

STATE OF ALASKA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINING, LAND AND WATER

PRELIMINARY DECISION

**ADL 232746 Nicholas Mangini
dba Kodiak Island Sustainable Seaweed**
Application for Lease
AS 38.05.035(c) & AS 38.05.083

This Preliminary Decision is the initial determination on a proposed disposal of interest in state land and is subject to comments received during the Public Notice period. The public is invited to comment on this Preliminary Decision. The deadline for commenting is **5:00 PM on December 6, 2017**. Please see the Comments Section on page 10 of this decision for details on how and where to send comments for consideration. Only the applicant and those who comment have the right to appeal the Final Finding and Decision.

Requested Action:

The Department of Natural Resources (DNR), Division of Mining, Land, & Water (DMLW), Southcentral Regional Office (SCRO) has received a request from Nicholas Mangini dba Kodiak Island Sustainable Seaweed to lease approximately 16.95 acres of tidelands for 10 years within Chiniak Bay located at the west side of Popof Island, near the city of Kodiak, Alaska. The applicant has a 3-year, 1-acre land use permit serialized as LAS 31010 for testing the growth of sugar kelp at this location. If this lease is authorized, land use permit LAS 31010 will be closed.

Scope of Review:

The scope of this decision is to determine if it is the State's best interest to issue a 10-year aquatic farm lease to Kodiak Island Sustainable Seaweed. Nicholas Mangini dba Kodiak Island Sustainable deployed four 800' submerged seeded longlines in a 1-acre parcel in the 2016-2017 grow season, testing growth of sugar kelp (*Saccharina latissimi*) within Chiniak Bay, on Kodiak Island, Alaska. The site proved successful and the applicant would like to move from the test phase to commercial production if the aquatic farm lease, ADL 232746, is authorized.

Authority:

This lease application is being adjudicated pursuant to AS 38.05.035(b)(1) Delegation of the Powers and Duties of the Director; AS 38.05.035(e) Written Findings; AS 38.05.070(b) Generally; AS 38.05.083 Aquatic Farming and Hatchery Site Leases; and AS 38.05.945 Public Notice. The authority to execute the Final Finding and Decision, and the lease, has been delegated to the Regional Managers of DMLW.

Administrative Record:

Case file ADL 232746 constitutes the administrative record for the Nicholas Mangini dba Kodiak Island Sustainable Seaweed lease application.

Legal Description, Location, and Geographical Features:

The State land where this proposed lease site is located is described as follows:

- **Site nickname:** Popof Island
- **Legal description:** NE1/4 Section 7 and NW1/4 Section 8, Township 28 South, Range 19 West, Seward Meridian
- **Geographical locations:** Chiniak Bay, West Side of Popof Island, Kodiak Island, Alaska
- **Approximate Lat/Longs:**

Grow Area for kelp: 1,215.22' x 607.612' = 16.95 acres

NE Corner Latitude:	57° 46.065' N	Longitude:	152°24.499' W
SE Corner Latitude:	57° 45.946' N	Longitude:	152°24.790' W
SW Corner Latitude:	57° 46.000' N	Longitude:	152°24.943' W
NW Corner Latitude:	57° 46.112' N	Longitude:	152°24.655' W

- **Existing surveys:** None
- **Municipality/Borough:** Kodiak Island Borough
- **Native Corporations/Federally Recognized Tribes:** Koniag, Inc.

Title:

The DNR Title Report issued from DNR's Realty Services on September 13, 2017 states that the State of Alaska holds title to the subject tidelands under the Equal Footing Doctrine and the Tide and Submerged Lands Act of 1953. The State of Alaska holds fee title to the land and mineral estates of Popof Island.

Third Party Interests:

No third-party interests are known at this time.

Classification and Planning:

The project area is subject to the Kodiak Area Plan (Area Plan). The Area Plan map for the proposed lease site is Map 3-5 Kodiak Region, found in Chapter 3 of the Area Plan. The Unit No./Area for the site is KT-13 Near Island¹. The tideland designation for the site is Public Recreation and Tourism-Dispersed². The tideland classification for the site is Public Recreation Land³. Popof Island, the closest upland area to the proposed aquatic farm site is classified as Public Recreation Land, also⁴.

