Design of Multiple Recirculating Aquaculture Systems to Evaluate Oil Toxicity in Marine Fishes

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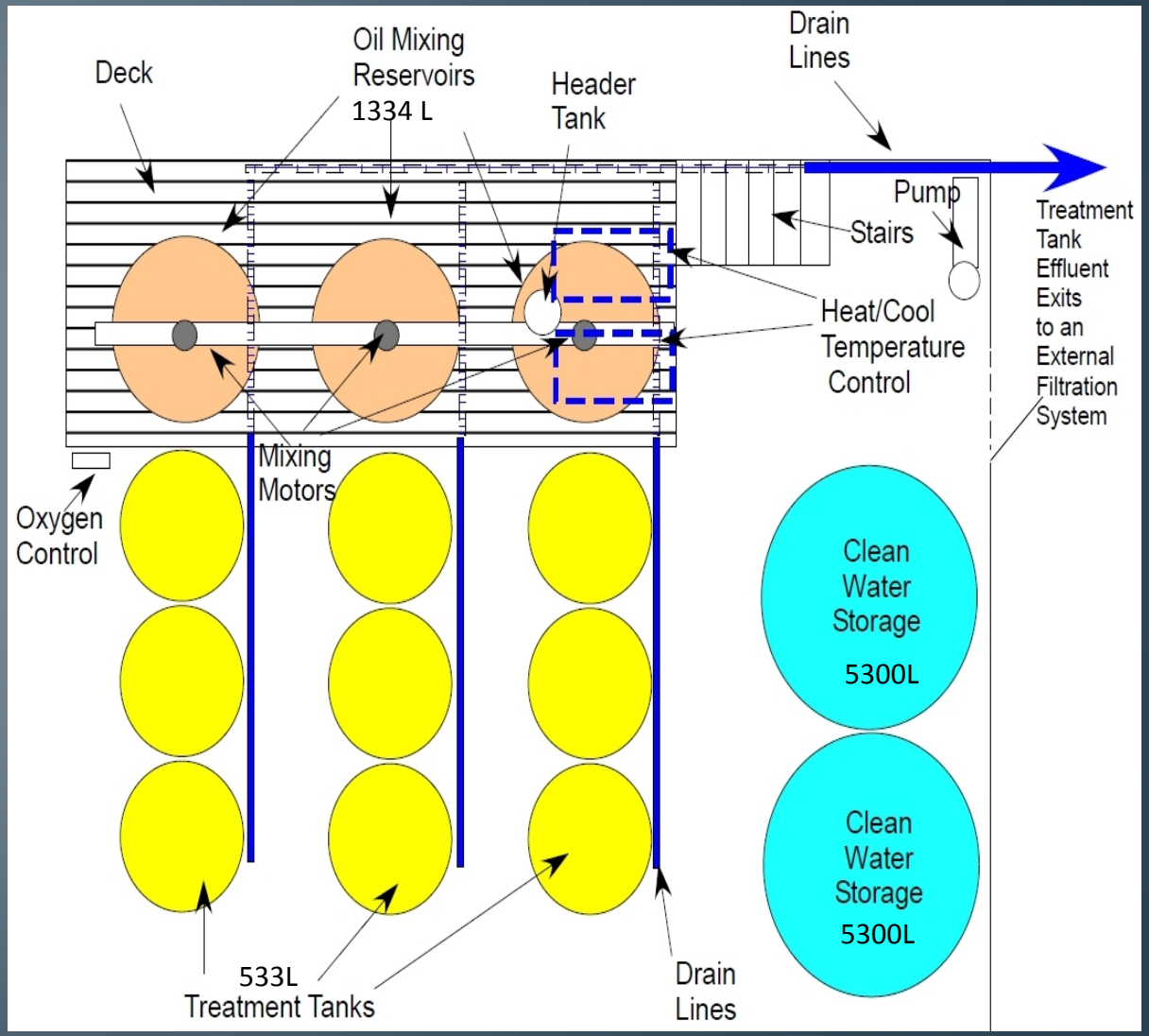
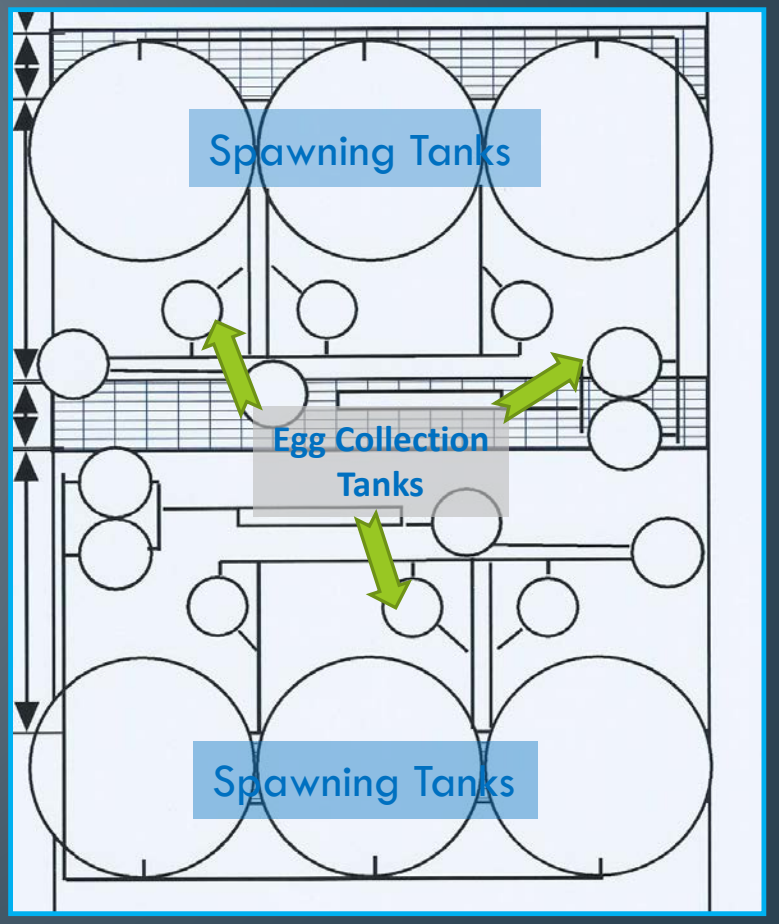
Oil-Exposure Facility Design Goals

