

**STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BOARD OF ENVIRONMENTAL PROTECTION**

<p>NORDIC AQUAFARMS, INC. Belfast and Northport Waldo County, Maine</p> <p>A-1146-71-A-N L-28319-26-A-N L-28319-TG-B-N L-28319-4E-C-N L-28319-L6-D-N L-28319-TW-E-N W-009200-6F-A-N</p>	<p>IN THE MATTER OF : :APPLICATIONS FOR AIR EMISSION, :SITE LOCATION OF DEVELOPMENT, :NATURAL RESOURCES PROTECTION :ACT, and MAINE POLLUTANT :DISCHARGE ELIMINATION SYSTEM :(MEPDES)/WASTE DISCHARGE :LICENSE : : SITE LOCATION OF DEVELOPMENT ACT : NATURAL RESOURCES PROTECTION ACT : FRESHWATER WETLAND ALTERATION : COASTAL WETLAND ALTERATION : STREAM ALTERATION : SIGNIFICANT WILDLIFE HABITAT : FINDINGS OF FACT AND ORDER : : :           OCTOBER 5, 2020</p>
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Upstream Watch is grateful to have the opportunity to comment on the Proposed Draft Order and Permit under SLODA and NRPA. A summary of Upstream's positions is below, followed by some specific focus areas: Groundwater, Financial Capability and Air Quality.

PRELIMINARY REMARK:

To begin: On page 6 of the DEP Review memo it states "Upstream/NVC are entities comprised of members who reside within close proximity to the project site and are opposed

to the project”. That statement is not true. Upstream Watch and NVC are opposed to the location and technology proposed for Nordic’s project but are not opposed to the project per se, or to aquaculture in general. In fact, Upstream Watch urged Nordic to consider a larger nearby site, also in Belfast, but Nordic refused.

GENERAL STATEMENT:

From the outset Upstream Watch asserted that the Nordic project is proposed for an unsuitable site and the application filed by Nordic is fatally incomplete. To the former point, in addition to sensitive environmental conditions, Nordic intends to remove the top 25 feet of soil over the whole site because it is unsuitable. To the latter point note the following provisions of chapter 372 governing site location law procedures.

THE SITE IS UNSUITABLE:

Consider the statutory mandate of 38 M.R.S.A 484 (4)

**§484. Standards for development**

**(CONFLICT)**

The department shall approve a development proposal whenever it finds the following.

4. Soil types. **The proposed development will be built on soil types that are suitable to the nature of the undertaking.**

**Consider the Rules that elucidate the meaning of “suitable”**

**Chapter 376: SOIL TYPES STANDARD OF THE SITE LOCATION LAW**

SUMMARY: These regulations describe the scope of review of the Board in determining a developer's compliance with the "soil types" standard of the Site Location Law (38 M.R.S.A. §484(4)); the information which shall be submitted, when appropriate, within an application for approval; and, the terms and conditions which the Board may impose on the approval of an application to ensure compliance with the standard.

## **1. Soil Types Suitable For the Development**

**A. Scope of Review.** In determining whether the proposed development will be located on soils suitable for the nature of the development, the Board shall consider all relevant evidence to that effect, such as evidence that:

- (1) All major limitations to the proposed development presented by soil characteristics will be overcome by proper engineering techniques.

**B. Submissions.** Applications for approval of proposed developments shall include evidence that affirmatively demonstrates that the development will be built on suitable soils, including information such as the following, when appropriate: ...

Nordic insists that it must excavate and remove between 20 and 52 feet (depending on which presentation you believe) of native soil over almost the whole 37-acre site, and bring in replacement soils because the native soil will not support its proposed buildings. That soil replacement plan is conclusive evidence that the site is unsuitable because the native soils are unsuitable and have to be replaced almost in their entirety. Nordic claims that they looked at sites from Canada to Washington D.C. Did they? Or did they find a good

deal on the Belfast site and construct a “survey” after the fact to prove their choice correct, which kind of worked, until they looked at the soils. The site is unsuitable and the application must be denied.

### INCOMPLETENESS OF THE APPLICATION

Instead of providing comprehensive and compelling evidence that it met the regulatory requirements, Nordic supplied with the application whatever helped its case and finessed the rest, hoping that BEP would allow it to take a permit condition to resolve difficult parts of the application instead of complying with the application requirements up front. But BEP cannot accommodate Nordic. It would be illegal. BEP and the public must be assured that the difficult issues have been properly analyzed and resolved in accordance with the rules and the standards of state and federal law before any permit is awarded, not sometime in the future, after the project is partly or fully built.

**2. Nature of Terms and Conditions.** As specified in Section 483 of the Site Location Law, the Board may place terms and conditions on the approval of a proposed development. However[1], terms and conditions shall address themselves to specifying particular means of satisfying minor or easily corrected problems, or both, relating to compliance with the Site Location Law and shall not substitute for or reduce the burden of proof of the developer to affirmatively demonstrate to the Board that each of the standards of the Site Location Law has been met. (Ch 372, 2) Emphasis supplied)

In other words, application requirements are to be met in the application itself and are not to be postponed into the future as permit conditions the applicant promises to meet.

**3. Requirement of Additional Information.**

As part of the application process, staff may request additional information which like the application requirements themselves must be provided before a permit is granted and may not be ignored or converted to conditions to be met in the future

In reviewing applications determined to be complete, the Board or Staff may require additional information from the applicant on any aspect of the proposed development relating to compliance with the standards of 38 M.R.S.A. Section 484.

Upstream Watch incorporates its comments on the difference between application requirements and permit conditions expressed in its September 11, 2020: **RESPONSE OF UPSTREAM WATCH TO DRAFT BOARD ORDER RE: MEPDES AND WASTE DISCHARGE, as though fully set forth herein.**

TITLE, RIGHT or INTEREST

Nordic has the burden of demonstrating it has “Title, right or interest” (TRI) in all of the land from the source of its wastewater discharge at its treatment facility to its proposed disposal site in Penobscot Bay. As the Department wrote on page 11 of its document, “Chapter 2 allows the Department to return an application after it has been accepted as complete for processing if the Department determines that the applicant did not have, or no longer has, sufficient TRI”. The TRI requirement is set forth in paragraph 9 below. In the Nordic case, the applicant relies on subsection B below. Nordic presented the Department an executed agreement by which it intends to purchase an easement, possibly coupled with a lease, from Richard and Janet Eckrote. The record is closed. Nordic’s only claim of access

into Penobscot Bay is by way of an easement negotiated with the Eckrotes through the intertidal land adjacent to Eckrotes' house lot. On July 29, 2020 in a deposition taken as part of the quiet title litigation over the Eckrotes' intertidal zone, Nordic's surveyor, Jim Dorsky[2], admitted that the Eckrotes' do not own the intertidal zone in question. It appears Mr. Dorsky prepared a survey map containing that information for Nordic in November 2018, barely a month after Nordic filed its applications. Since November 2018 Nordic has known, as Upstream Watch suspected, that the Eckrotes' did not own the intertidal zone below their house lot and therefore Nordic has known since November 2018 that it did not have "Title right or interest" as required by law. Yet Nordic persisted and put the Board and the Department through four days of hearings along with all of the pre-hearing meetings and pre-hearing filings, the post hearing filings, 21 Procedural Orders and other time-consuming and expensive impositions on the government and the people of the state of Maine. Statutory law, regulatory law, and the Department's own writing tell us consistently that an applicant must maintain "Title right or interest" from the time of its application through the use of the property in question. Yet nowhere is there a procedure by which information revealing a failure of "Title right or interest" can be presented to the Board except by asking the board to reopen the record to allow further investigation of Title, right or interest" which the board has thus far refused to do. Upstream Watch proposes an alternative. The board could take administrative notice of the deposition given under oath by Mr. Dorsky. Although Mr. Dorsky does not offer an opinion as to who the correct owner of the intertidal land in question might be, he does state and his survey work reflects that it is not Richard and Janet Eckrote. It is only through Richard and Janet Eckrote that Nordic has ever claimed "Title, right or interest". Taking administrative notice of Mr. Dorsky's deposition would mandate that the Board return the application to Nordic and terminate these proceedings. Upstream Watch urges the board to pursue that course.

The assessment of the Board's position on title, right or interest, as stated in the Department Order, is contradictory. After stating at the top of page 12 that the Department

“cannot afford to allow its permitting proceedings to be transformed into the equivalent of an administrative agency quite [sic] title action,” the Order goes on to state “the Board finds that the applicant has made a sufficient showing of TRI to develop and use the property as proposed.” Granting this permit with this understanding for practical purposes serves as an unauthorized quiet title action, possibly subjecting the actual owner to the need for further legal actions to prevent illegal use of the land. Evidence available to the department is ambiguous and cannot be interpreted to demonstrate that Nordic has sufficient right, title or interest to “develop and use the property as proposed.”

#### **4. Title, Right or Interest**

The Department will consider an application only when an applicant has demonstrated sufficient title, right, or interest in all of the property which is proposed for development or use. An applicant shall demonstrate in writing sufficient title, right, or interest, as follows:

- A.** When the applicant claims ownership of the property, copies of the deeds to the property shall be supplied.
  
- B.** When the applicant has an option to buy the property, a copy of the option agreement shall be supplied. Option agreements shall contain terms deemed sufficient by the Board to establish future title.
  
- C.** When the applicant has a lease on the property, a copy of the lease shall be supplied. The lease shall be of sufficient duration, as determined by the Board, to permit construction and reasonable use of the development.

**D.** When the applicant has eminent domain power over the property, evidence shall be supplied of the ability and intent to use the eminent domain power to acquire sufficient title, right or interest as determined by the Board.

