



US Army Corps
of Engineers
Alaska District

Public Notice of Application for Permit

ANCHORAGE
Regulatory Division (1145)
CEPOA-RD
Post Office Box 6898
JBER, Alaska 99506-0898

PUBLIC NOTICE DATE:	April 14, 2017
EXPIRATION DATE:	May 1, 2017
REFERENCE NUMBER:	POA-2016-402
WATERWAY:	Larsen Bay

Interested parties are hereby notified that a Department of the Army (DA) permit application has been received for work in waters of the United States as described below and shown on the enclosed project drawings.

Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Michael R. Gala at (907) 753-2821, toll free from within Alaska at (800) 478-2712, by fax at (907) 753-5567, or by email at michael.r.gala@usace.army.mil if further information is desired concerning this notice.

APPLICANT: Efficient Coastal Resources

LOCATION: The project site is located within Section 36, T. 30 S., R. 30 W., Seward Meridian; USGS Quad Map AK-Karluk C-1; Latitude 57.5350° N., Longitude 154.0218° W.; approximately 1 mile southwest of Larsen Bay Harbor along the shore, near Larsen Bay, Alaska.

PURPOSE: The applicant's stated purpose is to construct a 198-acre aquaculture farm.

PROPOSED WORK: Expand a current 1-acre aquaculture farm to 198-acre. The aquaculture farm would be 5,400-foot long by 1600-foot wide consisting of fifty (50) submerged long lines 4,800-foot long spaced 20-foot apart. The long lines would be anchored in place with twenty-eight (28) 200-lbs Danforth anchors attached to six (6) A-4 buoy's by 300-foot anchor lines, and twelve-hundred (1200) cork/weight line combinations, below the Mean High Water Mark (MHWM, 12.82 feet above mean lower low water elevation of 0 feet) of Larsen Bay which is a navigable water of the U.S. If necessary the applicant would place thirty-three (33) 1000-lbs

crab pots along the ocean floor to assist in stabilizing the long lines. The crab pots would have all webbing and mesh removed. Access and work on the site would be conducted by a work skiff with no additional support structures on site. The proposed project would encompass roughly 10% of the total area of Larsen Bay. All work would be performed in accordance with the enclosed plan (sheets 1-15), dated April 11, 2017.

ADDITIONAL INFORMATION: The applicant has applied for an Alaska Department of Natural Resources Land lease and an Alaska Department of Fish and Game Habitat Permit.

APPLICANT PROPOSED MITIGATION: The applicant is not proposing a discharge of fill material into waters of the U.S. The project has avoided and minimized adverse impacts to aquatic functions and waters of the U.S. to the maximum extent practicable. The applicant is not proposing any compensatory mitigation for the project.

CULTURAL RESOURCES: The latest published version of the Alaska Heritage Resources Survey (AHRS) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. There are no cultural resources in the permit area or within the vicinity of the permit area. The permit area has been determined to be within the proposed projects footprint within waters of the U.S. Consultation of the AHRS constitutes the extent of cultural resource investigations by the Corps of Engineers (Corps) at this time, and we are otherwise unaware of the presence of such resources. The Corps has made a No Potential to Cause Effects determination for the proposed project. Consultation with the State Historic Preservation Office (SHPO) is not required, however, any comments SHPO may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

ENDANGERED SPECIES: The project area is within the known or historic range of the Short-tailed Albatross (*Phoebastria (=Diomedea) albatrus*), Northern Sea Otter (*Enhydra lutris kenyoni*), Humpback whale (*Megaptera novaeangliae*), Sperm whale (*Physeter macrocephalus*), North Pacific right whale (*Eubalaena japonica*), and Steller Sea Lion (*Eumetopias jubatus*).

The project area is listed as critical habitat for Northern Sea Otter (*Enhydra lutris kenyoni*) and Steller Sea Lion (*Eumetopias jubatus*).

We are currently gathering information regarding these species and have yet to make a determination of effect. Should we find that the described activity may affect the species listed above, or their designated critical habitat, we will follow the appropriate consultation procedures under section 7 of the Endangered Species Act of 1973 (87 Stat. 844). Any comments the U.S. Fish and Wildlife Service or the National Marine Fisheries Service (NMFS) may have concerning endangered or threatened wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).

The project area is within the known range of the Chum Salmon (*Oncorhynchus keta*), Pink salmon (*Oncorhynchus gorbushca*), Coho salmon (*Oncorhynchus kisutch*), Chinook salmon (*Oncorhynchus tshawytscha*), Sockeye salmon (*Oncorhynchus nerka*), Octopus (*Octopoda spp.*), Walleye Pollock (*Theragra calcogramma*), Pacific Cod (*Gadus macrocephalus*), Dover Sole (*Microstomus pacificus*), Rock Sole (*Lepidopsetta bilineatus*), Flathead Sole (*Hippoglossoides elassodon*), Arrowtooth Flounder (*Atheresthes stomias*), Sculpins (*cottidae spp.*), Skates (*Rajidae spp.*), and Squid (*Cephalopoda, Teuthida*).

We have determined the described activity would not adversely affect EFH in the project area.

TRIBAL CONSULTATION: The Alaska District fully supports tribal self-governance and government-to-government relations between Federally recognized Tribes and the Federal government. Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding protected rights and resources will be accorded due consideration in this process. This Public Notice serves as notification to the Tribes within the area potentially affected by the proposed work and invites their participation in the Federal decision-making process regarding the protected Tribal right or resource. Consultation may be initiated by the affected Tribe upon written request to the District Commander during the public comment period.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all the factors that become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The outcome of the general balancing process would determine whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur. The decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Commander determines that it would be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

AUTHORITY: This permit will be issued or denied under the following authority:

(X) Perform work in or affecting navigable waters of the United States – Section 10 Rivers and Harbors Act 1899 (33 U.S.C. 403).

Project drawings are enclosed with this Public Notice.

District Commander
U.S. Army, Corps of Engineers

Operations Description:

Erik Obrien deployed a one-acre aquaculture farm for the 2015-2016 grow season, testing growth of macroalgae species *Saccharina* and *Alaria* in Larsen Bay, on the west-side of Kodiak Island. Proving the site is viable, starting in the 2016-2017 grow season, production will move from test phase to commercial production. Given the low-value of product, the scale of operations is set to expand substantially in order to be a viable business.

Figure 1 shows the grow area, approximat one mile from the Obrien's residence in Larsen Bay Alaska covers an area of 4,800 feet by 1,000 feet.