The proposed operation must be in the overall best interest of the State before an authorization may be issued. Factors that are to be considered in this decision are identified in 11 AAC 63.050(b). In Chapter 2 of the Area Plan, Areawide Land Management Policies, goals include providing opportunities to increase income and diversify the State's economy through the use of state tidelands and submerged lands for aquatic farming⁵. As specified in the Area Plan in Chapter 3 under

¹ Kodiak Area Plan Ch. 3 p. 3-102

² Kodiak Area Plan Ch. 3 p. 3-102

³ Kodiak Area Plan Ch. 4 p. 4-5

⁴ Kodiak Area Plan Ch. 4 p. 4-5

⁵ Kodiak Area Plan Ch. 2 p. 2-5

Management Intent⁶, heritage sites, seabird colonies, and waterfowl wintering areas are to be protected. Sport fishing and commercial harvest opportunities are to be maintained⁷. In accordance with the Area Plan and classification, aquatic farming is an allowable use on state owned tidelands.

Traditional Use Findings:

Traditional use findings will not be discussed in this Preliminary Decision because the proposed lease site is located is located within the Kodiak Island Borough, an organized borough. Pursuant to AS 38.05.830 a traditional use finding is not required.

Access:

Access to and from the aquatic farm is by skiff from the boat harbor on Near Island. Larger vessels will be used during deploy and harvest time only and will also be accessed from the boat harbor on Near Island.

Access To and Along Navigable and Public Waters:

Nearly all shore and tide lands in the State of Alaska are subject to a To and Along Easement under AS 38.05.127 and 11 AAC 51.045. The purpose of this easement is to uphold the constitutional right of the public to have free access to, and use of, the State's waterways. The department has determined that the issuance of this aquatic farm lease will not block reasonable access to state navigable water. The along easement extends 50 feet seaward from the line of mean high water (MHW).

Public Trust Doctrine:

Pursuant to AS 38.05.126 all authorizations for this site will be subject to the principals of the Public Trust Doctrine; specifically, the right of the public to use navigable waterways and the land beneath them for: navigation, commerce, fishing, hunting, protection of areas for ecological studies, and other purposes. These rights must be protected to the maximum extent practicable while allowing for the development of this project. As such, SCRO is reserving the right to grant other authorizations to the subject area consistent with the Public Trust Doctrine.

Management Analysis:

The scope of this review is to evaluate and determine if a lease authorization for the above-mentioned parcel is in the best interest of the State and supports the overall intent of the Aquatic Farm Act.

In 1988 the legislature adopted statutes referred to collectively as the Aquatic Farm Act. The legislature, through the adoption of the Aquatic Farm Act, established in statute the State could proceed and indeed encourage development in the area of shellfish farming. The two central tenets of the State's aquatic farming policy are:

1. The State should encourage the establishment and responsible growth of an aquatic farming industry; and,
2. Development and siting of aquatic farming operations should be made with full consideration of established and ongoing activities.

⁶ Kodiak Area Plan Ch. 3 p. 3-102

⁷ Kodiak Area Plan Ch. 3 p. 3-102

With these considerations, Aquatic Farm Leases were designed to achieve commercial production and develop a foundation for an aquatic farming industry in the State of Alaska.

Management Goals for Aquatic Farms:

The overall intent of the Aquatic Farm Program is to provide citizens access to public lands and resources with the goal of creating an industry which will foster the State's economic growth through the creation of employment opportunities and development of Alaska grown shellfish products.

Three main state agencies, the Alaska Department of Fish and Game (ADF&G), DNR, and the Department of Environmental Conservation (DEC) oversee the regulatory responsibilities for the commercial operation of Alaska aquatic farms. These agencies work cooperatively to ensure the State's public lands and resources are being used in such a manner as to positively contribute and benefit the residents of the State of Alaska through means such as economic growth and the availability of locally grown products.