## **FINANCIAL CAPABILITY**

Chapter 373 presents an application requirement of financial capacity. The applicant must demonstrate that it has the “financial capacity to design, construct, operate, and maintain the development”. The chapter even provides how evidence of financial capacity can be presented by an applicant such as Nordic that has asserted that they are unable to secure funds before issuance of permits; by a cash equity commitment, a financial plan for financing, and a letter of commitment or intent to fund. Nordic has provided none of these.”[3].. As the department wrote on page 13 of its draft in the third full paragraph “Nordic provided several submissions in support of financial capacity”. Those were “a joint letter from Carnegie Investment Bank and Parleto Securities characterizing Nordic as “well positioned to secure necessary funding”. That is not a commitment letter, financial plan, or letter of intent to fund. It fails to meet the application requirement. Nordic also supplied a “letter of interest” from EKF, a Danish export credit agency. Neither meets the requirements of Chapter 373.

Nordic never offered and the Board apparently is not requiring a performance bond. Should Nordic fail after destroying 37 acres of forest, 9 streams, and other resources, The City of Belfast is stuck. Should Nordic get partly constructed and fail as they are apparently doing in Norway, Belfast is stuck with a huge non-reusable building.



**Upstream Watch offers the comments of its volunteer retired CPA, Martha Reeve:**

The cursory attention paid to assuring appropriate financing of this half-billion-dollar project is not commensurate with the risk involved. Considering the potential to cause extremely costly, serious and permanent harm to the publicly-owned and treasured natural resources of Belfast, Northport, Penobscot Bay, and the State of Maine, it is the responsibility of the Department to assure that the environment will not be compromised and citizens will not be saddled with huge clean-up costs due to inadequate financial performance by the applicant. Maine statute and the SLODA permit application provide guidance to assess an applicant's capacity to meet financial obligations. The Department does not have, and has not requested in proposed conditions, adequate information to make this crucial assessment.

The premise of the Financial Capacity section of SLODA, as stated in the first sentence in item #1 of Chapter 373 of Department rules and the first sentence in the Financial section of the Department's Draft Order, is the fundamental dependence of all environmental safeguards and mitigation measures inherent in a SLODA permit on the financial capacity of the applicant to:

- a) design,
- b) construct,
- c) operate and
- d) maintain

the development in a manner consistent with state environmental standards and provisions of the Site Law. Adding a condition that requires some evidence of access to an unverifiably-calculated amount of funds pertaining to phase 1 construction does not eliminate the Department's responsibility to determine before a permit is granted that the applicant has

credible evidence of capacity to fulfill each and all of the above financial obligations responsibly, including, as noted in 38 M.R.S. §484, 2, B, (1), the financial ability to restore the site should the project fail.

The Department Order waives the Department’s obligation to procure and examine documentation of credible financial capacity by relying on the phrase “except, in cases in which the Department defers a **final** determination as set forth in [Ch.373] Section 2 (A)” (emphasis added). Justification for relying on this section is Nordic’s assertion that “funding for the project is contingent on final approval.” (Draft Order, P.13) Inability to demonstrate available project funding does not in any way compromise the rationale, the ability, or the burden of preparation and submittal by Nordic, and analysis by the Department, of sound financial evidence that the project is financially viable. Ch. 372, 2, notes that the purpose of conditioning is to address “minor or easily-corrected problems,” not to “reduce the burden of proof of the developer to affirmatively demonstrate to the Board that each of the standards of the Site Location Law has been met.” To interpret the conditioning exception as eliminating financial documentation requirements in advance of permitting would negate the purpose of Financial Capacity standard of the Site Location Act .[4]

The SLODA application, in fact, directly addresses Nordic’s situation by including submissions option “(3) Other. If funding is required, but a final commitment of all necessary money cannot be made until all approvals are received and other reasonable conditions are met, provide the following.” Clearly this provision of the application is relevant in this case, and Nordic has indicated that this provision applies with checkmarks by each document on part D of the SLODA application, the Submissions Checklist

Cost estimates and a financial plan, as required by the SLODA application, are widely-used, well-tested formats to determine the viability of a proposed project. They are typically expected and routinely analyzed by any potential stakeholder, including internal company management, loan officers, and investors, to determine project feasibility before

making any kind of commitment to a potential venture. Nordic's submittals in no way fulfill the purposes of these recognized documents or the application's requirements. It is reckless for the department to risk the natural resources of the State of Maine without requiring and analyzing adequate, professional and credible forms of these listed documents.

Every document required by the SLODA application is well-considered and necessary to a valid determination of financial capacity:

A. **Estimated Costs**. A diligent cost estimate is essential to a Department determination that adequate funds are available. A simple 1% cost overrun in this project would amount to a \$5 million debt, potentially devastating to an affected contractor, municipality, or state agency. The broad categories and lack of source information in the table "Estimated Development Cost" provided by Nordic do not enable the Department to evaluate the credibility of the numbers provided or confidently assess the dollar amounts of funding required for various stages of construction in order to appropriately condition a permit. A credibly detailed cost estimate is not dependent on securing funding, it should have been part of the application review procedure, and there is no justification for issuing a permit before proper preparation and presentation, in complete and professional form, of this document. A meaningful cost estimate should include verifiable data in usable detail from identified, reliable sources. With Nordic's brief summary of a few large, poorly-defined categories the Department cannot determine at any time whether funds that may be secured by Nordic are adequate to design, construct, operate and maintain a development in a manner consistent with state environmental standards and the provisions of the Site Law.

B. **Financing**. Nordic proposes to follow, and the Department appears to concur, 3, Other. As previously noted, this section is pertinent to this applicant.

a. Cash Equity Commitment. The term “cash equity” should not be confused with corporate stock, but refers to liquid assets, or assets that can readily be converted to cash. Committed funds indicate genuine, long-term interest by the applicant to carry the project through, and (as noted in the application) that the applicant is financially able to “go forward.” This commitment is not dependent on securing outside funding, it should have been part of the application review procedure, and there is no justification for issuing a permit before determining an appropriate amount and requiring that liquid funds are committed. Although 20% of project cost (\$100 million) is noted as “normal,” the Department has the right to “adjust” the amount. There is no provision to eliminate it. There is no indication that the parent company has any liquid funds available that could potentially be committed to the Maine project (beyond the permitting process) and no indication that the applicant itself has any assets whatsoever. With a complete lack of up-front funding commitment to this project the Department cannot determine that Nordic is committed to or has the financial capacity to design, construct, operate and maintain a development in a manner consistent with state environmental standards and the provisions of the Site Law.

b. Financial Plan. A financial plan clarifies and validates the developer’s financial expectations by illustrating a viable financial strategy to realize completion of a project and to assure that it can be profitable. The SLODA application specifies a financial plan focused on securing funding. Nordic’s assertion that it will secure funding at loosely-defined stages from an undetermined mix of equity, debt, and cash flow, confirmed by an unsubstantiated statement by a bank with financial ties to Nordic, is not a financial plan. Financial planning, essential from the outset of a project, is not dependent on securing funding, it should have been part of the application review procedure, and there is no justification for issuing a permit before a reliable financial plan has been presented. Projected financial statements are key components of a financial plan and are widely relied upon to assess cash needs over time, evaluate overall viability, monitor progress, and recognize cost overruns before they become critical. Projected cash-flow statements calculate cash needs based on verified cost

estimates, construction timing, and operations planning, and cash availability based on specified cash sources. Projected profit and loss statements calculate realistic profit potential and identify target market conditions, cost levels, and production benchmarks based on current conditions and trends and transparent assumptions. Projected balance sheets calculate expected levels of asset value and debt over time. It would be reckless to undertake an enterprise of this size without projected financial statements including verifiable numbers and prepared according to accepted accounting principles. Without a cohesive financial plan focused on carefully projected financing needs, based on reliable data, and prepared by an independent, unbiased financial professional, the Department cannot determine that Nordic has the financial capacity to design, construct, operate and maintain the development in compliance with state environmental standards and the provisions of Site Law.

c. Letter. As noted in the application, this letter is intended to indicate “an intention to provide financing subject to reasonable conditions of acceptance.” Financial institutions routinely commit to future financing contingent on satisfaction of various conditions. A suitably-conditioned letter of intent is not dependent on securing funding, it should have been part of the application review procedure, and there is no justification for issuing a permit before a financing entity has demonstrated intent to provide funds for this project. A letter of intent indicates that “an appropriate financial institution” (SLODA application, 3,B,3,c) has determined that the project is viable, and that the borrower is reputable and likely to meet financial obligations. With no confirmation that any financing entity will provide funding for this project, the Department cannot determine that Nordic has the financial capacity to design, construct, operate and maintain the development in compliance with state environmental standards and the provisions of Site Law.

C. **Certificate of Good Standing**. Provided, except for possible Maine subsidiary. 38 M.R.S. §484(1) is intended to ensure that a permit is granted only to an applicant who has demonstrated financial capacity. Delay of final documentation that adequate funds are readily available is allowed by a permit condition, and the Department can therefore not

make a final determination on issuance of a permit until that time. Ch.373, 2, C. notes documentation that is appropriately delayed as permit conditions. The statute, however, is completely inconsequential if it is interpreted to sanction permitting in advance of any comprehensive analysis of credible financial evidence. Proposed permit conditions are meaningless without plausible evidence that the amount of funds to be documented is adequate, or that cost estimates to be submitted are reliable or verifiable. This Draft Order, based on an application that does not include the financial documentation required to ensure compliance with 38 M.R.S. §484(1), does not ensure that this applicant has financial capacity to design, construct, operate, and maintain the development in a manner consistent with state environmental standards and the provisions of the Site Law, and therefore the Board and the Department must deny a SLODA permit.