Figure 2 and **Figure 3** show the anchor lines required to secure the submerged longline grow area, and the expanded footprint by 300 feet on all sides, making the total footprint for the requested site, 5,400 feet by 1,600 feet. Additional detail is shown in Figure 3, where each of the anchor lines can be more clearly identified. At each corner of the farm, two, 200 pound Danforth anchors set the exterior frame, by pulling in opposite directions; a sway anchor runs the length of the farm down the center, 500 feet from each of the corners on the short side. Perpendicular anchors run the long length of the farm, every 600 feet. Each of these distances can be easily identified by the numbers (in hundreds) near each line, representing anchor lines. At the end of each line is a 200 pound Danforth anchor, totaling 28 anchor/anchor line combinations. The 33 boxes represent 100 pound crabpots set along the seafloor, and linked together in a longline system, on the sea floor. While this structure would greatly increase the stability of the farm, the costs and complexity of adding the crabpot component of the design may prove too expensive and complex in year one. The benefit of the crabpot frame along the seafloor, besides stability is to facilitate setting gear that is otherwise removed each summer. The crabpot structure would stay in place year-round on the seafloor. Crabpots are stripped of all webbing and repurposed as waste to the community of Kodiak.

Figure 4 and **Figure 5** show 3D renditions (see CAD design submitted with application) of the whole farm, including each of the 50, 4,800 foot submerged longlines that will form the plantable farm. The 50 lines are 20 feet apart, and in total represent 240,000 feet of longline that will be planted with seeded twine. Also displayed are the cork/weight components attached to each 4,800 foot longline, every 200 feet. Each longline will have 25 cork/weight compliments.

Figure 6 is an early simple sketch of the farm design, with markup to compliment the digital designs.

Of the 50 longlines to be planted, the farm will be split evenly, 25 each of *Saccharina*, (sugar kelp) and *Alaria* (ribbon kelp). Fertile material will be collected from within 50 km of the farm site, and delivered to the hatchery in Kodiak at the NOAA facility, in the late summer, estimated August or September. The seed will grow in the hatchery for approximately 6-8 weeks, and planted in October or November. The farm site will be constructed in September, after the summer salmon season (Obrien fishes commercially in the area). All anchors and lines will be set from the skiff, similarly to the way setnet gear is set. If the crabpot frame is deployed, Obrien will contract with the *F/V Enterprise* or similarly sized *Pot Boat* to facilitate setting that gear. The grow season is during the winter months, November to May.

Harvest estimates are assumed as empirical data for Alaska grow operations is limited, although based on *Saccharina* growth rates in other regions, it is expected that *Saccharina* will yield approximately 3,000 pounds per 400 feet, or 1.05 million pounds grown on 140,000 feet of longline. Data on *Alaria* is even

more limited, though it is expected to grow slower. The best estimate is that Alaria will grow to half the volume of Saccharina, or approximately 500,000 pounds from 140,000 feet of longline. Harvest will take place in May. The current harvest plan assumes the product will be bagged and loaded onto the 42-foot *F/V Ella Jane* for transport to Kodiak, where it will be dried. One alternative under consideration is to set up processing in Larsen Bay. O'Brien already has a DEC processing permit for salmon, so converting to kelp is feasible. Kelp that is processed in Larsen Bay would be skiffed to the harbor in bags, and trucked to the processing facility. Processed product will be held until a southbound Samson Tug can be coordinated for wholesale delivery to Tacoma Washington.

Figure 7 shows a representative diagram of full length of the farm, including anchor lines, measuring 5,400 feet. 200 pound Danforth anchors will be secured to the ocean floor, connected by 300-foot anchor line (scope at ratio of 3:1), connected to an A4 buoy floated to the top of the water. A 60 dropline will run from the A4 buoy, to the submerged longline, 7 feet underwater. A 9 in. x 18 in. pot cork will be attached to 7 foot, ½ polydac sinking line, quick-looped to the submerged longline; where the polydac is looped to the longline, a 10-pound rock weight in a mesh bag will be lashed to prevent slippage, and form the cork/weight compliment necessary to hold the longline submerged at 7 feet. The cork/weight combinations will spread the length of the 4,800 foot longline every 200 feet. (Figure 7 is representative, truncating the missing 23 cork/weight combinations every 200 feet.) The longed crabpot frame, secured to the ocean floor, and secured to an A4 buoy at the surface of the water. (Figure 7 is representative, truncating the 7 longlined crabpot and A4 buoy combinations every 600 feet; this corresponds with the perpendicular anchor sways, also not shown).

Figure 8 shows how the dropline will connect to a perpendicular anchor line and the start of the 4,800 plantable longline. At the beginning of the plantable longline will be the first cork/weight compliment. This intersection is held together with a 5/8 teardrop stainless steel ring.

Figure 9 shows the vertical, top-view of the 50 submerged longlines that form the plantable farm, 240,000 feet of ½ inch blue steel hard-lay line, including the anchor lines that secure the farm.

Figure 10 shows the seeding process by which seeded twine is affixed to PVC pipe (2" or 3"), whereby the longline is threaded through the center. As the longline passes through the pipe, the twine is tied and periodically taped to secure it tight to the long line. As described in Figure 12, the longline is built with shackles of gear which can be separated, allowing the spooled twine to be threaded on the longline.

Figure 11 shows the detailed components of the farm in horizontal view, and explained, and representative of all 25 cork/weight combinations that are again truncated, but explained in detail to understand design and relation to ocean surface and sea floor.

Figure 12 shows a shackle of gear and the c-link method used to connect and disconnect the longline. Not shown in the image is how the ½ hard-lay blue steal line is spliced to the c-links, thus merging the representative shackles in the example.

1. **Site location:** The operation will be located in Larsen Bay on Kodiak's west side, approximately one nautical mile from the community of Larsen Bay. Coordinates have been provided in the Alaska's Aquatic Farm Application.
2. **Site dimensions:** Acres for each parcel: The will cover approximately 198 acres, shaped in a rectangle, with 50, 4,800 foot lines spread every 20 feet for 1000 feet; including 300 feet of anchor line extending from each side of the plantable farm.
3. **Total acres of all parcels:** Parcel 1 – 198 Acres.
4. **Species you intend to farm:** Sugar Kelp, *Saccharina latissima* & Ribbon Kelp *Alaria*
5. **Culture Method:** Submerged Long Line.
6. **Gear (type, size, number, configuration, material, mesh size, and anchoring system):** 28, 200 pound Danforth anchors, 6 – A4 buoys, 1200 cork/weight/line (7 ft. ½ polydac) combinations, 240,000 feet of ½ blue steal hard-lay line, 8,400 feet of 9/16 SRC hard-lay line.
Optional 33 crab pots (anchors), 14,400 ft. 5/8 SRC hard-lay line and 540 ft. polydac connecting line.
7. **Equipment (type, size, number, configuration, material, and anchoring system):** See above.
8. **Harvest equipment and method:** 23-foot Aluminum skiff, cut the kelp from the line, bag in fish totes, bags, haul to shore for processing in Larsen Bay; or bag line, and kelp together for tender on 42 foot *F/V Ella Jane* to Kodiak for processing. Processing equipment is a 40 foot container van converted for dehydrating and drying.
9. **Support Facilities** (type, size, number, configuration, material, and anchoring):
Not Applicable.
10. **Access to and from site:** Skiff.
11. **Storage location of equipment and gear when not in use:** Parcel 1 – Home in Larsen Bay.