As part of the lease conditions the applicant/lessee is required to submit two documents which the agencies will use to measure the aquatic farm's viability and determine if it is the State's best use of the land and resources. Evaluative measures are derived from a variety of sources including, but not limited to, current industry standards, comparable farms in the area, and research and technology based trends on both the local and regional scale.

The first document an applicant/lessee is required to submit is a Development and Operations Plan describing a basic business strategy for the aquatic farm site. This includes general information such as, location information and infrastructure (i.e. work rafts, covered processing facilities, flupsys, etc.) to be used on the farm site. It also contains measurable goals established by the applicant/lessee, to include information on startup and projected stocking, species to be cultured, anticipated seeding schedules and production and harvest levels for each 12-month cycle. In addition, it specifies business practices such as methods used to improve the productivity of the species being raised (i.e. predator exclusion controls, seeding schedules, etc.), cultivation and harvesting techniques, equipment used for cultivation and harvesting, number of people on site, projected number of days the site is actively being farmed, and methods of accessing the farm site. As the business market is a fluid entity DNR is under the expectation this Development and Operation Plan will be modified (with prior department approval) over the life of a lease.

Annual reports are the second required document a lessee must submit for an aquatic farm site to remain in compliance with lease terms. These reports are used as an evaluative tool by DNR, ADF&G, and the lessee to measure the productivity of an aquatic farm site, the current feasibility of the Development and Operation Plan, and to identify any problems (i.e. seed shortage, environmental factors, etc.) that have been encountered over the course of a 12-month period. In addition to identifying any difficulties an individual farm may be encountering, these annual reports will provide the regulatory agencies a method of identifying larger scale or industry wide problems and trends.

Lease Management Discussion

Nicholas Mangini dba Kodiak Island Sustainable Seaweed was issued a 3-year land use permit (LAS 31010) for a 1-acre kelp aquatic farm with an effective date of November 1, 2016 and

expiration date of October 31, 2019. The kelp aquatic farm site is in the same general location of the proposed aquatic farm lease with the legal description of NE $\frac{1}{4}$ Section 7, NW $\frac{1}{4}$ Section 8, Township 28S, Range 19W, Seward Meridian. In addition to paying a \$250 annual use fee, a performance guaranty in the amount of \$2,500 and liability insurance was secured by Nicholas Mangini for his land use permit. If lease ADL 232746 is authorized, land use permit LAS 31010 will be closed. The existing performance guaranty of \$2,500 will be transferred to ADL 232746 if the lease is authorized.

Nicholas Mangini dba Kodiak Island Sustainable Seaweed found the 1-acre site viable for the growth of kelp and submitted an aquatic farm lease application to DNR aquatic on March 8, 2017. The proposed lease site will cover an area of 1,215.22' x 607.612' or approximately 16.95 acres. The aquatic farm will be composed of 50, 800' submerged longlines spread every 12' for 1,000'; including 200' of anchor line extending from each side of the farm.

Two kelp species, *Alaria marginata* and *Saccharina latissima*, will be grown for commercial use on the submerged longlines. Of the 50 longlines to be planted, the farm will be split evenly with each kelp species: 25 each of *Alaria marginata* and *Saccharina latissima*. The grow season is during the winter months, November to May. Five additional species of kelp (*Cymathere Triplicata*, *Eularia fistulosa*, *Nereocystis luetkeana*, *Palmaria sp.*, and *Pyropia sp.*) will be grown for research and development reasons on a portion of the longlines.

The proposed lease will be subject to the terms of DMLW's standard lease document⁸ and any Special Stipulations based, in part, upon the following considerations.

Development Plan

The proposed lease Development Plan submitted on March 8, 2017 is accepted by SCRO as complete, but is subject to change based on agency and public review. Should the proposed lease be granted, it is anticipated that the Development Plan will need to be updated throughout the life of the lease as activities and/or infrastructure are added or subtracted. All updates must be approved, in writing, by SCRO before any construction, deconstruction, replacement of infrastructure, or change in activity will be permitted. SCRO reserves the right to require additional agency review and/or public notice for changes that are deemed by SCRO to be beyond the scope of this decision.