**The Chapter 373 Financial Responsibility Rules are reproduced below.**

**Chapter 373: FINANCIAL AND TECHNICAL CAPACITY STANDARDS OF THE SITE LOCATION OF DEVELOPMENT ACT**

. **SUMMARY:** This chapter includes rules adopted pursuant to the “financial capacity” and “technical ability” standard of the *Site Location of Development Act*, 38 M.R.S. §484(1). The rules elaborate on the statutory standards, set forth the information that must be submitted pursuant to each standard, and explain the Department’s authority to impose conditions on a permit issued.

**1. Introduction.** This chapter relates to the financial capacity and technical ability standard of the *Site Location of Development Act* (Site Law). 38 M.R.S. §484(1). To obtain a Site Law permit an applicant must demonstrate the financial capacity and

technical ability to design, construct, operate and maintain the development in compliance with state environmental standards and the terms and conditions of the permit.

## 2. **Financial Capacity**

**A. Standard.** The applicant shall have financial capacity to design, construct, operate, and maintain the development in a manner consistent with state environmental standards and the provisions of the Site Law. The applicant must have the financial capacity for all aspects of the development, and not solely the environmental protection aspects. Evidence of financial capacity must be provided prior to a decision on an application, except, pursuant to 38 M.R.S. §484(1), the Department may defer a final finding on financial capacity by placing a condition on a permit that requires the permittee to provide final evidence of financial capacity before the start of any site alterations.

**B. Submissions.** The application for approval of a proposed development must include evidence that affirmatively demonstrates that the developer has the financial capacity to design, construct, operate, and maintain the proposed development, except in cases in which the Department defers a final determination as set forth in Section 2 (A) above. Evidence to demonstrate financial capacity must include, but is not limited to, the following information.

(1) **Cost estimates.** Accurate and complete cost estimates of the development, including all proposed phases. The itemization of major costs may include, but is not limited to, the cost of the following activities: land purchase, erosion control, roads, sewers, structures, water supply, utilities, pollution abatement, landscaping, and restoration of the site, if applicable.

(2) **Time schedule.** The time schedule for construction of all phases proposed.

(3) **Evidence of funds.** Evidence such as the following:

(a) **Letter of commitment or intent to fund.** A letter from a financial institution, governmental agency, or other funding entity indicating a commitment to provide to the applicant a specified amount of funds and the uses for which the funds may be utilized. In cases where funding is required but there can be no commitment of money until approvals are received, an applicant may submit a letter of "intent to fund" from an appropriate funding institution indicating the amount of funds intended to be provided to the applicant and the specified uses for which the funds are intended.

In cases where one or more limited liability corporations are part of the applicant's corporate structure, evidence must be submitted describing the applicant's corporate structure, and demonstrating that the proposed financing is clearly linked from the financing institution to the applicant.

(b) **Self-financing**

(i) The most recent corporate annual report or financial statements indicating availability of sufficient funds to finance the development together with material explaining the report, and evidence that funds have been set aside for the proposed development. The financial information in any annual report and any financial statement should be audited, or an explanation provided why audited reports are not available.



(ii) Copies of bank statements of accounts held by the applicant or other evidence indicating that funds are available and have been set aside for the proposed development.

(c) **Government agency**

(i) Evidence that funds to complete the development have been included in an approved budget, that the expenditure of funds has been approved by the appropriate legal entity such as the municipality or the Legislature, that the issuance of bonds has been approved to cover the cost of the development, or that grant money has been obtained to cover development costs.

(ii) In cases where funding is required but there can be no commitment of money until approvals are received, a detailed plan outlining how funds for the development will be obtained and evidence that legal authority exists to implement the plan.

(4) **Phased development.** In cases of phased development or long term construction projects, the department may find that the applicant has demonstrated adequate financial capacity to comply with department requirements provided (a) the applicant has demonstrated financial capacity for a separate first phase, and (b) the permit is conditioned to require that evidence of financial capacity adequate for review and approval be submitted to the Department prior to construction of each subsequent phase. Construction of each subsequent phase may not begin prior to approval of financial capacity for that phase.

**C. Terms and Conditions.** The Department may, as a term or condition of approval, establish any reasonable requirement to ensure that the developer has and will maintain the financial capacity to meet permit requirements and state environmental standards, such as the following.

(1) **Performance bond.** Requiring the posting of a performance bond to ensure that the development is constructed, operated and maintained, and the site restored, if applicable, in compliance with the permit requirements and state environmental standards.

(2) **Phased development.** Prior to the start of the first phase of construction and each subsequent phase, the permittee shall provide a cost estimate for that phase as well as evidence that the applicant has been granted a sufficient line of credit or a loan by a financial institution authorized to do business in this State or evidence of any other form of financial assurance determined by this Chapter to be adequate by the Department for review and approval.

(3) **Dedication of funds.** Prior to the start of construction, the permittee shall submit to the Department for review and approval final financial arrangements demonstrating that funds are still available and have been specifically dedicated to the proposed development costs.

1.

GROUNDWATER AND SURFACE WATER:

**Upstream Watch volunteer John Krueger has analyzed the Department's Draft Order and Permit regarding Groundwater and Surface Water:**

**SLODA Topics Krueger**

Nordic has chosen a pristine "Greenfield" to become the second largest land-based salmon farm in the world. Nordic's proposed sprawling, industrial fish farm and the proposed technology is not suitable for its Belfast site. Tr. 2/14/20 125:10-13 (J. Krueger).

Evidence of unsuitability includes: (1) a lack of a sufficient deep water current at the outfall, (2) a lack of adequate monitoring of the ocean discharge to Penobscot Bay, (3) the choice of using a "green field" site instead of a "brown field" site with historic records and an existing discharge pipe, (3) availability of ground water, (4) poor construction site soils, (Prefiled Testimony, J. Krueger, p. 5) and (5) abundant natural resources (Prefiled Testimony, T. Parent, pp. 3-6 and more) at risk.

**Ground Water Concerns at the Little River**

Under Chapter 375, "No adverse environmental effect standards of the site location of development act" sections 7 and 8 specifically prohibit any adverse effects to ground water quality. In fact, section 8 states:

"(1) The quantity of water to be taken from ground water sources will not substantially lower the found water table, cause salt water intrusion, cause undesirable change in ground water flow patterns, or cause unacceptable ground subsidence"

**Nordic’s SLODA Application Should Be Denied Because Its Project Will Have An Unreasonable Adverse Effect on Ground Water Quantity and Quality.**

The Department’s regulations require that the applicant affirmatively demonstrates that there will be no unreasonable adverse effect on ground water quantity, and to that end asks the applicant to provide information including estimates of the quantity of ground water to be used by the proposed development. 06-096 C.M.R. ch. 375, § 8(C)(1). According to Nordic’s application, “[c]ollectively, the project is anticipated to use approximately 1,205 gallons per minute (gpm) of freshwater.” SLODA Application, Section 01, Description, top of p. 3. “In total, the proposed development will receive fresh water from three distinct supply sources: (1) groundwater withdrawn from the Site at a proposed rate of 455 gpm; (2) surface water withdrawn from the Site at an estimated rate of 250 gpm; and (3) public water supply delivered to the Site by the Belfast Water District at a proposed rate of up to 500 gpm. SLODA Application, Section 15, Groundwater, Appendix 15-A, Investigation Report, p. 4.

“At least some [water sources] will be able to produce what has been predicted and if there is an impact of one of them, we have some redundancies to be able to adjust.” Tr. 2/11/20 189:23 –190:1. What this statement reflects and confesses is an understanding that the estimated yields for each source assume conditions that are unlikely to exist on the proposed site.

**Groundwater Yield at the Little River Site**

Fractured Bedrock is not an ideal source of water. Water availability in fractured bedrock is hard to predict and is typically more limited than in a sand and gravel aquifer. So, the anticipated water available on site is less than originally desired. This lack of water compromises the use of water in the surrounding area, namely private wells and also adds to the need to use reservoir water.

A 72-hour pump test has been assumed in this case to represent a steady state flow. It may not. This is an assumption that should be followed up with a third-party evaluation of the hydraulic flow patterns associated with multiple wells being pumped simultaneously. Groundwater yield is based on models that assume current levels of groundwater flow and precipitation infiltration. 2/11/20 Tr.140:2 143: 5 (Mobile Testimony). Both will be severely reduced by Nordic's proposed drainage infrastructure. *See* Commentary, SLODA Section, Effects on Runoff/Infiltration. Department staff's assessment is that hydrogeological modeling and pump tests generally indicate that the specified volume of water can be obtained from the Little River site, although it is possible that a drawdown of the aquifer may result. The long-term consequences of the water extraction on water levels and water quality are beyond the scope and capacity of the models used, although the model does suggest salt water intrusion at the project site, reduced base flow, and increase in the volume of the larger bedrock aquifer contributing to the watershed (with consequent minor reduction in volume of that aquifer contributing to adjacent watersheds). A revised monitoring program would more fully capture issues associated with potential effects of the proposed water withdrawal and to include measures to prevent adverse effects. This monitoring program should be implemented before a permit is granted. There is no contingency plan engineered and tested to be implemented in case harmful groundwater levels or saltwater intrusion is experienced.