LEGEND BOX

Figure A-1: General Location Map
Coastal Efficient Resources
Larsen Bay
Westside of Kodiak Island
February 4th, 2016

USGS Map: Karluk C-1, ID: 5667780
USGS Map: Kodiak C-6, ID: 5668450

Distance from Larsen Bay One Mile



Google Earth



LEGEND BOX

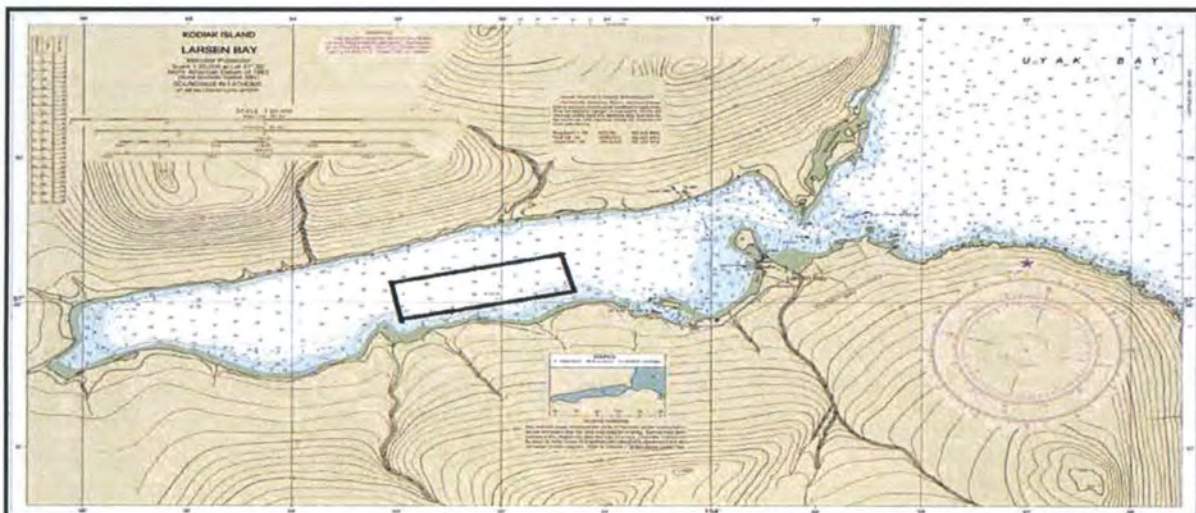
Figure B-2: Detailed Location Map
 Coastal Efficient Resources
 Larsen Bay
 Westside of Kodiak Island
 February 4th, 2016

NOAA Chart: 16559



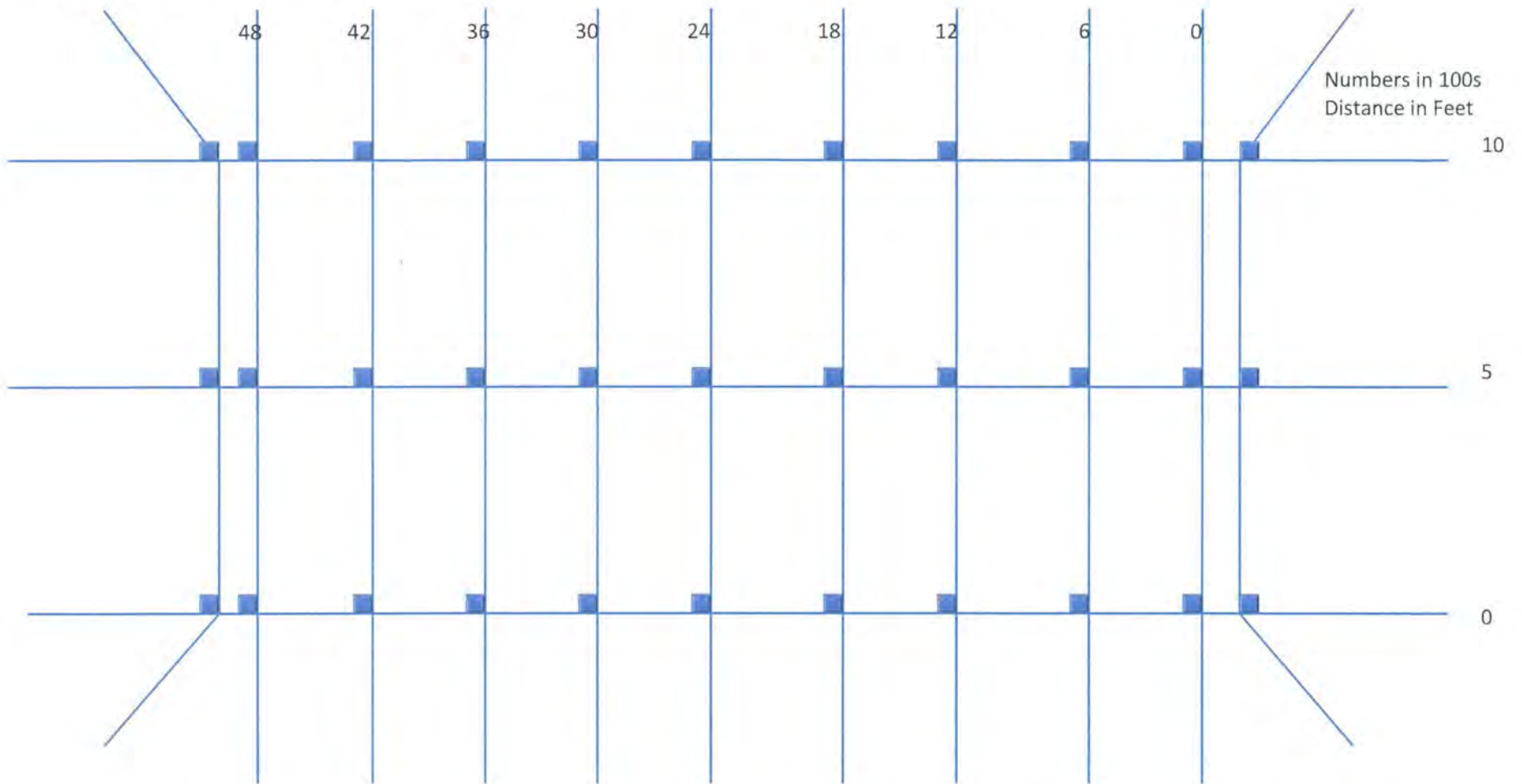
Google Earth

feet 3000
 km 1



Parcel 1: <u>Larsen Bay</u> (e.g. Grow-out Area)	NE Corner No. 1: Latitude 57° 32.277' N	Longitude 154° 1.472' W
	SE Corner No. 2: Latitude 57° 32.022' N	Longitude 154° 1.399' W
	SW Corner No. 3: Latitude 57° 31.839' N	Longitude 154° 2.999' W
	NW Corner No. 4: Latitude 57° 32.083' N	Longitude 154° 3.113' W