Compliance with Existing Regulations and Lease Stipulations

SCRO recognizes there are many challenges faced by aquatic farmers in Alaska with growing kelp. Such challenges include survival of seedstock to harvestable size, localized water quality issues, fouling organisms such as bryozoans that diminish quality of product, and weather issues that damage product or culture gear. Harvesting, processing, and marketing logistics must all be considered.

This said, SCRO has the responsibility to appropriately manage lands held in trust for the residents of the State of Alaska and to ensure the authorized aquatic farms are operating in accordance with

⁸ DMLW Lease Agreement, form 102-111, as revised (last revision September 25, 2001). A copy of the standard lease agreement is available upon request

the intent of the Aquatic Farm Act. The primary method used to accomplish this is the adoption of regulations governing how laws are to be implemented.

Key regulations for the management of aquatic farms are identified below:

11 AAC 58.510, Lease Utilization

This regulation states the land being leased must fall within the scope of what is being proposed by the applicant and approved by DNR. Leases must be developed and utilized consistent with the approved development plan within 5 years or the lease may be terminated.

11 AAC 63.030(b), Commercial Use Requirement (CUR)

The CUR is one method DNR has available to determine whether or not the aquatic farm is being farmed to a commercial benchmark. The CUR was codified in the 1998 regulations as a quick and quantifiable measurement of productivity by the fifth year of operations (and beyond) and it provides DNR and ADF&G a means of identifying farms that may need closer monitoring. At the time the CUR was adopted, the primary species being farmed was the Pacific Oyster which had an established record of growth data in Alaskan waters available to regulators and industry members. At this time the CUR states a farm needs to be making annual sales in excess of \$3,000.00 per acre or \$15,000.00 per farm by the fifth year of operation of aquatic farm product, as defined in AS 16.40.199. Failure to meet CUR constitutes a default and may be cause for termination, per 11 AAC 63.110(7).

11 AAC 63.110(7), General Lease Provisions, Development and Operations Plan

The applicant has provided a site description and a project description to DNR and ADF&G with their application. They also provided a projection on how much planting and harvesting they plan to do during the 10-year term. DNR is aware of some of the issues faced by farmers when trying to establish any realistic long term projections. This is why the Development and Operation Plan is considered a fluid document and subject to change (with DNR approval) over the life of the lease in reaction to unanticipated changes in the basic business plan. Leaseholders are encouraged to communicate changes to plans with DNR frequently to communicate how farming activities are progressing. Failure to develop the lease site in accordance with the approved development plan within five years of lease issuance will result in non-compliance and subject the lease to cancellation.

11 AAC 63.110(7), General Lease Provisions, Annual Reports

Annual Reports (due by January 31st of each year) are valuable documents for both DNR and ADF&G. They are the main tool both agencies use to identify and understand issues the aquatic farmer may be encountering which could inhibit the productivity of an aquatic farm site. Reports also communicate if the site is being utilized in accordance with the Development Plan and if the CUR is being met annually, per 11 AAC 63030(b). By failing to submit complete and timely Annual Reports, the lessee not only falls out of compliance with aquatic farm regulations, but also inhibits DNR's constitutional responsibility to ensure the land is being utilized in accordance with the best interest of the residents of the State.

Proposed Action:

A central tenet of DNR's Mission Statement is to responsibly develop state resources by making them available for maximum use consistent with public interest. In keeping with this statement,

DNR proposes to issue Nicholas Mangini dba Kodiak Island Sustainable Seaweed a 10-year aquatic farm lease. This will enable DNR to adequately assess Nicholas Mangini's progress in meeting the following regulations:

- 11 AAC 63.110 (7) requires compliance with an approved Development and Operation Plan and the timely submission of Annual Reports.
- 11 AAC 63.110 (11)(B) requires the lessee to provide the department with any records it has determined are necessary to verify the lessee's compliance with the lease provisions.
- 11 AAC 63.030(b) requires progress shown toward being able to meet the CUR prior to the end of the lease term (this can be done by supplying ADF&G and DNR annual reports).
- 11 AAC 58.510 requires the lessee to make substantial use of the land within five years of the lease term and develop it in accordance with the approved Development and Operation Plan.