Many nearby homeowners private wells experienced drawdowns from the 72-hour pump test. Nordic groundwater withdrawal will substantially lower the found water table. Nordic presented testimony that existing water supply wells would likely suffer a 10-12-foot drop (*see* Prefiled Testimony, M. Mobile (Fig. 14A)), but that it would not affect the homeowners' ability to use the wells. If a domestic well went dry, Nordic would "investigate and discuss it with the homeowner". SLODA Application Section 15, Groundwater, Appendix 15-B, Water Resource Monitoring Plan. Nordic refused to guarantee that they would provide a new well or connection to City water (with Nordic paying water bills for

ten years). This will require homeowners whose wells run dry due to Nordic's withdrawals to bring lawsuits against Nordic, hire expert hydrologists and others, all of which is beyond the financial capacity of most homeowners.

### **Saltwater Intrusion at the Little River Site**

The Department's regulations require the applicant to provide information including "[i]n the areas where salt water intrusion, the lowering of the ground water level, or land subsidence have been or can be reasonably be expected to be a problem, a report by a duly qualified person addressing the potential effects of ground water use by the proposed development." No such report exists. Tr. 2/11/20 161:15-19 (M. Mobile). Well GWW-103 experienced saltwater intrusion. Contrary to the BEP assessment, evidence of ground water contamination has been provided. Saltwater intrusion is indeed a contamination of ground water quality and once there is saltwater intrusion usually the result is irreversible. Nordic cannot avoid drilling in this location to meet its freshwater needs. Therefore, Nordic has not satisfied its obligations pursuant to the regulations to provide this information.

Modeling of saltwater intrusion is considered difficult and the Herzberg Relationship used to predict saltwater intrusion has numerous difficulties to compromise accurate modeling.

- The possible presence of fissures and cracks and fractures in the aquifer, whose precise positions and extents are unknown but which have great influence on the development of the saltwater intrusion
- The possible presence of small-scale heterogeneities in the hydraulic properties of the aquifer, which are too small to be taken into account by the model but which may also have great influence on the development of the saltwater intrusion

- The change of hydraulic properties by the saltwater intrusion. A mixture of saltwater and freshwater is often undersaturated with respect to calcium, triggering dissolution of calcium in the mixing zone and changing hydraulic properties.
- The fact that saltwater intrusions are often not in equilibrium makes it harder to model. Aquifer dynamics tend to be slow and it takes the intrusion cone a long time to adapt to changes in pumping schemes, rainfall, etc. So the situation in the field can be significantly different from what would be expected based on the sea level, pumping scheme etc.

### **High Hazard Dams**

Dependency on the use of the lower reservoir surface water supply adds additional concern for intake water contamination. Ransom's hydrogeologic Investigation Report states that the planned withdrawal of 250 gpm represents the entire baseline flow of the Little River into the lower reservoir. A significant factor to change the Little River watershed is the integrity of the two dams that create the reservoirs. Both dams are significantly degraded and the failure or removal of either of the dams could significantly impair Nordic's ability to withdraw the needed 250 gpm for their operation. The amount of surface water can be influenced greatly by drought and more importantly on the structural integrity of the dams. The upper dam has already been identified as a critical hazard by the Army Corp of Engineers, signifying a danger to human life. GEI Consultants review of the Little River Upper and Lower Dams indicated the dams lack critical stability and dam failure analyses to fully understand the risk and threat that the dams present. The dams are in poor condition and lack the infrastructure to lower the reservoirs in the event of an emergency, are at potential risk of failure, and, in the event the dams were to fail, and in the absence of analyses, they present an unacceptable threat to downstream life and/or property. The dams supporting those reservoirs are in a "high hazard" condition, yet Nordic has not agreed to maintain or repair or remove those dams. Does this impose upon the State of

Maine or the City of Belfast a responsibility to maintain the dams, to protect the “jobs” and private investment by Nordic? It is likely that the surface water in the damned Little River may be hydraulically connected to the ground water sources. Nordic should have tested to determine if this is true and to what extent because their supply depends on knowing that information.

### **Belfast Water District Source of Water Compromised**

Nordic has contracted with the Belfast Water District to purchase up to a maximum of 500 gallons per minute. SLODA Application Section 16, Water Supply, Appendix 16-A. The current Belfast drinking water system presents several significant reasons to question drinking water quantity for Belfast residents. First, Nordic has failed to define the minimum amount of fresh water that will be needed. They have been asked several times. Since the ground water quantity at the Little River Site is already sufficiently low, surface water is now needed from the reservoir (Initial claims by Nordic were that a desirable site would not need a surface water source). Additional water must come from the Belfast Water District Smart Road site. As the Belfast Water District has explained in testimony not only is the existing City pipe infrastructure old, but the two production wells age each exceed 50 years. Life spans on such wells are prone to collapsing with age and 50 years is a typical age for reconstruction. To supply any additional amounts would require extensive upgrades to City pipe infrastructure, and likely the need to develop a third well. According to Keith Pooler, Superintendent of the Belfast Water District (BWD), the BWD can offer a maximum of 262 million gallons per year (498.5 gallons per minute) with the town’s existing pipe system. While the City’s aquifer has more capacity, in order to use that water, the pipe system would need serious upgrades, which Nordic has declined to provide, pushing that burden onto the City of Belfast. Prefiled Testimony, B. Bryden. To develop more water additional wells or well upgrades would be necessary.

From the planning board meeting 2/26 where Keith Pooler was present to answer questions:



The city has two wells in use: one drilled in 1957, one in 1965. Estimated lifespan of a well is 50 years. Old wells collapse and it takes around 6 months to drill a new well alongside a failed well. The Talbot well was drilled and tested in 2005. It will take \$2mil to get that pumping. They must bring that online if NAF goes through. They plan on using the revenue from the sale of water to NAF to do that. The Talbot well might produce as much as 2000 g/min.

Existing well on Jackson Pit max capacity is 600 g/min

Existing well on Smart Rd. max capacity is 1100 g/min

The one and only transmission main can only handle 1300 gpm max (bursting could be an issue). The city's current demand is 202,356,000 gallons/year (385 g/min)

Note:What is the peak hourly demand?

Nordic has been promised a max of 262,800,000 (500 g/min)

Total 465,156,000 (885 g/min)

Max capacity through the main is 683,280,000 (1300 g/min)

Buffer is 218,124,000 g/year or 415/gpm maximum

The cost to replace the main with a larger main would be min. \$6,000,000

Pooler said that if NAF asked for more water than 500 g/m, extensive studies would be needed. The Planning Board asked and the BEP asked Nordic for the minimum amount of freshwater they need. They have never responded.

If, as Nordic said originally, they need 1200 gpm, the city supplies 500, the reservoir supplies 250, and groundwater wells supply 450, the total is reached. In a drought, supplies from the reservoir and from wells could be, and would be expected to be, compromised. Nordics response has been that they could buy more water from the city. But Mr. Poler said that taking more than 500 gpm "extensive studies would be needed". Nordic provided no such studies. City water will not be available. Nordic does not have any contingency plan.

Therefore, Nordic is unable to identify sufficient freshwater sources to meet its freshwater requirements and as such cannot provide a true estimate of the quantity of ground water to be used by the proposed development.

**Depletion of ground water resources will result in adverse effects on their assimilative capacity and recreational use, as well as on certain wildlife habitats.**

Upgradient disruptions by drainage infrastructure will eliminate nearly all wetlands and streams on the site, eliminating their assimilative capacity and impacting wildlife habitat. These qualities will be eliminated from the lower reaches of streams that Nordic has designated as unaffected and suitable to serve as wetland compensation. Nordic should have analyzed this and reported their findings to you.

**There is a difference between meeting the burden of proof before a permit is granted, and meeting the burden of confirmation of proof as a condition of permit. Condition of Approval Must Ensure there will be no Unreasonable Adverse Effect on Ground Water Quantity.**

The Department's regulations contemplate that any approval of a permit application could impose reasonable requirements to ensure no adverse effect on ground water quantity, 06-096, C.M.R. ch. 375, § 8(D)(1)-(3), such as:

- (1) A development obtains its water from a surface water source, public community supply, or utility;
- (2) Wells in the surrounding area be monitored to determine the effect of the development on ground water levels; and

- (3) People in the surrounding area, whose wells are adversely affected by the development, be provided with new wells or another source of potable water for their use and consumption, and if a new source, a period of 10 years where Nordic pays their water bill in return for destroying not just an asset of the homeowner but an asset providing a staff of life.

Upstream urges that if the Board were to approve Nordic's application that the Board impose the following reasonable requirements before issuing the permit:

- An effective monitoring plan to assure that private wells are not adversely affected. Tr. 2/11/20 192: 2-10 (Dr. Hopeck). This must include third party supervision to protect the homeowners.
- A meaningful reimbursement plan for private wells that are adversely affected.
- Evaluation of yields of on-site wells accounting for proposed drainage and stormwater infrastructure.
- Upper and lower dam ownership, repair, and maintenance plans that are adequate to assure projected groundwater yields.
- Evaluation of the potential effects of saltwater intrusion from pumping activities.

**Nordic's SLODA Application Should Be Denied Because Its Project Will Have An Unreasonable Effect on Runoff/Infiltration Relationships.**

According to 06-096 C.M.R. Chapter 375: “[t]he Department recognizes that some developments cause unreasonable increases in stormwater runoff by decreasing the infiltrative capacity of the soils on a development site. The Department also recognizes that increases in stormwater runoff cause increased danger of flooding, the pollution of surface water bodies, and the depletion of groundwater resources.” 06-096 C.M.R. ch. 375, § (4)(A). As Nordic will eliminate almost all infiltration on site, Nordic has not and cannot demonstrate its project will have no unreasonable effect on runoff/infiltration relationships.