Figure 3: Detailed Farm Diagram



200 Danforth Anchor at end of each line, with 300 ft. of scope between buoy and anchor. Squares represent 1000 pound crabpots (3 tied together per weight), dead-weight with lines floated straight to surface with no scope. 33 individual deadweight drops, 99 total pots. Pots are long-lined together, forming the frame of the farm. Horizontal lines farming distance is 4800 ft. with perpendicular lines secured every 600 ft. 60 ft. spread between A4 buoy and corner anchoring systems (two anchor/lines per corner). Vertical lines farming distances of 1000 ft., with deadweight pots every 500 foot. Not shown are 4800 ft. horizontal lines spread every 20 foot. Total farm capacity, 50 lines*4800 ft. = 240,000 feet.

Figure 4: Detailed Farm

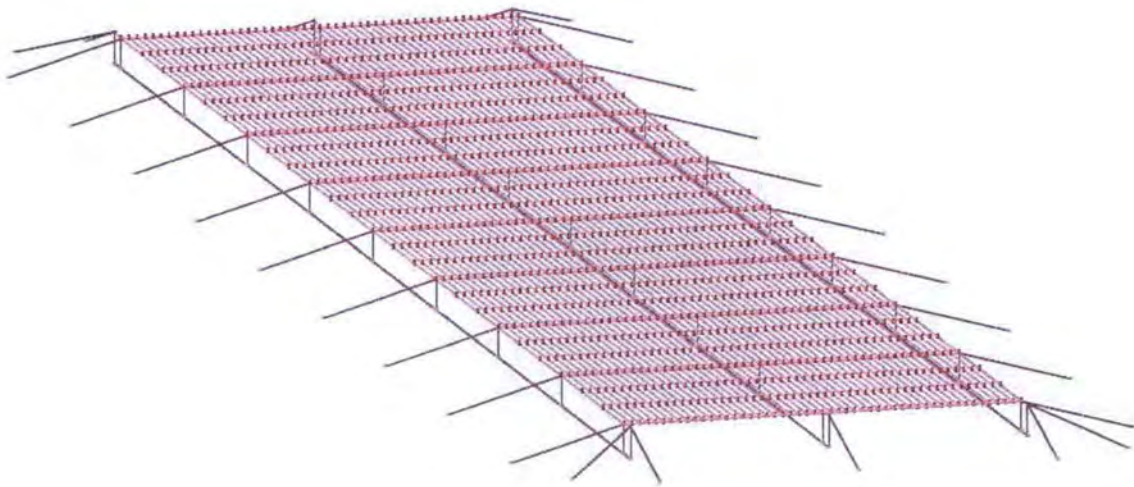


Figure 5: Detailed Farm with Markup

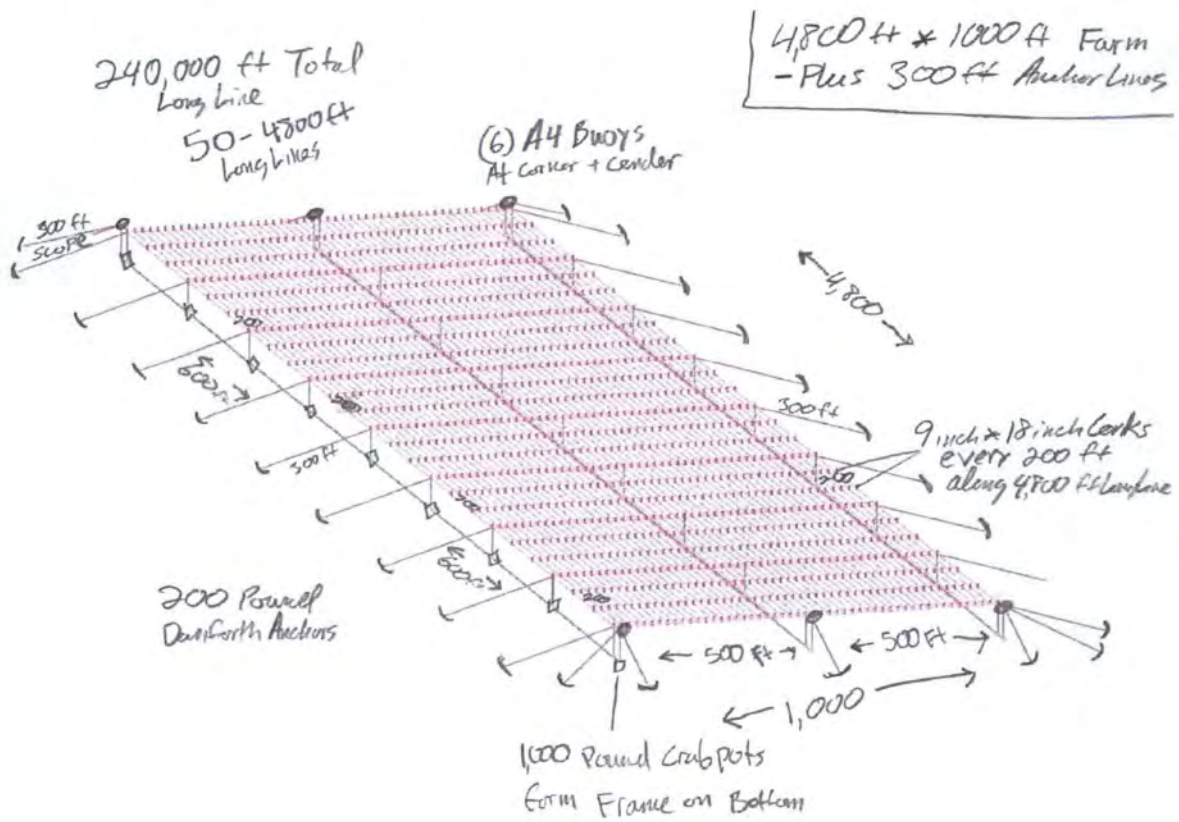


Figure 6: Detailed Farm, Sketch Outline

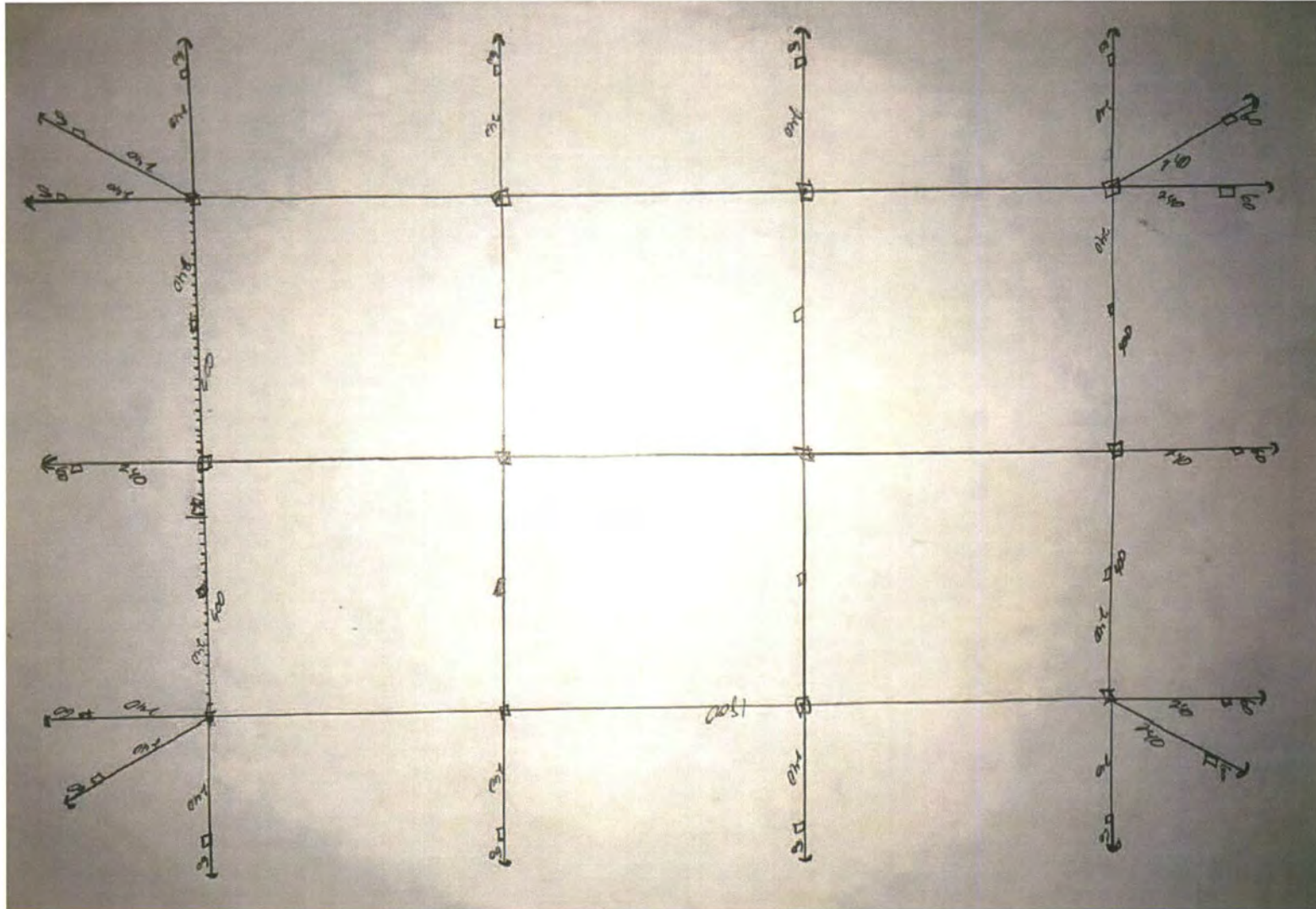


Figure 7: Representative Diagram 5,400 ft. length, Horizontal View, Distance between cork/weight combinations represents 4,800 ft. submerged long-line that will be planted with 6-8-week old seed from hatchery

