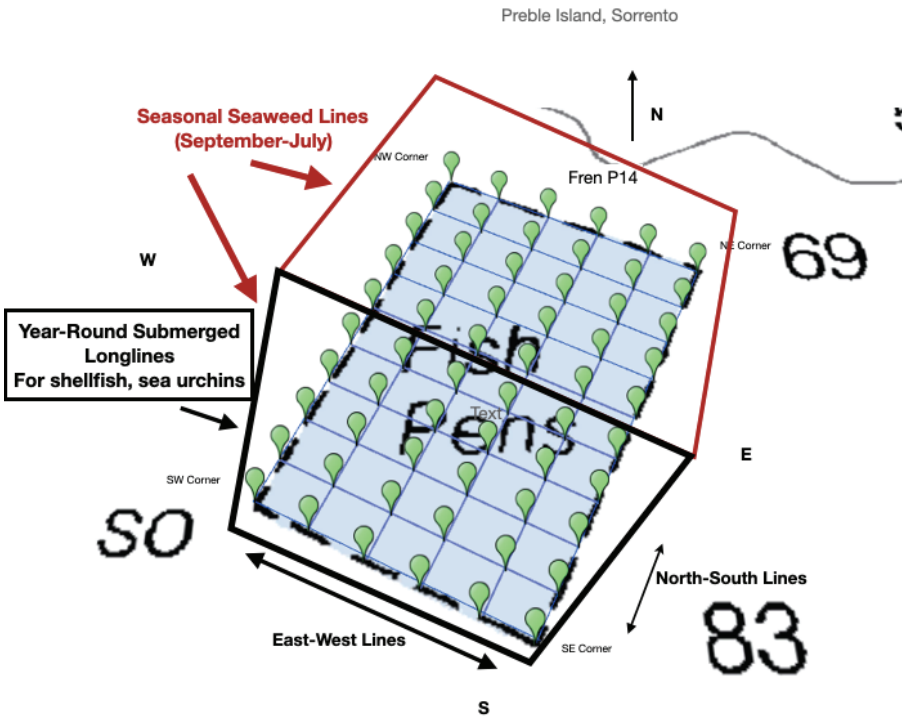
Proposed Amended Lease Layout

Amended changes include:

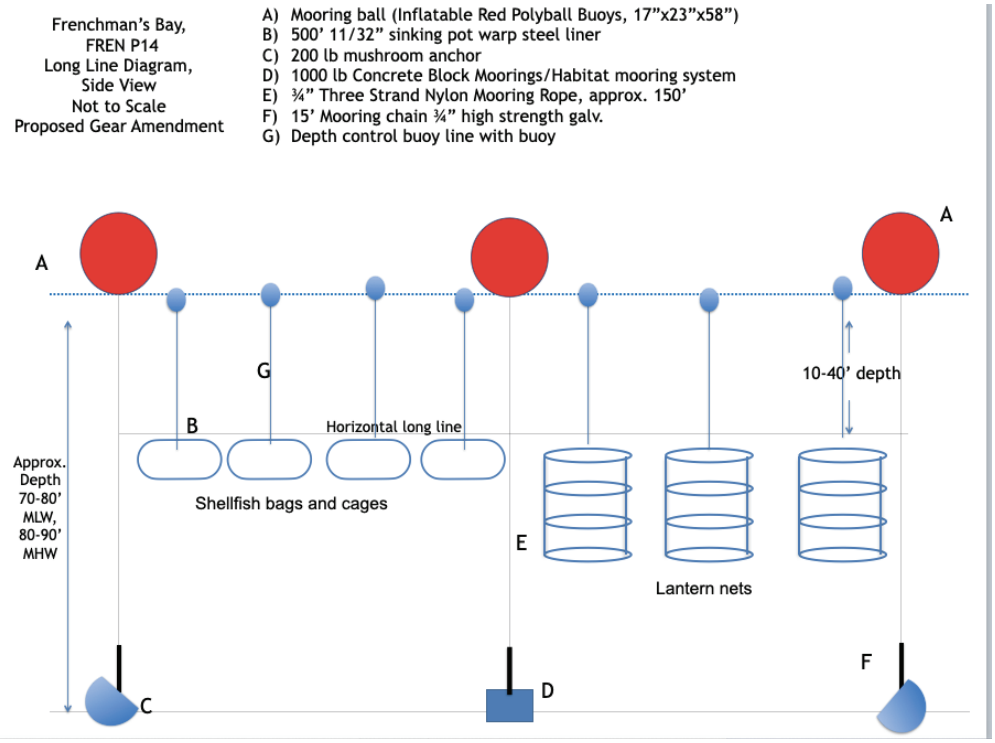
- Mooring configuration from existing 5 x 4 longlines, to a max configuration of 10 x 6 longlines in a grid pattern. (10 lines North to South parallel, 170' apart, 6 lines East to West parallel, 200' apart)
- Minimum moorings: 20 (in a 5 x 4 grid), Maximum moorings: 60 (in a 10 x 6 grid)
- Longlines will mostly consist of seasonal (September-July) seaweed cultivation on submerged horizontal longlines across the entire farm.
- Year-round deep water longlines (>10ft deep) for the suspension of lantern nets and cages for shellfish and sea urchin cultivation will be present on the southern half of the farm, to include the north-south (6 lines at 680') and east-west (5 lines at 1000') lines.

Overhead View of proposed Amendment, showing new mooring configuration and submerged long lines.