**Nordic’s Plan for Capturing Runoff and Precipitation Will Result in Depletion of the Very Groundwater Resources It Intends to Rely Upon.**

Nordic plans to convert the site from infiltration-friendly ground surface to acres of impervious surfaces. Prefiled Testimony, M. McGlone, at 10. At the chosen site, 51% of natural land will be made impervious and so 95% of the precipitation falling on the landscaped surface will be captured and treated. *Id.* At the site 55% of the precipitation falling on the landscaped surface is captured and treated, thus 84% of the precipitation falling on the natural site is being captured and treated. SLODA Application, Section 1, Project Overview, at 4 (“Including required impervious access drives, parking areas and delivery areas, the total new impervious area at the Site will be 27.4 acres at full build-out This will deplete the very groundwater resources that Nordic plans to use to run its facility.

Nordic will install a perimeter drain to catch and divert the water running onto the site. McGlone Prefiled Testimony 6. Nordic witness Michael Mobile said the primary source of ground water for the Nordic Wells will be water from the aquifer (which recharges from precipitation) and onsite precipitation, see Prefiled Testimony of Michael Mobile, #12, which is exactly what Nordic will eliminate with drainage and stormwater management infrastructure. Perimeter drains will collect and divert upslope, off-site subsurface water. Impervious surfaces will intercept precipitation, which will be collected in detention basins and

discharged into the perimeter drains already collecting water from off-site. This system will discharge all water into the Little River downstream near the ocean. Pre-Filed Direct Testimony of Maureen McGlone, #3 and #4.

By design, these changes to the natural landscape will unreasonably deplete the ground water resource. Ground water extraction/well projections assumed full infiltration as it exists now. Tr. 2/11/20 140:2–143:5. All the well 72-hour pump tests and other tests were run with full infiltration. Nordic has no idea how much water, if any, will be available to pump from the subsurface after the stormwater drains are installed. *See* Commentary, SLODA 8, Groundwater Quantity.

**Nordic Has Failed to Provide Evidence That the Stormwater Management System Will Be Fully Coordinated with Project Site Plans.**

Applications for approval of proposed developments shall include evidence that affirmatively demonstrates “that the stormwater management system will be fully coordinated with project site plans, including consideration of street patterns, pedestrian ways, open space, building siting, parking areas, recreational facilities, and other utilities, especially sanitary wastewater disposal facilities.” 06-096 C.M.R. ch. 375, § (4)(C)(7). Stormwater management is not coordinated with project site plans. Off-site water sources and on-site precipitation is intercepted and thus unavailable to meet fresh-water requirements for fish rearing. *See* 06-096 C.M.R. ch. 375, §§ (4)(A), (8).

The BEP should deny this permit because Nordic proposes to intercept all groundwater that could recharge the wells and groundwater supply required to provide fresh water for fish rearing operations. *See* Commentary, SLODA 8, Groundwater Quantity. This is an unreasonable (and untenable) effect on runoff/infiltration relationships. This also precludes pumping freshwater from the aquifer as proposed in Nordic’s process. Nordic’s stormwater

management plan diverts water around the site and removes from the site water falling onto the site. Prefiled Testimony of M. McGlone at 2, 10. 51% of site is newly impervious, 95% of this is treated. 55% of landscaped surface is treated. *See* Tr. 2/11/20 142:5 (Ed Cotter); 06-096 C.M.R. ch. 375, § 4. These actions will diminish the amount of water available in the subsurface. Nordic did not conduct any study to determine the amount of diminution of water in the subsurface, so no one is able to conclude the impact of that diminution on yields from on-site wells or the reservoir. Tr. 2/11/20 142:22–143:5 (M. Mobile).

### **Use of Surface Water for Land Based Salmon Farming**

Surface water is considered the least safe source for freshwater supply due to the potential pathogens and microbes that may exist. Reference Bryden written testimony relating to Canadian Provinces regulatory recommendations. While disinfection and filtering are part of the Nordic plan the reservoir is known for high color and odor when used as a water supply and the presence of wildlife to provide micro bacteria to the supply. Equally problematic is that poor water quality in the reservoir will increase the likelihood of disease within the system and thus require rigorous treatment.<sup>1</sup> Prefiled Testimony, Bill Bryden.

**The RAS technology chosen for this facility is not appropriate given the ground water resources and effluent concerns at this location. A better technology is available and would significantly eliminate risks to ground and surface water.**

RAS can support the use of methodologies and systems that are sustainable and environmentally sound. Nordic's RAS system does not do that. Nordic's RAS does not represent best available practice. Nordic's use of a partially closed RAS should be compared to other

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<sup>1</sup> Note that surface water is treated same as well water. *See* SLODA Application, section 16, Water Supply, Text, p. 2, 16.2.1, Well and Surface Water Treatment System Description.

RAS methodologies that include aquaponics, and the use of closed RAS (CRAS) system designs. There are designs that recycle 100% of fresh, brine water, minimize power usage and don't pollute the oceans or aquatic environments, particularly those through which endangered fish migrate. Aquaponic systems like employed by Superior Fresh uses systems can be used to recycle fresh or brine water. But it has to happen at the system design phase because you need to send the water at the right pH at the right temperature and the right volume flow to the various plant growing facilities. These systems work, they don't pollute, and done right they are power efficient. AquaMaof is no longer just an equipment provider and facility operator. They are teamed with 8F who provides financing and funding. Together they are building multiple land-based RAS systems in the US and world-wide under the brands "Pure Salmon" and "Soul of Japan". They employ ozone in the manner they use it in brine water works. They have need for no vaccinations, no therapeutics ever. They are never needed. The point is that zero discharge and minimal discharge systems not only reduce the amount of effluent to the bay, but importantly reduce the need for groundwater.

Better technologies exist than are what Nordic is proposing. These better technologies are being designed in the US, Canada, and the Middle East (these are Zero Discharge and Minimal Liquid Discharge). AquaMaof Aquaculture, Superior Fresh and Sustainable Blue use these and Nordic should, too..

Maine's Department of Marine Resources has recognized and anticipated ZERO LIQUID DISCHARGE in their new application forms.

- Sustainable Blue has been growing and shipping their salmon to restaurants and distributors in Canada. This past November, Forbes held an investors conference in New York. 400 participants were fed salmon provided by Sustainable Blue and Atlantic Sapphire and declared it delicious. Forbes message to investors is that Closed Land Based RAS is where the industry is headed.

- Atlantic Sapphire has their own patented injection well technologies that they utilize to grow-out saltwater salmon with zero discharge into the ocean or aquifers.
- Superior Fresh has been utilizing aquaponics for raising Atlantic Salmon to accomplish zero effluent discharge. They have been marketing it successfully for several years in the Mid-West and recently were the first US facility to win the coveted Best Aquaculture Practice (BAP) certification by the Global Aquaculture Alliance. (GAA). While they use a minimal amount of salt in their grow-out water for general fish health, blind taste tests have shown that their salmon is just as flavorful as those grown in more concentrated brine.
- Another example is the move to Zero Liquid Discharge (ZLD) used by AquaMaof. AquaMaof, a highly successful company with a long track record and multiple sites raising fish for market worldwide. They have multiple sites that raise Atlantic Salmon in brine water using and licensing their proprietary Minimal Liquid Discharge (MLD) system. Their Zero Liquid Discharge effort is underway. **If you have seen the Exxon bio-fuel ads featuring micro-algae tanks, you will get the idea. According to their chief technology officer depending on the type of algae used you can harvest it to produce high Omega3 fish food and bio-fuels. Different algae are used for processing fresh or brine water. AquaMaof will be licensing their ZLD technology for new systems construction.**

Nordic's partially closed RAS not only affects the effluent, but the amount of ground water needed. The need for groundwater supply is also a function of how well the RAS is operating. If problems occur in bringing the RAS system to planned operating conditions, i.e. removing wastes, or microbiological contamination additional sources of fresh water will be needed.

Prior Conduct is an important component of Site Location and Development.



To date, the only facility that Nordic can point to that is operationally using a RAS 2020 system is the Phase One only facility in Fredrickstadt, There Nordic is still making changes as they failed to get their freshwater filtration system working completely, and while they are pouring concrete for their D shaped tanks, that is a long way from having a functional operational Phase 2 that is producing fish. The company IAA who was supposed to do this for them went bankrupt. Recently Nordic has determined that Fredrickstadt facility will NOT be used for production, but instead will be used for “research”. That means that as Nordic would begin to construct its Maine facility, that facility will become Nordic’s first actual production facility, if it works. Nordic is continuing its experiment in Maine with no assurance of success. The Norwegian system design failure suggests that full scale production of a large RAS system as proposed by Nordic in Belfast has no precedent and is not ready to go.

### **Ground Supply: Goose River**

Nordic is proposing to obtain a significant amount of water from the BWD. The 2018 Capacity Report submitted by Nordic states that this increased use will result in induced recharge from the Goose River to the aquifer, and consequently lower flows in the Goose River. The delivery of this water is authorized by the PUC, but there is uncertainty about the potential impacts of that withdrawal to the surface water of the Goose River. Department staff recommend that the applicant submit a monitoring plan similar to the one outlined above for the Little River, including establishment of an appropriate minimum flow, the establishment of a suitable warning level above this flow and a plan to assure the minimum flow in the Goose River. The monitoring plan should include equipment setup at a measured cross section of the river where reliable data can be collected to relate water depth to flow; a data logger recording water depth at frequent intervals and some other system to function during ice and very high flow conditions; piezometers to record water levels in the aquifer near the river and pumping well(s); and daily usage data

from the pumping well(s). To protect the drinking water supply for the people of Belfast, the monitoring plan should include automatic shutoffs in the event of drawdown in excess of a set amount or level.

