

MEMORANDUM

TO: Beth Callahan, Project Manager, Bureau of Land Resources
 FROM: Mike Parker, Project Manager, Bureau of Remediation and Waste Management
 DATE: November 8, 2019
 RE: Review of Nordic Aquafarms, Inc. Application

I have completed my review of the information Nordic Aquafarms submitted in Section 18 of the Site Location of Development application for its' proposed salmon aquaculture facility. The applicant has identified the types and quantities of wastes that will be produced during the construction and operation of the proposed facility and submitted commitment letters from facilities that could receive the wastes. My detailed comments on the information are listed below.

A. Wastes Generated During Construction

Approximately 30 acres of forested area will be cleared within the proposed area of development, with an estimated volume of 1,146 cords of marketable timber. Timber will be sold or otherwise used as firewood by Comprehensive Land Technologies, Inc. or donated to the Waldo County Woodshed, which provides free firewood for people in need in the Waldo County. Other land-clearing debris, including brush, stumps, soil and rock, will be used on site for erosion control or disposed of off-site through Waste Management Disposal Services of Maine or Casella Organics.

Comment: The applicant and its' contractors should take note that the Maine Forest Service has prohibited the transport of pine species with bark, under certain conditions, to Aroostook and Washington County to prevent the spread of the pine shoot beetle.

The applicant also expects to generate construction and demolition debris as well as small amounts of special wastes, including asbestos insulation and roofing and soils contaminated with polycyclic aromatic hydrocarbons (PAHs). Casella Organics and Waste Management Disposal Services of Maine were identified as disposal locations for these wastes.

Comment: With the exception of the of the PAH-contaminated soils, both Casella and Waste Management may dispose of the above-listed wastes without further review and approval. Disposal of the PAH-contaminated soils will require the disposal facility to file a Special Waste Disposal application with the Department prior to disposal of this waste.

Construction and installation of the intake and discharge water pipes into Penobscot Bay will generate approximately 15,000 cubic yards of dredge spoils. The applicant collected 2 samples of the sediments for initial characterization. The samples were analyzed for total metals, volatiles and semi-volatiles, pesticides, herbicides, PCBs, ignitability, sulfide and cyanide reactivity, total solids, pH and free liquids. Nine analytes were detected above the reporting limits, including acetone, carbon disulfide, fluoranthene,

pyrene, arsenic, barium, chromium, lead and mercury. Arsenic, barium, chromium, lead and mercury have upper limits for toxicity that determine if the waste is non-hazardous or hazardous. Federal and state regulations allow generators to apply the “rule of 20”, whereby if the total concentration of an analyte is less than 20 times the upper toxicity limit, it may be assumed that the waste is non-hazardous for that analyte for initial characterization. None of the analytes with upper toxicity limits exceeded the 20 times limits and, in some cases, were well below the 20 times limit.

Given the historic discharge of mercury into the Penobscot River from the chlor-alkali facility located in Orrington, Maine, the applicant analyzed the mercury levels in the sediments that would be excavated during the installation of the intake and discharge water pipes. The mercury levels in the two samples were 267 ng/g and less than 103 ng/g. In a study of the marine sediments in the same geographic area, mercury concentrations ranged from 30 to 150 ng/g, with an average of 55 ng/g (Bodaly, R. A., 2013. Background Concentrations of Mercury in Central Maine Estuaries: Penobscot River Mercury Study, Chapter 17).

The applicant proposes disposing of the dredged material at either the Waste Management Disposal Services of Maine or Juniper Ridge landfills.

Comments: The use of the “rule of 20” is acceptable for characterizing the dredged material. Both the Waste Management and Juniper Ridge landfills are already permitted for and have the capacity to accept the dredged material. Staff note that both landfills require the dredged material be sampled and analyzed for TCLP metals, volatiles, semi-volatiles, herbicides and pesticides, total PCBs and sulfide reactivity at a rate of one sample for every 250 tons of waste generated. However, using totals and the “rule of 20” is acceptable for both the landfills in lieu of TCLP. Using a density of 1,300 pounds per cubic yard, this will result in approximately 40 samples of the dredge material being analyzed. Staff are confident that none of the parameters will exceed the applicable upper toxicity limits.

Staff’s review of the mercury data collected by the applicant and the existing data regarding mercury levels in the sediments of Penobscot Bay show that the mercury levels are similar to and within the expected range of values, as compared to previous studies. In addition to the 2013 data, staff also reviewed the data gathered during Phase I of the Penobscot River Mercury Study (Bodaly, R. A., et al. 2008. Phase I of the Study: 2006 – 2007.) Offshore sediment samples were collected along transect lines traversing west to east and analyzed for total mercury. Total mercury concentrations for Transect 2, located north of the proposed dredge, ranged from 192 to 321 ng/g, with a mean of 256.1. Total mercury concentrations for Transect 3, located south of the proposed dredge, ranged from 80.5 to 213 ng/g, with a mean of 137.8. No removal of the sediments located in the area of the proposed Nordic Farms dredge was recommended as part of the overall plan for remediation of the Penobscot Bay area in conjunction with the Penobscot River Mercury Study. Staff recognize that there will be a limited resuspension of mercury-containing sediments during the excavation of trench for the intake and discharge pipes. However, this will be limited in duration and extent and the

