RE: Request for a Permit Modification; NPDES Permit FL0A00001 July 05, 2023

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Environmental Engineer
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Dear Mr. Tyler,

This letter shall serve as a formal request for a permit modification of Ocean Era's NPDES permit number FL0A00001, in accordance with 40 CFR Section 124.5. As such, Ocean Era does not intend to implement the project as currently permitted (i.e., with almaco jack or a SPM net pen system). The following Velella Epsilon (VE) Project history and progress status provides the rationale for requesting this permit modification.

Proposed Changes –

- Grid mooring system vs. FL0A00001-permitted single- or swivel-point mooring (SPM) system
- Red drum (*Sciaenops ocellatus*) vs. FL0A00001-permitted almaco jack (*Seriola rivoliana*)

Background –

Ocean Era's previous success with multiple pilot and demonstration operations culturing almaco jack was based in part on the use of the SPM system as a fundamental best management practice (BMP) for effectively eliminating the *Neobenedenia* skin fluke issue. This ectoparasite is a common fish health challenge with many marine species, particularly *Seriola* spp. The VE Project's original Chilean partner had agreed to provide the FL0A00001-permitted SPM system as an in-kind contribution for VE. However, this company met with financial difficulties, and ceased operations about 5 years ago. Since that time, the Ocean Era team has pursued numerous other U.S. and European manufacturers who might be willing and able to design, engineer, and construct a similar net pen system. None have been identified to date. Several of these companies have pointed out the challenge for manufacturers to provide the one-time financial investment needed for such non-recurring engineering costs for a demonstration-scale SPM net pen. One U.S. company (InnovaSea) has proposed a demonstration SeaProtean submersible net pen on a fixed grid mooring (but is not willing to provide this as an in-kind contribution).

Over the same timeframe, the VE Project's hatchery partner (Mote Aquaculture Park) suffered a power failure during one of the recent hurricanes causing the total loss of the conditioned almaco jack broodstock. While newly captured wild broodstock could certainly be obtained, this would then mandate a minimum of 6 to 12 months to condition new broodstock for spawning.

Justification –

The project therefore currently has no almaco broodstock available, a poor history of fingerling production, and no manufacturer who is willing and able to design, engineer, and construct a single-use, demonstration scale SPM net pen system. The VE Project team has therefore been compelled to redirect the project towards a commercially available species, and a multi-point fixed grid mooring system.

Red drum are considered highly successful candidates for offshore culture in the Gulf of Mexico. Fingerlings for this species are readily and abundantly available from several Florida hatcheries throughout the region. There is an existing pond-based aquaculture industry for red drum in Texas, and a large market and strong demand for the product.