Nordic has failed or refused to do so, essentially claiming BWD must do it. Nordic could at least pay for the design of the plan and wait for the results before accepting a permit. No monitoring information has been provided to date. The issue is relevant to this project because Nordic proposes to utilize water from BWD in its operations, enough water to require an additional ground water well to be put into service. Nordic's use will increase the amount of water withdrawn from the Goose River aquifer and has the potential to impact surface water in the Goose River. The 2018 Capacity Report submitted by Nordic states that this increased use will result in induced recharge from the Goose River to the aquifer, and consequently lower flows in the Goose River.

Consideration for drought and the increase in water needs as population increases in the Belfast area also need to be addressed by Nordic as it is Nordic that proposes to create that rapid increased demand.

The Draft permit allows:

- Prior to construction of the project, submits information establishing background data regarding water quantity for the Goose River, including information regarding river flows and flow measurement locations, to the Department for review and approval; and
- Prior to operation of the facility, establishes and submits a monitoring plan for the Goose River to the Department for review and approval. The monitoring plan shall include equipment setup at a measured cross section of the river where reliable data can

be collected to relate water depth to flow; a data logger recording water depth at frequent intervals and some other system to function during ice and very high flow conditions; piezometers to record water levels in the aquifer near the river and pumping well(s); and daily usage data from the pumping well(s). The plan also shall establish minimum flows for the Goose River, consistent with Chapter 587 and establish a suitable warning level above this flow, along with a plan to maintain those minimum flows within the affected reach of the Goose River.

**There is a difference between meeting the burden of proof before a permit is granted and meeting the burden of confirmation of proof as a condition of permit. Condition of Approval Must Ensure that Both of these conditions should take place before a permit is issued.**

No contingency plan is yet offered by Nordic for action should data be collected that indicates problems with the water level in the Goose River water supply.

### **Archeological Issues Associated with Lowering of the Lower Reservoir**

There is the additional concern that using the Little Reservoir as a water source is problematic. During drought years the lower reservoir probably will not provide adequate water supply.

If the water level is lowered significantly, land will become exposed that was once likely a native American settlement. Significant data indicates that the Little River was once a settlement (Belfast Historical Society documents), yet the development of the dams buried

these sites and excluded this area as a location for site artifacts inventory as part of the application process. How much lowering of the reservoir will be allowed before Chapter 94-089 of the Maine Historical Preservation Commission will need to update the archeological study? According to *Dr. Arthur Spiess*, Senior Archaeologist, Maine Historic Preservation. If the water level is dropped by only a couple of feet in the impoundment it will still be above the original shoreline level around most of the impoundment. However, should levels approach basin bottom, an archaeological survey may be required. No provision exists to address this concern, nor can an after the fact study take place. A specific water level regime for the lower reservoir should be provided.

**Contingency Plans and concerns with the RAS technology being planned.**

There are virtually no contingency plans offered by Nordic. The need for contingency plans arises from several concerns. One concern is that the final MBR treatment facility is centralized. SLODA Application, Sect. 1, Descrip, Sect. 1, text., p. 21, AP001. If one of the many tanks develops a problem, then all the combined treatments could fail. How will the Applicant contain 7.7 million/gallons a day of untreatable wastes? Look at the plans. There are no containment basins to hold a large volume of discharge in the event of a problem, nor has Nordic requested a by-pass permit, another huge problem should it be considered.

There is only one final treatment area that collects discharge from growing tanks and also the chlorinated waste from the fish processing. As an example, MBR utilizes biological as well as mechanical filtering. Chlorine can reduce the STERAPORE Hollow Fiber Membrane Bio-Reactors (MBR) treatment efficiency. There is little monitoring in the plan, so problem wastes could be simply discharged, and no one would know. While highly acknowledged as effective, The STERAPORE Hollow Fiber Membrane Bio-Reactors require the applicant to provide assurances and to prove that these too will not be subject to failures that might endanger the discharge waters. While most scientific articles about MBR

systems suggest membrane surface fouling is the main operational limitation for the technology, it is widely recognized by practitioners that clogging phenomena possibly related to inefficient pre-treatment—are at least as important.

Nordic has recently changed their MBR design to reduce the particulate filter size from .4 um to .04 um. This is a significant change that has not been proven in practice and increases the likelihood of fouling of the MBR system, creating additional solid waste in the process and increasing the likelihood of a problem requiring a cessation of discharge into the ocean.

### **Nordic Has Failed to Demonstrate the Technical Ability to Meet Recent Changes in Nitrogen Concentration in Effluent**

The BEP has recently allowed the application to impose a limitation of 21 mg/l of Nitrogen in the effluent reduced from the 23 mg/l in the original application. This reduction is due to the fact that even with a factor of 2 variance from the anti-degradation policy, Nordic's 23 mg/l would still be a violation. While this 21 mg/l effluent concentration may seem like a small difference., it is an 8.7 % reduction in Nitrogen removal. Nordic has not demonstrated any ability to remove nitrogen at this capability. Nordic has claimed 85% removal of Nitrogen to obtain 23 mg/l. To attain 21 mg/l would imply an 86+0% removal capability. Nordic has not demonstrated that it knows how to do this. Until Nordic engineers a solution to this heretofore (and claimed by Nordic) unsolvable problem, no permit can issue.

### **Failure to Provide Contingency Plans for Fish Kills**

How would a large fish kill be addressed? Recently in the news (Early March 2020) Atlantic Sapphire subsidiary, Atlantic Sapphire Denmark, experienced a mortality event in

one of its grow-out systems, losing around 227,000 fish and pushing the company's next harvest revenue back by about four months. There is no contingency plan for such a large-scale failure, no place to store the dead fish, no place to store the contaminated water nor any study showing how this failure might impact the water supply.

**Nordic's SLODA Application Should Be Denied Because It Has Not Made Adequate Provision for Buffer Strips.**

The proposed "buffers," a scant remainder of existing habitat, are completely inadequate to replace the unique and valuable wildlife corridors of this site. The Department has recognized the importance of natural buffer strips in protecting water quality and wildlife habitat, as well as their ability to serve as visual screens to lessen the visual impact of incompatible or undesirable land uses. 06-096 C.M.R. ch. 375, § 9(A). The only natural buffer strips that Nordic proposes to preserve are conservation woodland around the existing public trail. SLODA Application, Sect.01, Sect.1, text, p. 21. These are on adjacent property that will not be owned by Nordic. SLODA Application, Sect.01, Sect.1, text, p. 2. Meanwhile, (1) Most of the natural wetlands on the development site will be destroyed and those remaining will not be adequately protected, (2) the conserved "corridor" within the shoreland zone around the Little River Trail will not provide adequate space for movement of wildlife and (3) buffer strips between the Little River trail and the west sides of buildings 1, 2, and 3 have not been assessed and are inadequate.

**Surface Runoff will be Impacted**

As is evident, almost all wetlands on the site will be completely destroyed or permanently lose their natural functions. The only undisturbed wetlands are #8, 17 & 18, small

wetlands along property boundaries, and for those, Nordic has not proposed adequate provision for buffer strips to adequately protect them from sedimentation and surface runoff.

In determining whether the developer has made adequate provision for buffer strips, the Department is responsible to evaluate whether “water bodies within or adjacent to the development will be adequately protected from sedimentation and surface runoff by buffer strips.” 06-096 C.M.R. ch. 375, § 9(B)(1). According to Nordic’s NRPA Application attachment 13, Compensation, Appendix 13-A (especially see Figures 1&2), updated by November 5, 2019, Nordic Response (including Att. A-F), P.15, Att. A, Map):

- W1, 3, 4, 13 &15 will be completely filled. W2 & W5 – Significant portions will be filled. The remainder will lose natural functions due to fragmentation and proximity of buildings and roads.
- W6 - Over 65% of W6 will be permanently destroyed. The remainder will be “impacted” by construction of the temporary Route 1 bypass. Its feeder stream, D7, will be replaced by building 8. It will no longer function as a wetland.
- W7 – Will be disturbed and altered by construction of the Route 1 bypass.
- W9 – Along S9. Excavation and rebuilding of the stream will impact the wetland, and Building 2 will significantly reduce drainage into the wetland.
- W10 & 12 – Inlet and outlet drainage ways will be excavated and replaced, altering wetland function.
- W11 – Shoreland will be excavated. Effects on area wildlife of construction and refill have not been studied. *See* SLODA 15, Wildlife. W16, at the northern end of Stream 9, will

be completely excavated during construction. It is between the Matthew's Bros. parking lot to the northeast and building 7 to the southwest.

Similarly, six NRPA-regulated streams were originally identified by Nordic in its application form. NRPA Application attachment 13, Compensation, Appendix 13-A, P. 11, Table 4:

- S3 – Upper reaches will be filled, eliminating Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat functions. NRPA Application, Attachment 13, Appendix 13-A, 2.2.1, p. 12. Although natural stream function will be destroyed, landscaping on the remaining banks is considered “on-site compensation.” Prefiled Testimony, Fiorillo, p. 8, #34.
- S5 - Upper reaches will be filled, eliminating Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat functions. NRPA Application, Attachment 13, Appendix 13-A, 2.2.1, p. 12. Although natural stream function will be destroyed, a new bridge is considered “on-site compensation.” Pre-filed Testimony, Fiorillo, p. 8, #34.
- S6 - Upper reaches will be filled, eliminating Groundwater Recharge/Discharge, Floodflow Alteration, and Wildlife Habitat functions. (NRPA Application, Attachment 13, Appendix 13-A, 2.2.1, p. 12. Although natural stream function will be destroyed, a new bridge and revegetation is considered “on-site compensation.” Prefiled Testimony, Fiorillo, p. 8, #34.
- S8- This is a culvert on the Eckrote private property.