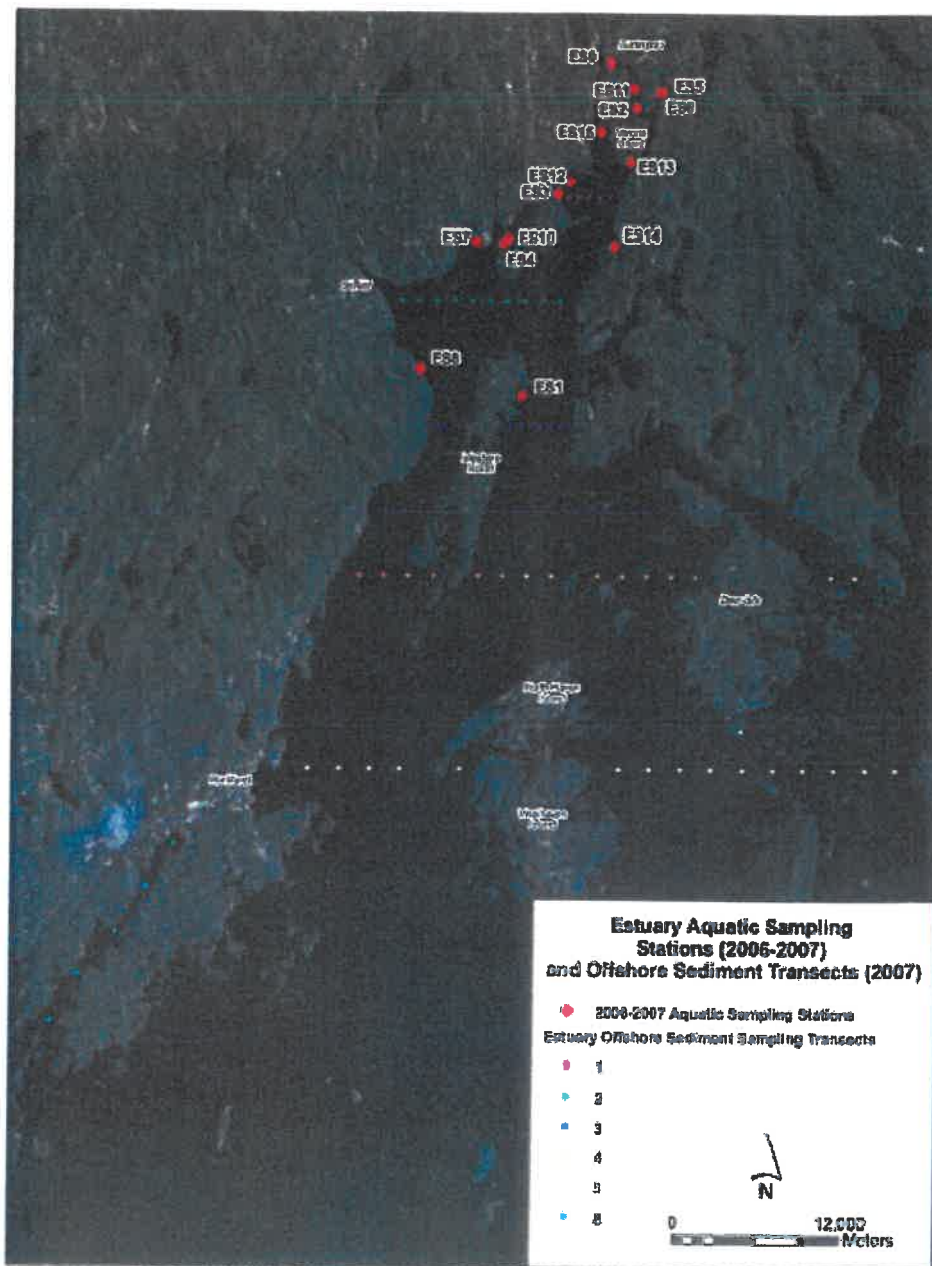


Figure 6. Map of Estuary (ES) aquatic sampling sites, 2006-2007. Also shown are the locations of sampling transects and sites in the estuary sampled for offshore surficial sediments in August 2007. Transects 1-5 are in the Penobscot estuary; Transect 8 is in the St. George estuary.

removal and upland disposal of the dredged material will result in an overall reduction in the amount of mercury-contaminated sediments in Penobscot Bay.

Staff also compared the mercury levels in the sediments to the 2018 Maine Remedial Action Guidelines (RAGs). The RAGs are used to establish clean-up standards for remediation sites. The most conservative risk-based clean up standard for mercury is the 1,800 ng/g under a leaching to groundwater scenario. The residential clean-up standard is 3,100 ng/g. Finally, a review of the clean-up standard for remediation of the sediments in the Penobscot River associated with the chlor-alkali facility is 2,200 ng/g. It is staffs' conclusion that the excavation and upland disposal of the dredge material associated with the Nordic Farms intake and discharge pipes poses no risk to human health or the environment.

B. Wastes Generated During Operations

The applicant has submitted estimates of the types and quantities of waste that will be generated during the operation of the proposed facility. These include filtrate from the onsite wastewater treatment plant, salmon processing solids (heads, guts, racks and mortalities), municipal solid waste from the offices, universal waste and recyclables. Several composting and disposal companies have provided letters of commitment to accept the identified wastes. These include Waste Management Disposal Services of Maine, Casella Organics, Agri-Cycle Energy, Channel Fish Company, Coast of Maine Organic Products and Compost Maine. In addition, the applicant is seeking approval from the Maine Department of Marine Resources to use the salmon processing wastes as lobster bait.

Comments: *Staff reviewed the estimates of the types and quantities of wastes that will be generated and find the list to be complete and accurate. Apart from Compost Maine, all the proposed facilities are licensed to accept these wastes and have the capacity to process or dispose of them properly. Compost Maine is not built or operating, nor have staff evaluated the companies composting operation for compliance with the applicable regulations. Staff encourage the applicant to reuse and recycle as many of the proposed wastes as possible. Composting and using the fish wastes as bait is preferable to landfilling. Finally, staff comment that transport of non-hazardous wastes in Maine must be conducted by transporters that are licensed to do so under Chapter 411 of the Maine Non-Hazardous Waste Transporter Rules.*

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