- Design, build and operate a land based, large-scale, zero discharge, experimental contaminant (oil) exposure system, linked to a recirculating filtration system and an isolated wastewater treatment system
- Recirculating filtration system must maintain appropriate:water chemistry & water quality parameters
- Wastewater treatment system must be isolated from all other water systems and capable of removing and isolating solids, oil and dispersant from system water during the filtration process
- Equipment must be sourced to ensure that contaminants are not retained within the system.

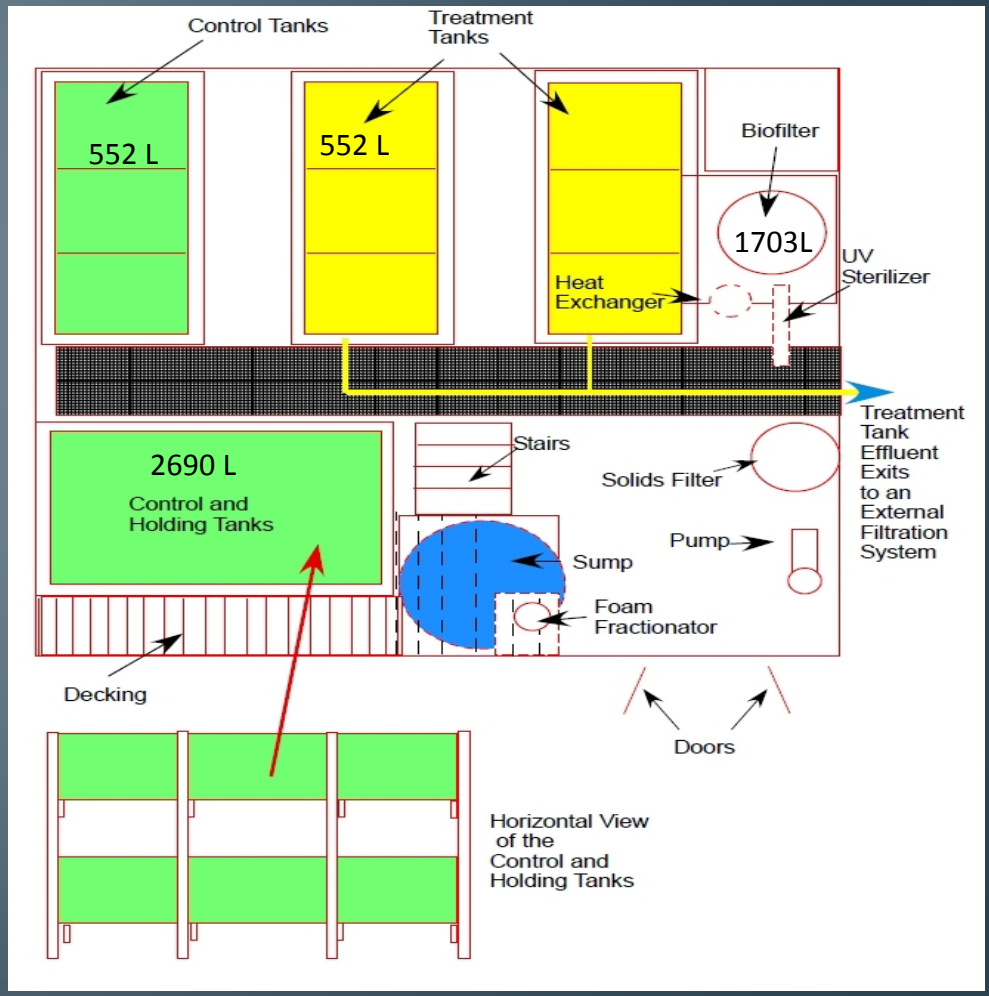
Oil Exposure System Design