- S9- The stream will be excavated during construction, altering its natural condition. NRPA Application, Attachment 13, Appendix 13-A, p. 12, 2.2.2. Based on surrounding topography, it must normally receive runoff from the west. All land to the west will be covered with buildings and drained by the stormwater system. *See* section 12, Stormwater Management, Appendix B, Post-Construction Stormwater Management. Water flow in the stream is likely to be severely compromised. This narrow, artificial swale is unlikely to carry as much water as it does now and is very close to 40'-high buildings. Its current value as a waterway, natural filter, and wildlife habitat and corridor will be severely reduced. Although its natural values will be severely compromised, NAF proposes to install landscaping around a 75' to 150'-wide corridor as a "riparian buffer." This "restoration" effort is considered "on-site compensation." Pre-filed Testimony, Fiorillo, p. 8, #34. S10 – This is the upper portion of S9.

Upon request from the DEP, three more streams were added. November 5, 2019, Nordic Response (Incl. Att. A-F), p. 17, Normandeau memo.<sup>2</sup> Given that so many of the wetlands and streams at the site will be destroyed or severely compromised, it makes it all the more a glaring omission in Nordic's application that it has not proposed buffer strips to adequately protect water bodies within or adjacent to the development from sedimentation and surface runoff.

## **ECOLOGICAL IMPACT**

### **Nordic Has Failed to Assess the Effluent's Ecological Impact to Biological Species.**

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<sup>2</sup> Nordic significantly updated and upgraded wetland and stream assessments in response to DEP request. November 5, 2019, Nordic Response (Incl. Att. A-F) Compensation fees and the appropriateness of proposed on-site compensation should be carefully reassessed.

The long-term impacts of Nordic's industrial fish farm on native Atlantic salmon, cod, halibut, bivalves, elvers, herring, grasses, and seaweeds will be negative. Efforts to restore native marine populations) will suffer, and so will the communities that live off them. Tr. 2/14/20 166:25167:1 (B. Bryden).

Upstream witness Richard Podolsky, Founder and CEO of Ecology and Technology, an environmental science consulting company based in Camden, Maine testified:

For a project that is as ambitious and impactful as NORDIC's, with short and long term and permanent impacts to uplands, wetlands, intertidal, sub-tidal and water column habitats, it is my opinion that direct, field observations and quantitative assessments of the biological resources be performed in every season of the year and in every habitat that will experience any impact from project activities. There are real consequences and implications to failing to properly characterize the ecological communities in the project area.

*See* Richard Podolsky Rebuttal Testimony (Jan. 17, 2020) at 2. This assessment recommended by Mr. Podolsky is necessary in order to evaluate the effects of thermal, biological and chemical components of the proposed effluent, and thus the need for water quality-based effluent standards.

To fully understand the potential environmental impacts at the proposed site, there would need to be an evaluation of release of nutrients into the water column and monitoring their dispersal and dilution thereafter. Three crucial factors would influence this dispersal and dilution: local physical oceanographic conditions, local background water quality, and wastewater composition. These parameters have not been sufficiently established to make a confident risk assessment for water quality near the project site. Because the proposed project will operate continuously throughout the year and possibly for decades, collecting a

thorough data set that describes the background environmental and ecological conditions is required.

More specifically, Nordic failed to provide the following crucial information needed to make a thorough evaluation of environmental impacts:

- Nordic failed to consider the effects of the plume with temperature and salinity that could attract some organisms (Tr. 2/13/20 32:8 (temp). 32:5 and 34:7 (salinity)) to unusual, suboptimal conditions while exposing them to non-native viruses (Tr. 2/13/20 384:2-22 (I. Bicknell)(“there is no way to totally eliminate those risks”)) and possibly suboptimal feeding conditions.
- Nordic failed to study the response of sessile organisms to the unnatural water quality in the plume.
- Nordic failed to perform adequate surveys of current behavior and existing water quality to assess the scope of altered water conditions that will affect marine wildlife.
- Nordic failed to conduct an adequate survey to identify marine species using this area.

Evaluation of the marine habitat was based on “a literature review,” and a one-time survey “conducted by towing a diver and a camera along the proposed pipeline route.” Application, SLODA section 07, Wildlife & Fisheries, Natural Resources Report p. 12, 4.0, Fisheries Methods. Nordic failed to demonstrate that it will meet the DEP 2018 criteria for wastewater discharge. “The water body is Marine Class SB.” January 14, 2020 Rebuttal Testimony, of Tyler Parent, at 2. In these waters “[d]ischarges may not cause adverse impact to estuarine and marine life in that the receiving waters must be of sufficient quality to

support all indigenous and estuarine marine species without detrimental changes in the resident biological community.” *Id.* at 4, Nordic Exhibit 37. Because this is not zero or minimum discharge RAS, effluent pipes are necessary. Nordic failed to address the effects of blasting and dredging on sessile marine organisms to place these pipes.

Nordic states that scallops, blue mussels, and soft-shell clams will be able to modify their behavior to temporarily endure the change in water conditions until their area of residence is no longer part of the active construction zone. Prefiled Testimony, T. Parent, p. 8, #20. Behavior modification is not a life-saving response to excavation of habitat and backfill with stone. Tr. 123:16 –125: 2 (Walsh describes excavation method). Nordic did no study to determine if, when, or which organisms are likely to inhabit the disturbed area.

**Nordic’s proposal to conserve a “corridor” within the shoreland zone around the Little River Trail is not adequate to provide space for movement of wildlife.**

The regulations also provide that evidence should be presented to demonstrate whether buffer strips will provide adequate space for movement of wildlife between important habitats. 06-096 C.M.R. ch. 375, § 9 (B)(2). This site, taken as a whole, is a special and locally rare ecosystem. It provides essential habitat for migratory and overwintering birds; it is a transition zone from coastal wetlands and shoreland habitat to riverine, wetland, upland and reservoir habitat. Prefiled Testimony, Fiorillo, pp. 3-5, #8-15; SLODA Application, Section 05, App. 5-A, p. 9. This undeveloped connectivity from shoreline and intertidal habitats is extremely important in the area, as most all of the shoreland is developed. As a unique corridor between rural upland, reservoir #1, and the shore and intertidal zone of Penobscot Bay, this important wildlife habitat is used by several mammal species (Prefiled

Testimony, Fiorillo, p. 5, #14) and wading birds (Fiorillo, p. 4, #13). The remaining “corridor” of 250’ – 500’ between the Little River and the reservoir and 40foot-high building walls is not sufficient to support wildlife homes or movement.

The site contains hayfields (Prefiled Testimony, A. Fiorillo, p. 3, #8) and riverine habitat. Shoreland habitat provides Tidal Water/Wading Bird Habitat (TWWH) (Prefiled Testimony, A. Fiorillo, p. 4, #12), and the Lower Reservoir provides Inland Waterfowl/Wading Bird Habitat (IWWH) (Prefiled Testimony, A. Fiorillo, p. 4, #13). Numerous streams and wetlands were identified by Nordic (NRPA Application, Attachment 9) with more added and designations upgraded in response to DEP inquiries. November 5, 2019, Nordic Response (includes Att. A-F), pp. 17-19, Normandeau Memo.

The strip of land that will remain as shoreland zoning setbacks around the Little River and the reservoir, and property setbacks, is not sufficient wildlife habitat by any measure. It is particularly inadequate to maintain valuable habitat connections between shoreland feeding area and upland habitat. The remaining strip represents a fragment of a former, complex habitat, and will degrade over time.

In Summary, Nordic cannot provide sufficient on-site mitigation to preserve wildlife habitat. Nordic has failed to study the effects of wastewater on Penobscot Bay or provide adequate mitigation. Nordic has failed to consider the alternative technology of closed-system RAS. Nordic’s construction schedules will not mitigate harm to threatened and endangered bats and other upland wildlife. Nordic has not conducted surveys of marine, terrestrial, or freshwater organisms to allow evaluation of mitigation measures. Nordic’s calculations for monetary offsite mitigation ignores impaired wetlands and includes meaningless on-site landscaping.

It is unlawful for a SLODA permit to be granted for this project due to failure to meet the conditions included in Scope of Review. Wildlife, including upland and marine species, notably vulnerable, federally endangered, migrating Atlantic salmon, will not be provided with “travel lanes” between areas of available habitat. Proposed alterations and activities including wastewater and release of mercury from marine sediments will adversely (and significantly) affect wildlife and fisheries lifecycles. There will be unreasonable disturbance to wildlife:

- (a) habitat of species declared threatened and endangered, notably Atlantic salmon, short-nosed sturgeon, and Atlantic sturgeon will be degraded. Surveys have not been conducted to determine if bats are present at the site.
- (b) Without further study, potential impacts on valuable waterfowl and wading bird habitat are not known.

Without proper study, effects on shorebird feeding and staging areas, especially at the mouth of the Little River, are not known. Nordic fails to demonstrate that it will meet the DEP 2018 criteria for wastewater discharge prohibiting detrimental changes to the residential biological community.

BEP cannot confirm compliance with SLODA Section 15, Protection of Wildlife and Fisheries, without the following studies:

- Evaluation of discharge using “effluent-based” standards.
- Comprehensive, year-round study of water movement and currents in this sector of Penobscot Bay to determine the scope of discharge plume effects.

- Research and study of the response of resident species to altered temperature, chemical, and feeding conditions within the discharge plume and to construction activities.
- Prediction and monitoring of effects of the effluent on the mussel farm southeast of the discharge pipe.
- Year round, on-site surveys of bird, bat, and benthic organisms.
- Marine sediment testing, including mercury analysis, along the proposed pipeline route according to the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers joint publication, “Evaluation of Dredge Material Proposed for Ocean Disposal,” 1991. (Hearing Transcript, K. Tucker, 2/12/20. P. 166, L. 13 – 17)

In order to assure meeting federal obligations under the international Williamsburg Treaty:

- Nordic must be prohibited from acquiring or introducing into their facilities any fish that are not Maine-raised.
- Nordic must be prohibited from acquiring or introducing into their facilities any fish eggs that are not Maine-raised.