Hazardous Materials and Potential Contaminants:

No hazardous materials or fuel will be stored on the lease parcels.

The use and storage of all hazardous substances must be done in accordance with existing federal, state and local laws. Debris (such as soil) contaminated with used motor oil, solvents, or other chemicals may be classified as a hazardous substance and must be removed from the sites and managed and disposed of in accordance with state and federal law.

Lease Performance Guaranty (bonding):

In accordance with 11 AAC 63.080 Nicholas Mangini dba Kodiak Island Sustainable Seaweed will be required to submit a performance guaranty for the lease site.

- **\$2,500.00 Performance Bond:** This bond will remain in place for the life of the proposed lease. The bond amount is based upon the level of development, amounts of hazardous material/substances on site, and the perceived liability to the State. This bond will be used to insure the applicant's compliance with the terms and conditions of the lease issued for their project. This bond amount will be subject to periodic adjustments and may be adjusted upon approval of any amendments, assignments, re-appraisals, changes in the development plan, changes in the activities conducted, or changes in the performance of operations conducted on the authorized premises, and as a result of any violations to one or more of the authorizations associated with this project.
- **Reclamation Bond:** SCRO is reserving the right to require a reclamation bond due to non-compliance issues during the term of the lease or near the end of the life of the project.

Insurance:

In accordance with 11 AAC 96.065, Nicholas Mangini dba Kodiak Island Sustainable Seaweed will be required to submit proof of liability insurance to SCRO, with the State of Alaska listed as a "NAMED" insured party. Nicholas Mangini dba Kodiak Island Sustainable Seaweed will be responsible for maintaining such insurance throughout the term of the lease.

Survey:

In accordance with AS 38.04.045, this short-term land lease does not require a survey. However, the State of Alaska reserves the right to require one in the future, should the need arise due to changes in statutes or increased use of the area. Nicholas Mangini dba Kodiak Island Sustainable Seaweed has submitted GPS coordinate point(s) for the four corners of the leased area.

Grant:

The term for an aquatic farm site is 10 years, per 11 AAC 63.100. The term dates for the lease will be dependent on approval of the Final Finding and Decision.

Compensation/Appraisal:

DMLW has approved an administrative lease fee schedule for aquatic farm sites that meet the conditions listed within the schedule. The most current lease fee schedule will be used to establish the fair market rental each lessee must pay. Fees are subject to adjustment per AS 38.05.105. At this time the rates for aquatic farms are \$450/acre or partial acre and \$125 for each additional acre or partial acre. In accordance with the Aquatic Farmsite Fee Schedule, Report No. 2522-12, a breakdown of the lease fee will be as follows:

$$16.95 \text{ acres } (1 \times \$450) + (16 \times \$125) = \$2,450.00 \text{ per year}$$

The applicant has the option to have a site-specific appraisal done for each site, at the applicant's expense, before the lease is issued, if they do not wish to use the DNR approved fee schedule. If an applicant opts for a site-specific appraisal, the division-approved appraisal will establish the rental for the lease and the fee schedule will no longer be an option.

Assignment of Lease:

The proposed lease, if issued, may be transferred or assigned to another individual or corporation **only** with prior written approval from the State of Alaska. A lease will not be assigned to an entity if that entity does not meet the statutory requirements of the lease or the lease is not in good standing.

Reclamation:

In accordance with AS 38.05.090(b), all Lessees must restore their lease sites to a "good and marketable condition" within a minimum of 120 days after the termination of their lease. What level of reclamation constitutes as being "good and marketable" is at the discretion of SCRO. DNR reserves the right to require a reclamation bond at any time.