Spawning System for Reproduction Exposure Trials



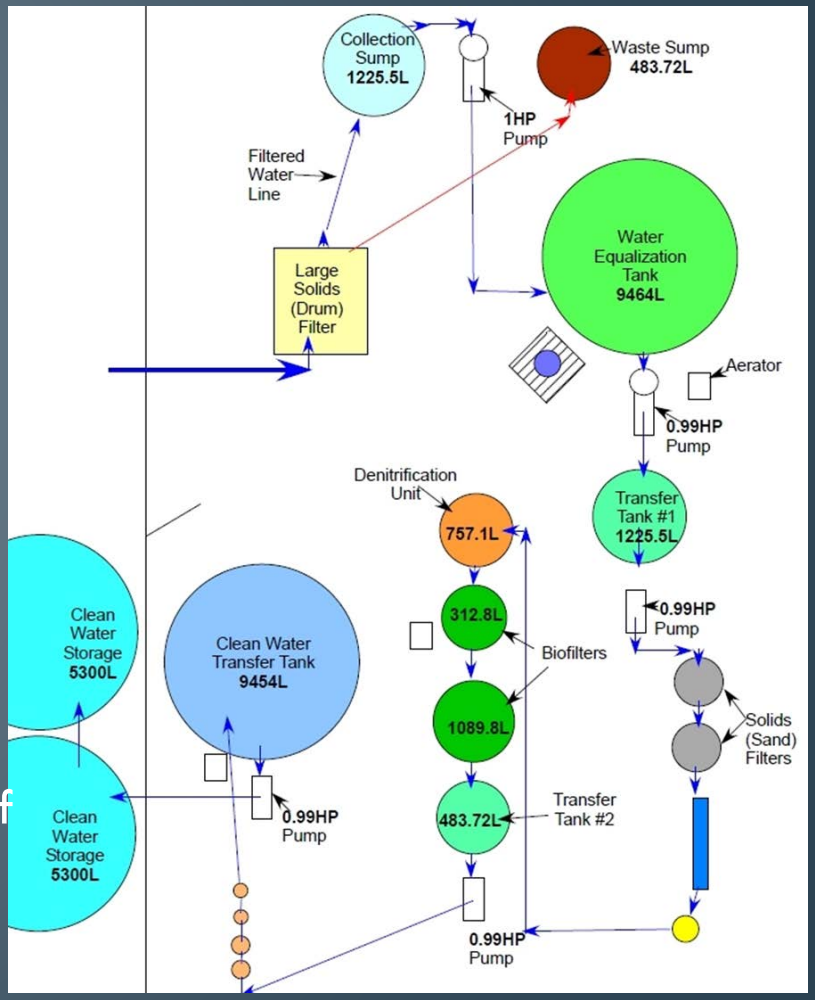
Flounder Oil-Sediment Exposure System



Recirculating Filtration & Wastewater Treatment System

Filtration steps:

- Solids removal (large & fine solids)
- Biofiltration (ammonia & nitrite removal)
- Denitrification (Nitrate removal)
- Oil removal
- Aeration
  - CO2 removal
  - Oxygenation
- Total Filtration System Water Capacity/Volume 35,096 L (20,054 L of clean water available for use)



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Oil Exposure Wastewater Treatment System Designed & Constructed by: Complete Water Services & Mote Aquaculture Research Team