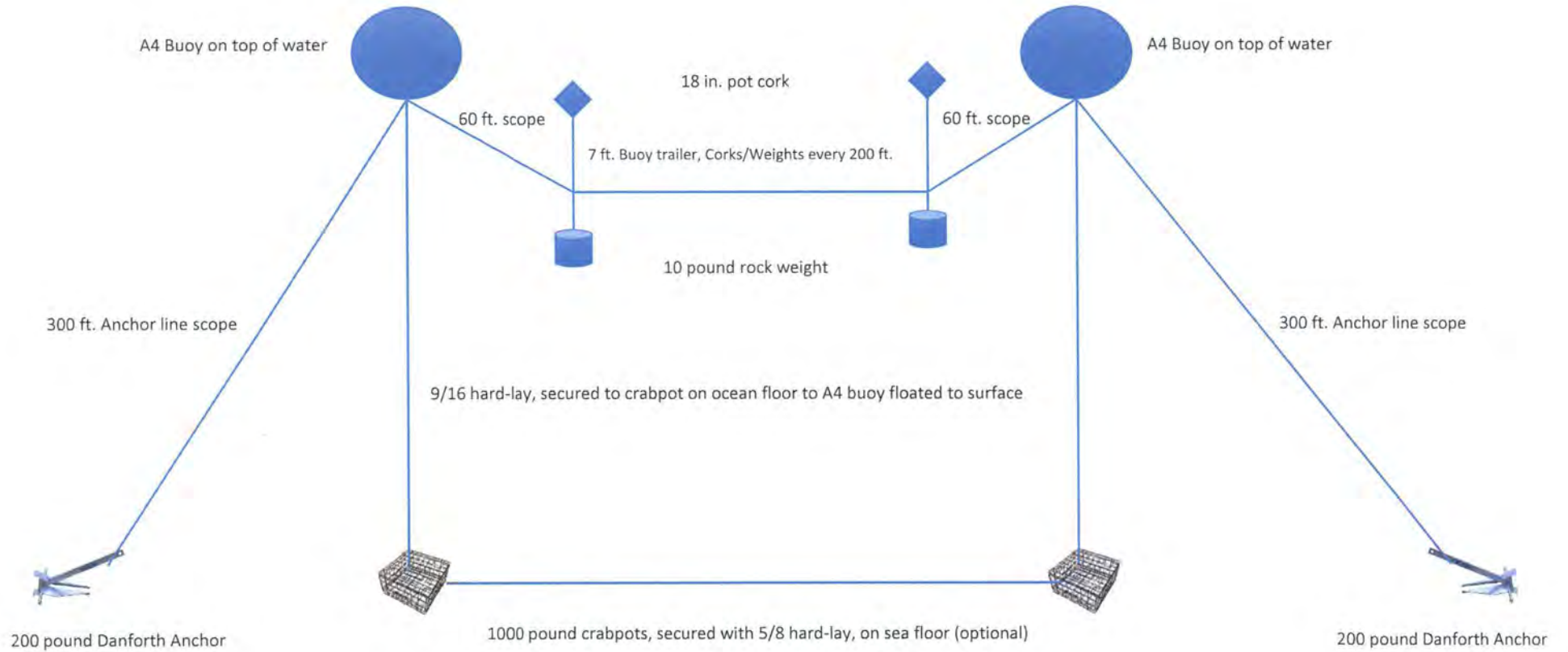


Figure 8: Detailed Corner Diagram

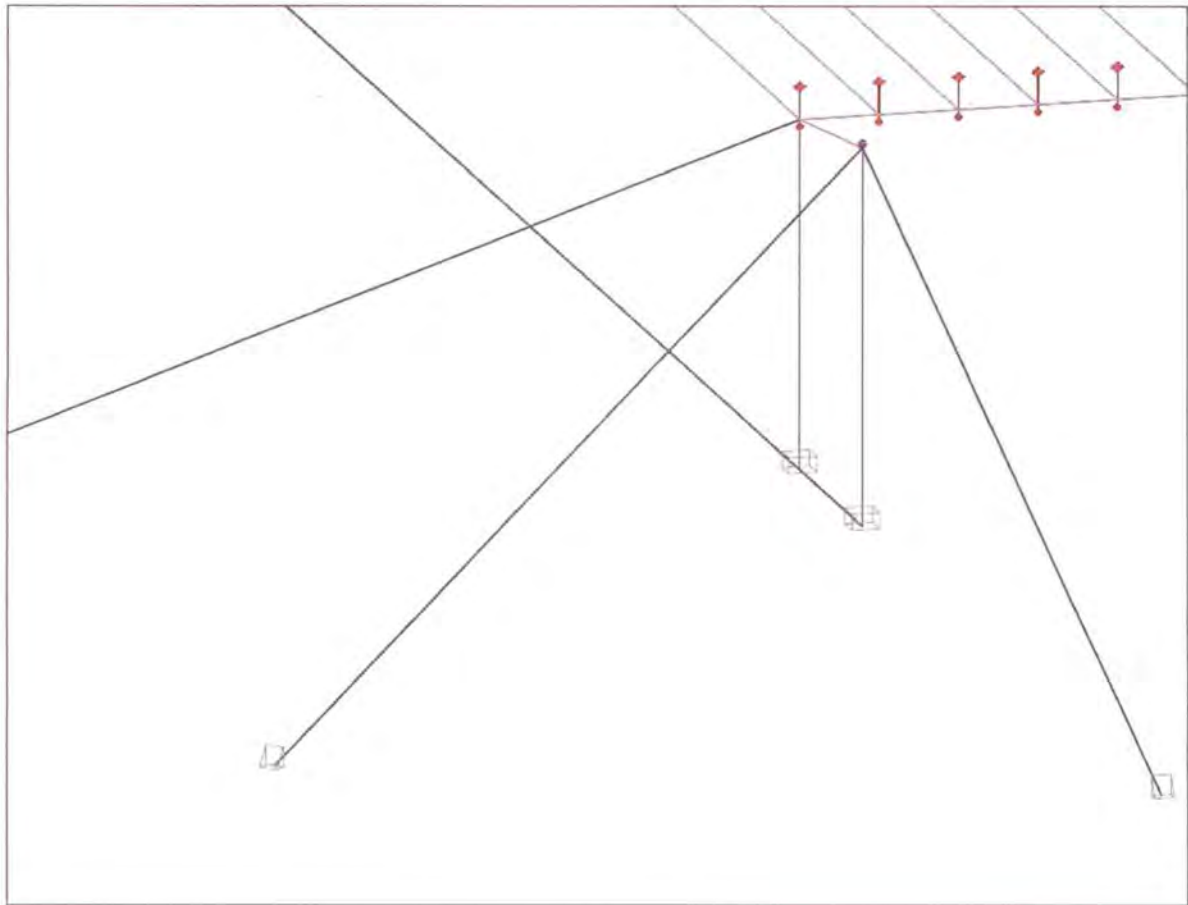


Figure 9: Vertical, Top view, showing 50, 4,800 Longlines representing farm grow area