Agency Notice:

An Agency Review was conducted for a 20-day review starting on **August 23, 2017**. The deadline for agency comments was **September 11, 2017**.

The following agencies were included in the review:

- DNR DMLW – Mining
- DNR DMLW – Water
- DNR DMLW – Title
- DNR Division of Parks and Outdoor Recreation
- DNR – Land Sales
- DNR – Office of History and Archaeology/SHPO
- DNR – Division of Oil and Gas
- Department of Fish and Game - Habitat
- Department of Fish and Game – Aquatic Farm Coordinator
- Department of Environmental Conservation - Shellfish
- Department of Transportation and Public Facilities
- US Fish and Wildlife Service
- U.S. Army Corp of Engineers
- National Oceanic and Atmospheric Administration
- U.S. Environmental Protection Agency
- U.S. Coast Guard
- City of Kodiak
- Kodiak Soil and Water Conservation District
- Kodiak Island Borough

Agency Notice Comment(s):

During the agency review, SCRO received one agency comment:

Kodiak Island Borough:

The Kodiak Island Borough Community Development Department commented that KIBC 17.15.090(B) states, “*... the outdoor storage of materials and equipment is prohibited unless it is listed as a permitted or conditional use in a district.*” Mr. Mangini’s home is located on a lot zoned R2-Two-Family Residential, a district in which outdoor storage is not listed as a permitted or conditional use. Consequently, we request that Mr. Mangini modify #12 of Kodiak Island Sustainable Seaweed’s Development Plan to specify that storage of equipment and gear at his home will be indoors, in order to be compliant with Kodiak Island Borough Code.

SCRO Response:

DNR has informed Nicholas Mangini dba Kodiak Island Sustainable Seaweed of the Kodiak Island Borough request. Nicholas Mangini dba Kodiak Island Sustainable Seaweed has complied with the request and revised #12 of the Development Plan.

Public Notice of the Preliminary Decision:

Pursuant to AS 38.05.945, the notice will be posted on the Alaska Online Public Notice System at <http://aws.state.ak.us/OnlinePublicNotices/Notices/Search.aspx> for at least 30 consecutive days per AS 38.05.945(b)(3). The post offices located in Kodiak USCG Branch, Kodiak, and USPS

Eastside Contract Postal Unit and will be requested to post the notice of the Preliminary Decision per AS 38.05.945(b)(3)(C). Courtesy notices will also be mailed or e-mailed to neighboring property owners, permit/lease holders, and other interested parties on November 1, 2017 for a 30-day public comment period.

Comment(s):

This decision is subject to both public and agency comments and all comments received by the comment deadline will be considered in the Final Finding and Decision. Only those who comment and the applicant have the right to appeal this decision.

Written comments about this project must be received in this office no later than 5:00 PM on December 6, 2017 to be considered.

To submit comments, please choose one of the following methods:

Postal: Department of Natural Resources
 Southcentral Region Office
 ATTN: Karen Cougan
 550 West 7TH Avenue Suite 900C
 Anchorage, AK 99501-3577

Phone: 907-269-8543

E-mail: karen.cougan@alaska.gov

Fax: 907-269-8913

If public comments result in significant changes to the Preliminary Decision, additional public notice may be given. To be eligible to appeal the Final Finding and Decision, a person must provide written comments during the Preliminary Decision comment period per AS 38.05.035(i)-(m).

Signature Page Follows

Recommendation:

SCRO has completed a review of the information provided by the applicant, examined the relevant land management documents, and has found that this project is consistent with all applicable statutes and regulations. This decision considers the applicant's history and experience with aquatic farming, their proposed Development Plan, the existing uses in the area, and the overall benefit to the State's aquatic farm industry. It is the recommendation that the State issue Nicholas Mangini dba Kodiak Island Sustainable Seaweed a 10-year lease, with the understanding that if the lessee fails to comply with the submission of the Annual Reports, Commercial Use Requirements, or with any other information the department requests, this will constitute a violation of the lease terms and steps may be taken to terminate the lease authorization(s).