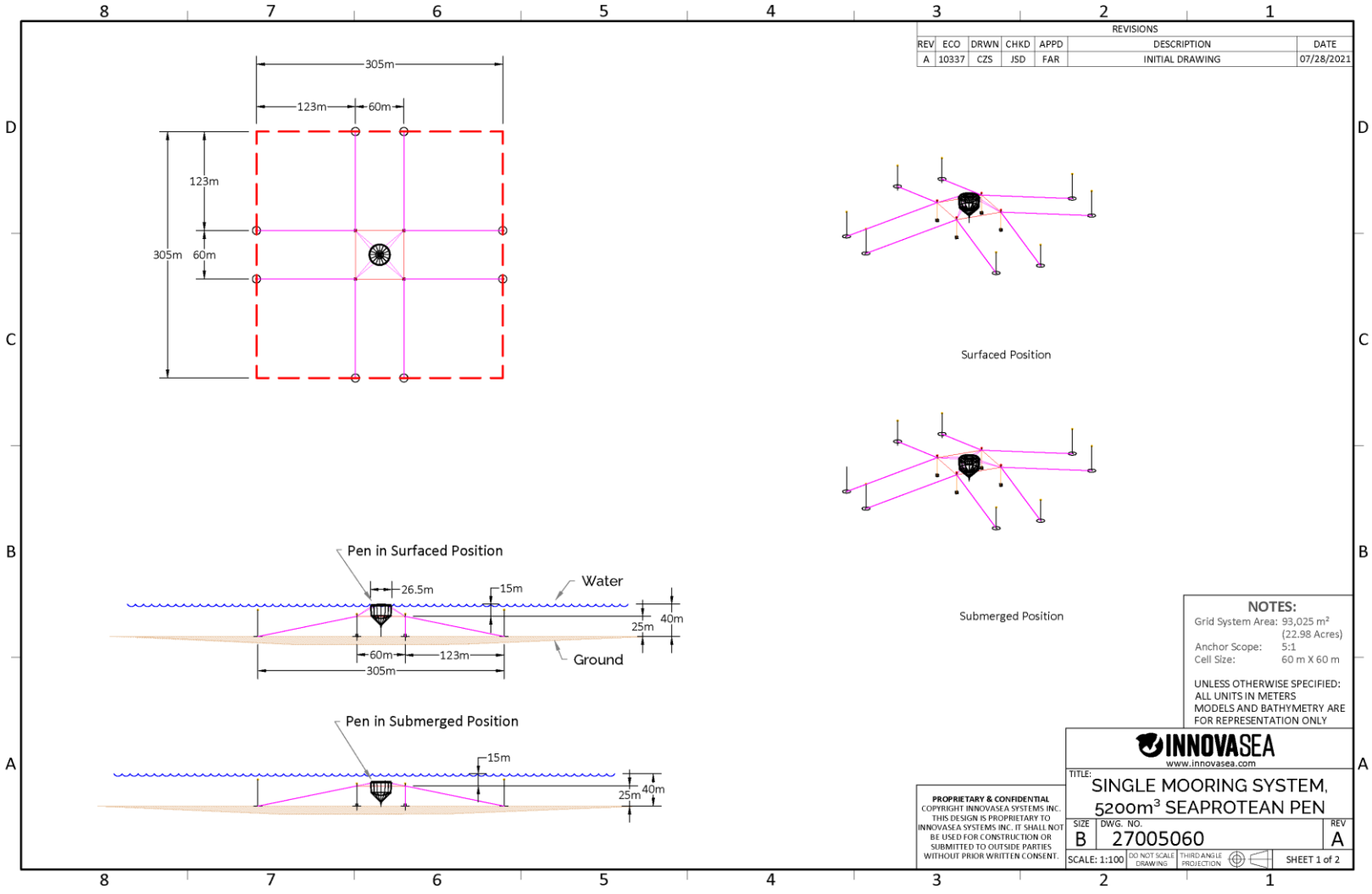
There are no reported health issues (i.e., skin flukes) with red drum in offshore culture systems, and thus no need for a SPM net pen system as a BMP. InnovaSea and other net pen manufacturers would be willing to provide a standard grid moored net pen system.

Comparisons –

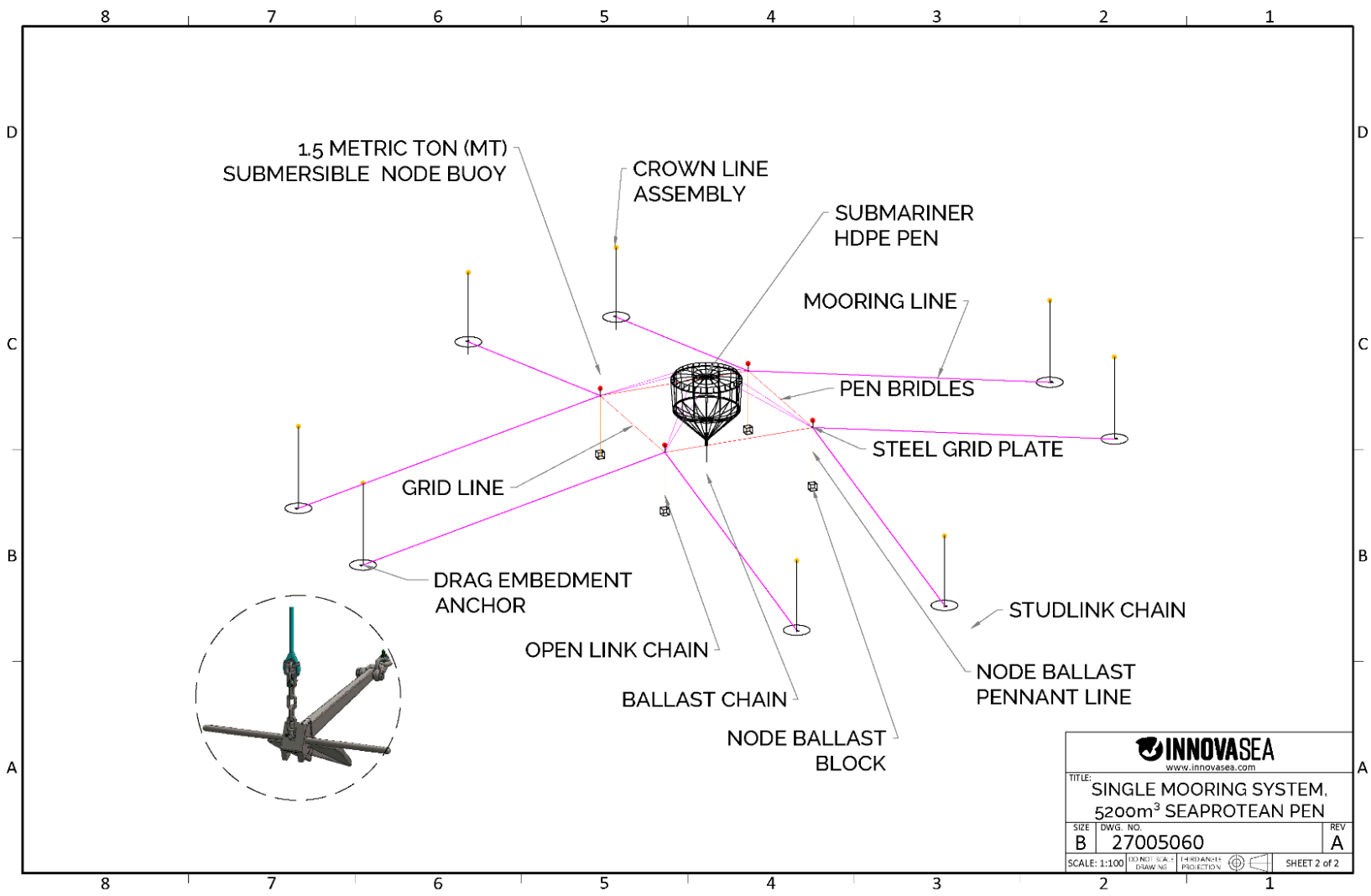
No changes are proposed for the site location or water depth.