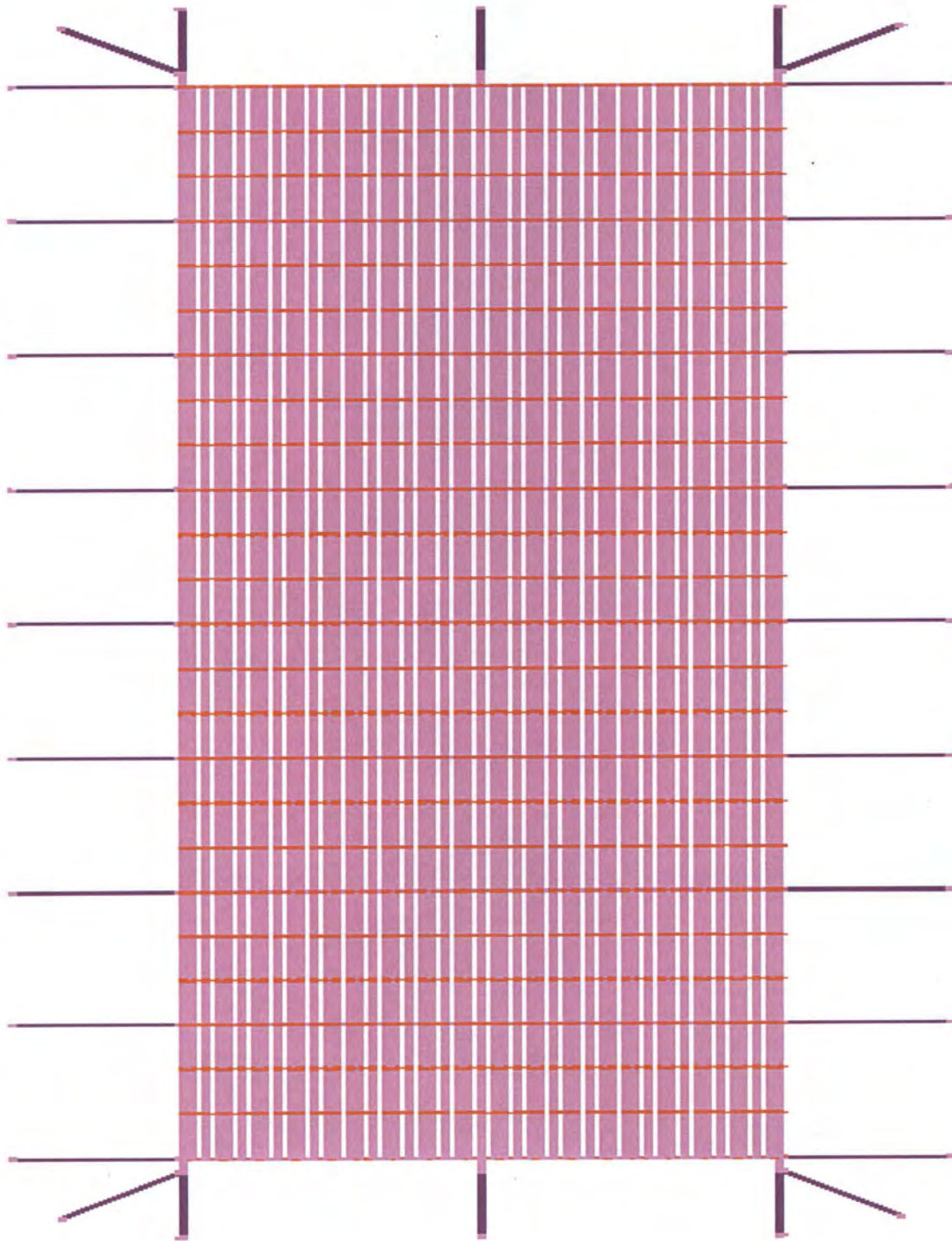
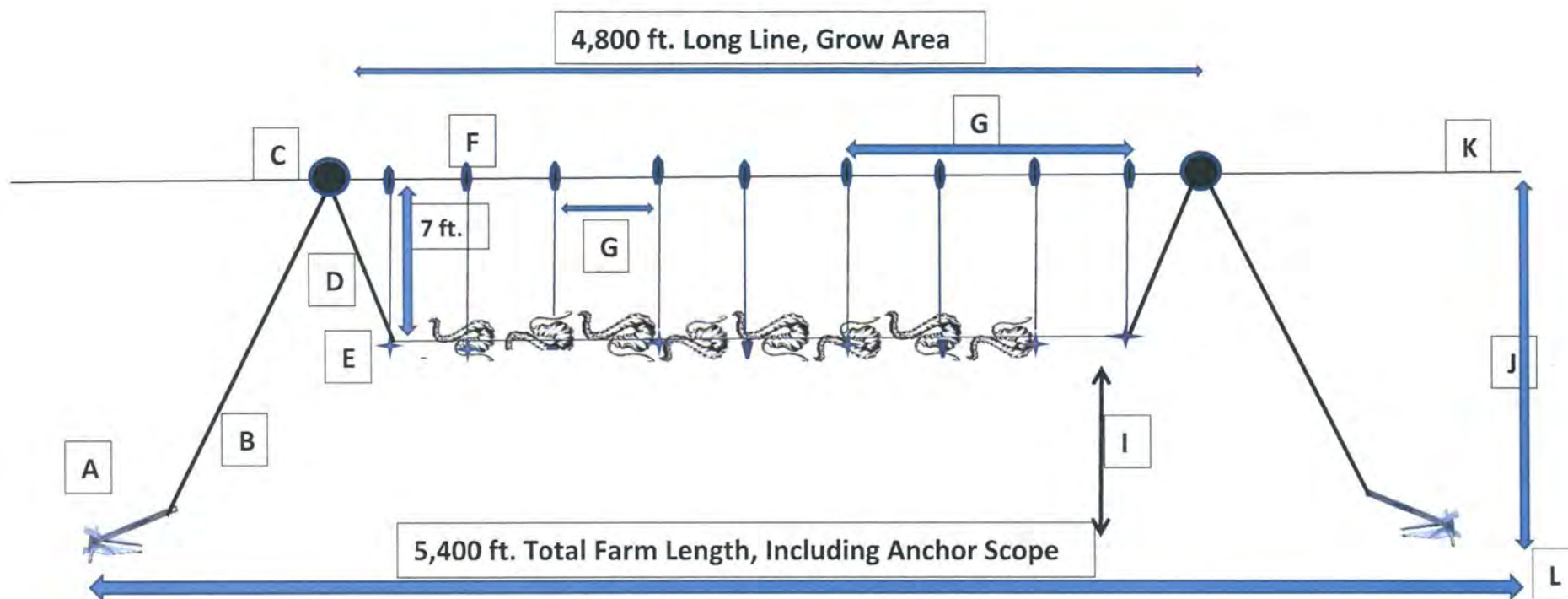