Karen Cougan

10/31/17

Date

Preliminary Decision:

It is the determination of the Division of Mining, Land, and Water that it may be in the State's best interest to issue an aquatic farm lease for 10 years to Nicholas Mangini dba Kodiak Island Sustainable Seaweed, as described above. Upon authorization of lease ADL 232746, land use permit LAS 31010 will be closed and the applicant will pay the annual lease fee of \$2,450 per year. The applicant will also be required to submit a \$2,500 performance bond and meet the State of Alaska liability insurance requirements.

This application shall now proceed to public notice.

Clark Cox, Regional Manager
Southcentral Region Land Office, Division of Mining, Land & Water

10-31-17

Date

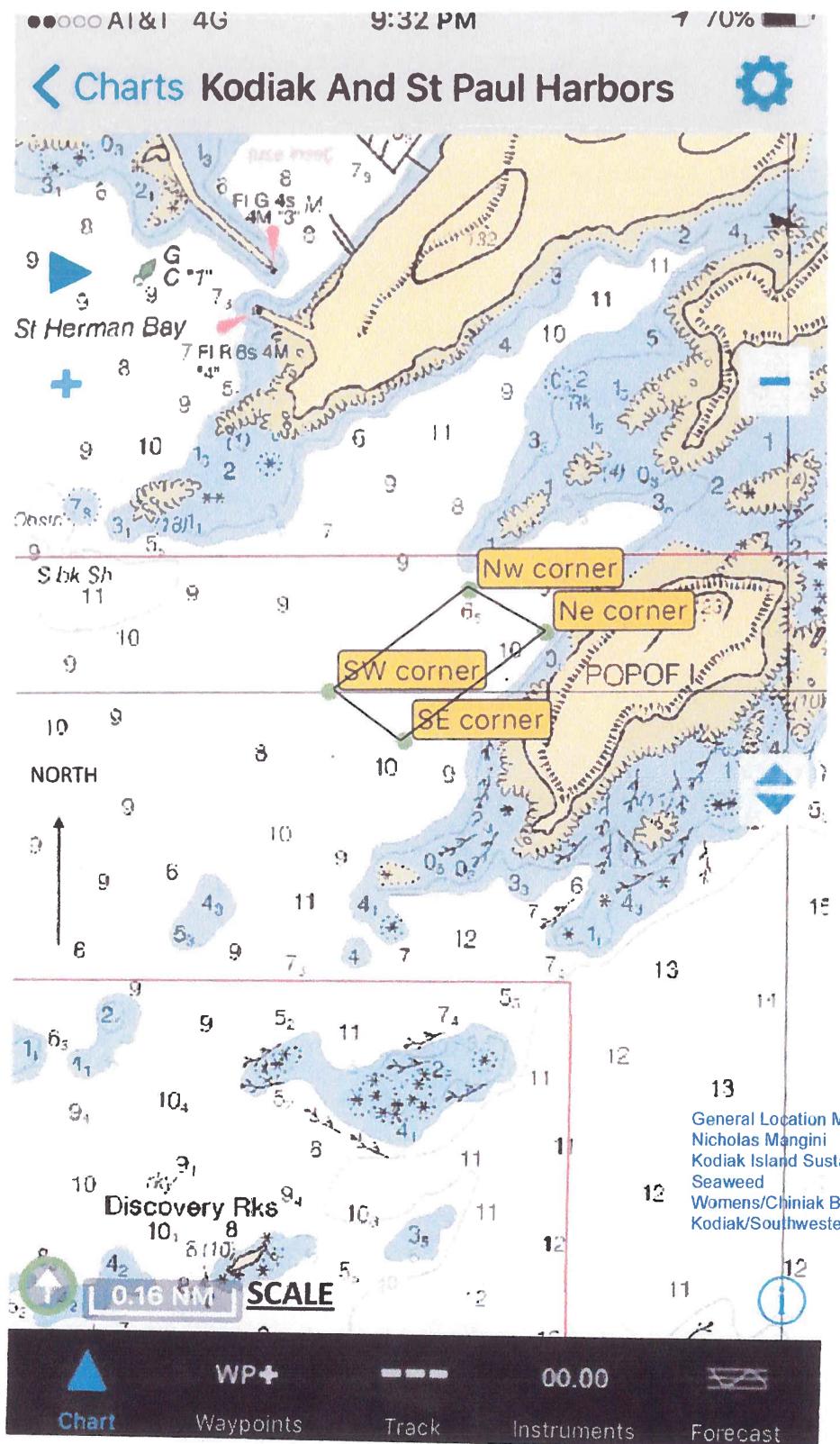
Attachments

Attachment A – Development Plan Vicinity Map, Project Description (The complete Development Plan is available upon request.)



Attachment A

Development Plan



Project Description

1. Operations description

I, Nicholas Mangini will attempt to deploy kelp growing operations near the town of Kodiak On Kodiak Island Alaska. My hope is to further the infrastructure needed to develop an operational kelp farm in the Kodiak area. The next phase of my project is to see feasibility of expanding the size of my current farm, also to see how the market handles the influx of available kelp in our area. this site is located within 1 mile of local harbors offering the ability to monitor it closely while staying well away from known routes or public use areas.

2. Site location

The location I've chosen for this phase is close to the town of Kodiak. Our hope is to monitor the growing on a daily, weekly basis to see growing rates and conditions for future use around the island. coordinates available in aquatic plan operations application

3. site dimension

the site will use 50 - 800 foot seeded lines anchored in place in a submerged configuration of buoys and corks. The site will retain a rectangular shape and basically is the same as my existing site but instead of 43 feet wide it will be 607 feet wide.

4. total acreage

16.950 acres 607 feet wide by 1215 feet long

5. species intended to farm

Sugar kelp, *Saccharina Latissima*

Ribbon kelp, *Alaria marginata*

Research and Developmental species

Cymathere Triplicata

Eularia Fistulosa

Nereocystis Luetkeana