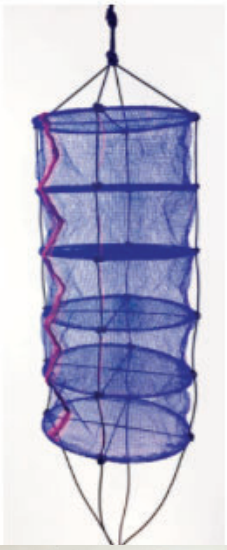


- **Cross-section view** showing:
  - mooring gear and
  - other gear
  - depths at MLW and MHW

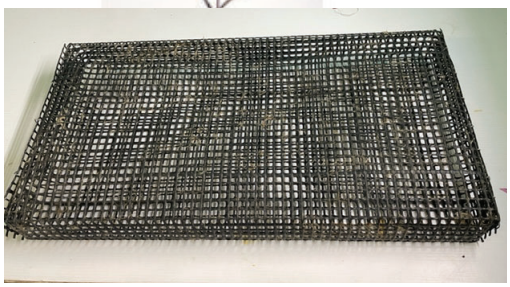


Drawing of an individual piece of each new gear, including:

- dimensions and
  - materials and
  - numbers of each type of gear to be added



Lantern nets are mesh enclosed stacked layers, 20” diameter x 50” in length.



Shellfish bags are typically plastic mesh rectangular bags in dimensions of 18”x35”x4”.

Shellfish cages, or “baskets”, are typically rigid plastic mesh units with dimensions of 33”x10”

It is estimated that at 4 feet spacing, approximately 200 lantern nets could be deployed in the east-west direction on each of the 1000’ parallel lines, and 40 nets could be deployed on the North-south cross lines.

At 3’ spacing, 300 shellfish units (cages/bags) could be deployed on each of the East-West 1000’ lines, and 50 on the North-South cross lines.

Initial deployment of nets/bags/cages will be experimental, with the potential for expansion if successful, up to 1/2 of the farm area on the southern end.

Gear	Units per East-West 1000' line	Units per North-South 170' line	Total number of units on farm
Lantern nets	200 at 4' spacing, at 2 lines=400 units	40 at 4' spacing, at 6 lines=240 units	640 units (for 2 EW lines, including EW and NS lines)
Shellfish unit (cage/ bag)	300 at 3' spacing, at 3 lines=900 units	50 at 3' spacing, at 18 lines=900 units	1800 units (for 3 EW lines, including EW and NS lines)

Bird Deterrent Control

All shellfish bags and nets will be submerged at least 10ft below the surface, so there will be no surface gear to attract bird landings. The only gear on the surface of the water will be the mooring balls and buoys. Birds have never been observed to land on or roost on these surface buoys.

Complete responses to the following questions (attach a separate sheet if needed):

1. How does adding this gear change your existing operations?
Amendment requests the addition of submerged bags/cages/nets for the cultivation of sea urchins and shellfish on an existing seaweed aquaculture lease. Submerged longlines would be placed 10-40 feet below the surface and marked with buoys, and will be present year round. The seaweed operation will continue as outlined in the lease. Tending of nets/bags/cages would take place at least once per month through the winter months, and weekly to bi-weekly in the summer months.

2. Describe any changes in the number of trips to the lease site per day. If none, please write "none."
None

3. Describe any changes in noise and level of on-site activity. If there are no changes, please write "none."
No additional noise or activity outside of existing operations, except for additional tending of bags/cages/nets in summer months. Trips to the farm would continue at least every two weeks through the summer months. Amendments are designed to fit into normal seaweed farm activity.

4. Will gear remain on site during the winter? X☐ Yes ☐ No If you selected “yes” use the space below to describe your overwintering plans. Please include the dates for overwintering.
Lantern nets and shellfish cages/bags will be suspended 10 ft below the surface year round. There are no unique overwintering activities.

3. Tax Maps and Riparian List

Is your existing lease within 1,000ft of shorefront land (which extends to mean low water or 1,650 ft. from shore, whichever is less)? ☐ Yes X No

If yes, the following supporting documents are required:

N/A

4. Applicant Signature

I hereby state that the information included in this application is true and correct. I have also read and understand the requirements of the Department's rules governing aquaculture and the application instructions pertaining to the lease amendment process.

Printed name: _____Sarah Redmond

Title (*if corporate applicant*): ____Founder, Springtide Seaweed

Signature:_____ Date: _____3/28/2022____

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Note:

- All applicants must sign and date this page. Please use the space below, if additional signatures are required.
- Corporate applicants, please be sure to include the title(s) (i.e. President, Treasurer, etc.) of the individual(s) signing on the company's behalf.

Additional Applicant:

Printed name: _____James West_____

Title (*if corporate applicant*):

Signature: Date: 3/28/22

5. Application Submission

1. Please review your application for completeness and ensure all supporting documents are attached. You may submit your application to DMR via email or mail to the addresses provided at the beginning of the application.

2. After you submit your application, DMR will review the proposed changes and contact you if additional information or action is required.

3. DMR will notify you when the application has been deemed complete.

4. After the application is deemed complete, DMR will establish a 14-day comment period. Personal notice of the proposed amendment(s) are provided to any riparian landowners within 1,000 feet of the existing lease and the municipality where the lease is located. Notice of the request will also be published on DMR's website. After the close of the comment period, DMR will render a final decision on the requested amendment(s).

Please be sure you have included the following (if applicable):

Species Amendment	Gear Amendment
☐ Tax map ☐ Certified riparian landowner list	☐ Copy of existing Army Corps Permit ☐ Layout plan ☐ Cross section view ☐ Drawing of new gear type ☐ Tax map ☐ Certified riparian landowner list