No appreciable changes in fish production numbers are anticipated. As permitted, a total of 20,000 fingerlings would be stocked. With anticipated 85% survival, a total of 17,000 fish would be harvested in 10 to 12 months. Since red drum grow more slowly than almaco jack, fish size at harvest would be approximately 2.75 pounds (lbs) vs. the permitted size of 4.4 lbs. This smaller fish size equates to a total harvest of 46,750 lbs vs. the permitted harvest of 74,800 lbs. Red drum require a lower protein feed than almaco jack and therefore the nitrogen loading in effluent water would be markedly reduced. This means that potential scale of impacts on the surrounding environment would be lessened.

Only minor changes in the submersible net pen design are anticipated. Both the originally permitted net pen and the proposed SeaProtean Pen (**Design 1** and **Design 2**) are based on a PolarCirkel-style submersible design.



Design 1. SeaProtean Pen Elevation and Plan Views



Drawing 2. SeaProtean Pen Isometric View

Although the smallest (and proposed) commercially available SeaProtean Pen is 26.5 meters (m) in diameter vs. the permitted net pen (17 m), the total net volume would be maintained at approximately 1,600 cubic m (m^3) by reducing the depth of the SeaProtean net to approximately 3 m (10 ft) in depth.

Mooring design for the proposed SeaProtean Pen uses eight (8) embedment anchors vs. the permitted mooring design of three (3) embedment anchors). The mooring design for the proposed SeaProtean additionally uses four (4) node ballast blocks as part of the anchor system.

The permitted net mesh was a CopperNet, using UR30 copper alloy wire woven into chain-link fence mesh. The proposed net mesh material for the SeaProtean Pen is KikkoNet, made of UV stabilized, extremely strong and lightweight Polyethylene Terephthalate (PET) monofilament, woven into a double twisted hexagonal mesh. There is no functional difference between the two materials, in terms of entanglement risk or other concerns.

The VE Project team recognizes that following information is additionally required in support of this permit modification and will be provided to EPA within 10 business days:

1. Updated NPDES application forms (Form 1 and 2B) available at: www.epa.gov/npdes/npdes-applications-and-forms-epa-applications
2. Additional information:
    a. Revised feed information with nutrient content
    b. Source of bloodstock fish and fingerlings
    c. Fish filial generation
    d. Fish growth rate, beginning size, ending size, and harvest weight
    e. Net pen design; gear size; ballast block information and size; anchor type and size; cage and mooring dimensions; line dimensions, quantity, and linear feet; and detailed diagrams; including a conservative scenario of the maximum number of anchors, ballast blocks, quantity of lines, diameter of lines, etc.
    f. Other changes in the management or production of cultured fish that may impact the nature or volume of pollutant discharge.

Please do not hesitate to contact me directly should you have any questions concerning this response to your request.

Yours sincerely, with aloha,

Neil Anthony Sims
Founder, CEO

cc: Dennis Peters, Founder, CEO
Gulfstream Aquaculture, LLC