Palmaria sp.

Pyropia sp.

6. culture method

Submerged long lines

7. Gear (type, size, number, configuration, material, mesh size, and anchoring system.)

This will be a maximum of 9 anchors and 50 seeded long lines. Corks and buoys depend on the weight created by the kelp itself although this year I found that 9 A-4 buoys and 8 corks per line is working well.

8. Equipment (type, size, number, configuration, material, mesh size, and anchoring system.)

This will be a maximum of 9 anchors and 50 seeded long lines. Corks and buoys depend on the weight created by the kelp itself although this year I found that 9 A-4 buoys and 8 corks per line is working well.

9. Harvest equipment and method

Skiff, cut the kelp from the line and remove, transfer harvested kelp to a larger vessel transfer to processing facility.

10. Support facilities (type, size, number, configuration, material, mesh size, and anchoring system.)

Not applicable.

11. Access to and from site

Skiff from a local harbor in Kodiak city located adjacent to my site, and larger vessels for deploy and harvest time only also leaving from said harbor.

12. Storage location of equipment and gear when not in use

My home in Kodiak city, each long line and anchor will be removed at time of harvest and redeployed at time of out plant, each season for the permitted years. Gear will be stored inside my shed in the offseason. I have ample room both in an attached garage and detached shed at my home in Kodiak for the misc. corks and lines that will be removed and replaced each year.

Narrative

The various seaweed long line system is composed of anchors and mooring buoy on each end, and a submerged rope that hangs at 7 feet from the surface of the ocean. The kelp spores are on a string which is wrapped around the subsurface rope and they maintain a constant depth from the surface using a depth control dropper. The spores are typically seeded onto the rope in late fall and harvest occurs late spring of the next year. The anchoring system is made up of 1000-pound cement blocks, scope ratio of roughly 2.5:1, Two and a half fathoms out for each fathom

of depth. We tested this site and design to scale in 2016 with much success in a very tough winter environment that is not a normal year for Kodiak so I am quite confident that the proposed set up will be successful.