Figure 10: Seeding Longline

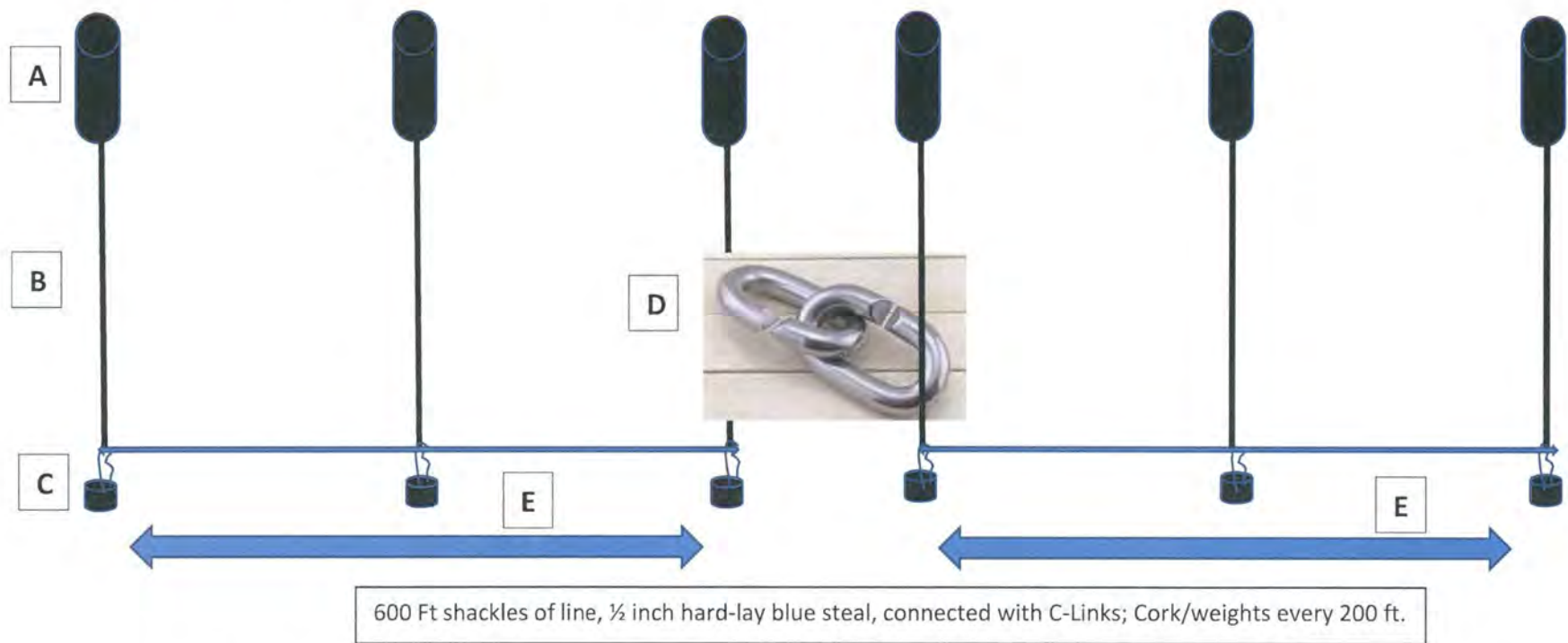


Figure 11: Cross-sectional view Submerged Longline (not to scale)



- A. Mooring, 200 lb. Danforth Anchor
- B. 9/16 Blue Steel Hard-Lay Line, 300 ft.
- C. AF Surface Buoy
- D. 60 ft. drop line, surface connect to submerged line
- E. Seeded Kelp on 1/2 in. hard-lay Blue Steel line, Total Length 4,800, each Shackle 600 ft.
- F. 18 in. Corks, attached to 10 lb. Rock Weights, with 7 ft. 1/4 in. polydac drop-line
- G. 200 ft. distance between cork/weights
- H. 600 ft. between perpendicular sway anchors
- I. Water depth at low tide
- J. 83 ft. – Distance from submerged longline to sea floor
- K. Water Line
- L. Sea Flore

Figure 12: Details on kelp depth control line dropper

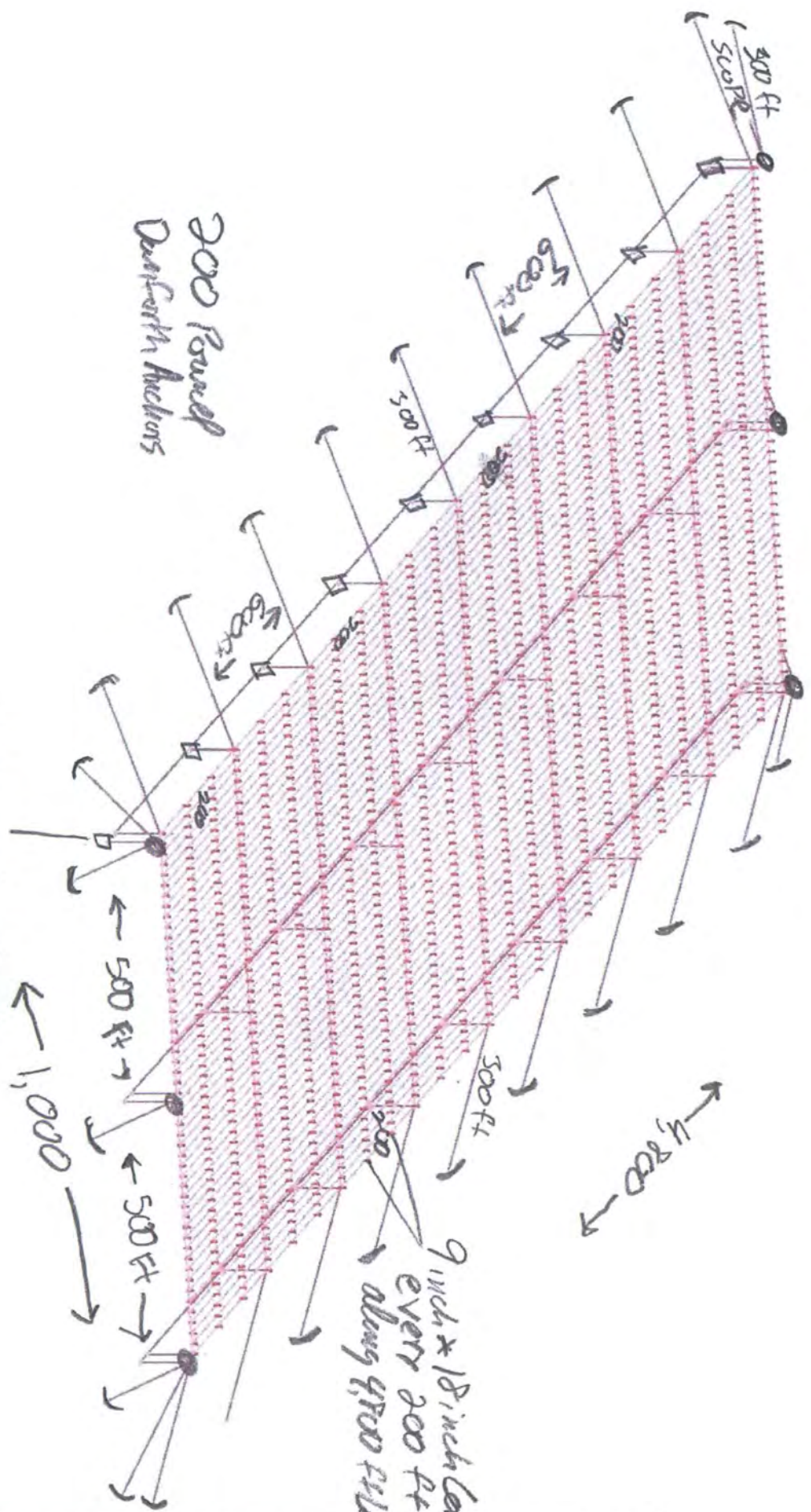


- A. 9 x 18 inch Pot Cork
- B. 1/2 polydac, sinking line, quick tied to cork at surface, quick tied to submerged longline under water; where connected to longline, 10-pound rock weight is bagged in mesh bag, and lashed to quick tie polydac to prevent slippage
- C. 10 lb. rock weight in mesh bag, lashed to submerged longline
- D. Stainless steel 1/2 C-Links
- E. 600 ft. Shackle of Gear

240,000 ft Total
Long line
50-4800 ft
Long lines

(6) 44 Buoys
At corner + center

4800 ft * 1000 ft Farm
- Plus 300 ft Anchor Lines



200 Pound
Danforth Anchors

1,000 Pound Crab Pots

Form Frame on Bottom

9 inch * 18 inch Larks
every 200 ft
along 4800 ft line