It is unlawful for BEP to grant a SLODA permit for this project due to failure to meet the requirements of this section included in Scope of Review:

- Wildlife, including upland and marine species, notably vulnerable, federally endangered, migrating Atlantic salmon, will not be provided with “travel-lanes” between areas of available habitat.

- Proposed alterations and activities including wastewater and release of mercury from marine sediments will adversely (and significantly) affect wildlife and fisheries lifecycles.

There will be unreasonable disturbance to wildlife:

- (a) Habitat of species declared threatened and endangered, notably Atlantic salmon, shortnosed sturgeon, and Atlantic sturgeon will be degraded. Surveys have not been conducted to determine if bats are present at the site.
- (b) Without further study, potential impacts on valuable waterfowl and wading bird habitat are not known.

Without proper study, effects on shorebird feeding and staging areas, especially at the mouth of the Little River, are not known. Nordic fails to demonstrate that it will meet the DEP 2018 criteria for wastewater discharge prohibiting detrimental changes to the residential biological community.

#### **IN ADDITION, UPDSTREAM WATCH OFFERS COMMENTS AS FOLLOWS**

#### **NO UNREASONABLE ALTERATION OF NATURAL DRAINWAYS**

The chapter requires that the applicant show its proposal will not result in the “unreasonable alteration of natural drainage ways”. Nordics application reveals nine drain ways on its site. Nordic proposes to remove eight of the nine drain ways and to remove part of the ninth drain drainway along with its alteration to become a perimeter drain around the site. The question is, is the removal of all drain ways on-site (notwithstanding that one of them will be



replaced) a “reasonable” alteration of natural drainage ways. See (1) and (2) below. If the removal of all the on-site drainage ways is not unreasonable in the context of drainage ways, what is? And isn’t characterization of removal of all drainways as “reasonable” on its face an abuse of the discretion vested in the Board? Isn’t this especially true when the proposed alterations fail to follow the published guidelines below, created to coach applicants how to avoid a finding of “unreasonable”. For example, A. (1) below requires natural drain ways to receive a 30 foot right of way and to remain in place. Under Nordic’s plan, eight of nine drain ways would be removed entirely. Nordic didn’t even try to comply.

### **No Unreasonable Alteration of Natural Drainage Ways**

**A. Scope of Review.** In determining whether the proposed development will cause an unreasonable alteration of natural drainage ways, the Department shall consider all relevant evidence to that effect, such as evidence that:

(1) Where a development site is traversed by a natural water course, drainage way, channel, or stream, a drainage right-of-way will be provided that substantially conforms with the lines of such natural water courses. Such rights-of-way shall be at least thirty feet in width.

(2) Any grading or other construction activity on the site will cause no unreasonable alteration of natural drainage ways such that drainage, other than that which occurred prior to development, will adversely affect adjacent parcels of land and that drainage ways flowing from adjacent parcels of land to the development site will be impeded.

**B. Submissions.** Applications for approval of proposed developments shall include evidence that affirmatively demonstrates that there will be no unreasonable alteration of natural drainage ways, including information such as the following, when appropriate.

(1) A plan showing all existing water courses, drainage ways, channels, or streams to be affected by the development, and the nature, width and location of proposed easements, rights-of-way, culverts, catch basins or other means of channeling surface water within the development and over adjacent parcels of land.

(2) Deed covenants which establish the easements or rights-of-way and provide for their continued maintenance.

**C. Terms and Conditions.** The Department may, as a term or condition of approval, establish any reasonable requirement to ensure that there will be no unreasonable alteration of natural drainage ways.

## **RUNOFF/INFILTRATION**

The chapter requires the applicant to show its development will have, “no unreasonable effect on runoff/infiltration relationships. Currently the project site is a forest. When it rains all water falling on the ground infiltrates into the earth. The development will convert the majority to impervious surface all of which will discharge water storm water to a series of catch basins and drains, ultimately to the perimeter drain and into the water of the Little River below the lower dam adjacent to the ocean. Post development there will be virtually no infiltration of rainwater into the site. If blocking virtually all infiltration is not an “unreasonable” effect on “runoff/infiltration relationships”, what is? And is ignoring this

change not an abuse of the discretion vested in the Board? And if the stormwater is not infiltrated into the subsurface must it, not *ipso facto*, be increasing the discharge by more than the permitted amount? If not, where does the water go? It's not revealed on the plans.

### **No Unreasonable Effect on Runoff/Infiltration Relationships**

**A. Preamble.** The Department recognizes that same developments cause unreasonable increases in stormwater runoff by decreasing the infiltrative capacity of the soils on a development site. The Department also recognizes that increases in stormwater runoff cause increased danger of flooding, the pollution of surface water bodies, and the depletion of groundwater resources.

**B. Scope of Review.** In determining whether the proposed development will have an unreasonable effect on runoff/infiltration relationships, the Department shall consider all relevant evidence to that effect, such as evidence that:

(1) A stormwater management system will infiltrate, detain, or retain water falling on the site during a storm of an intensity equal to a twenty-five year, twenty-four hour storm such that the rate of flow of stormwater from the development does not exceed the rate of outflow of stormwater from the site prior to the undertaking of the development.

(a) Developments which convey stormwater directly into the ocean (excluding estuarine tidewaters) exclusively in manmade piped or open drainage systems are exempt from the requirements of this subsection.

(2) The physical, biological, and chemical properties of the receiving waters will not be unreasonably degraded by the stormwater runoff from the development site.

(3) The peak discharge of the receiving waters will not be increased as the result of the stormwater runoff from the development site for storms up to a level of intensity of a twenty-five year, twenty-four hour storm.

## **SCENIC CHARACTER**

The Chapter requires that the applicant demonstrate there will be no “unreasonable effect on scenic character”. Currently the site is forested. Post development, the site will be dominated by industrial buildings. The board must determine if changing the scenic character from forest to industry is “reasonable” and in keeping with the scenic character of the surrounding area so as not to diminish one of Maine’s “most important assets”.

### **No Unreasonable Effect on Scenic Character**

**A. Preamble.** The Department considers scenic character to be one of Maine's most important assets. The Department also feels that visual surroundings strongly influence people's behavior.

**B. Scope of Review.** In determining whether the proposed development will have an unreasonable adverse effect on the scenic character of the surrounding area,

the Department shall consider all relevant evidence to that effect, such as evidence that:

- (1) The design of the proposed development takes into account the scenic character of the surrounding area.
- (2) A development which is not in keeping with the surrounding scenic character will be located, designed and landscaped to minimize its visual impact to the fullest extent possible.
- (3) Structures will be designed and landscaped to minimize their visual impact on the surrounding area.

## **SOLID WASTE**

The chapter requires the applicant to demonstrate it is made adequate provision for solid waste disposal. That includes the storage of solid waste at the facility awaiting disposal. That includes solid waste which might be generated from usual circumstances or during adverse weather conditions that might preclude removal of the waste from the site. Upstream watch is unaware of any solid waste disposal storage area on-site. During site preparation, will they burn the trees and brush they clear? What will they do with it?

### **Adequate Provision for Solid Waste Disposal**

- A. Submissions.** The application for approval of a proposed development must include evidence that affirmatively demonstrates the applicant has made adequate provision for solid waste disposal, including, but not limited to, the following information:

- (1) The types and estimated quantities of solid waste to be generated by the development and the proposed method of disposal. Types of solid waste may include, but are not limited to, stumps/grubbings, construction debris, demolition debris, household solid waste, industrial solid wastes, special wastes and hazardous wastes.
- (2) A letter from the operator of a solid waste management facility or a municipality stating that adequate capacity exists for solid waste generated by the development and that the development may utilize the solid waste management facility. The applicant must identify the method of collection (e.g. private, municipal or commercial) and the location of the solid waste management facility for each waste listed. If waste from the site is taken to a transfer station, the application must identify the facility or facilities at which the waste ~~is~~ would ultimately be managed.
- (3) If any stumps, grubbings, or other wood waste or land clearing debris ~~is~~ are to be disposed of on-site, the applicant must comply with 38 M.R.S. §1301 *et seq.* and all applicable sections of the Department's Solid Waste Management Rules. There are provisions within the Solid Waste Management Rules to exempt the processing of certain land clearing debris as described in 06-096 CMR 409(1)(B)(3). The applicant must delineate the disposal area on the site plan. For subdivisions, if waste is proposed for on-site burial on a particular lot, that lot must be conveyed with a deed restriction identifying the disposal area.
- (4) If wood wastes are to be burned on-site, the burn area must be shown on the site plan and exclusion plans provided for materials prohibited from being burned (including chemically treated wood, plastics, vinyl, asphalt shingles, etc). On-site burning cannot create a nuisance condition, and evidence of all applicable fire

permits must be submitted. Provide plans for handling both unburned wood waste and woodash, including the name of the licensed or exempt solid waste facility that will accept or receive or manage the ash and unburned materials and the name of the licensed or exempt transporter who will transport the materials to the proposed solid waste facility. If applicable, include evidence of capacity to accept the waste from an approved solid waste facility or a plan outlining the usage of these materials in landscaping and reclamation of the site. Include information on ash/topsoil mixing ratios and application rates. Any proposed open burning must comply with the *Rules for Open Burning*, 06-096 CMR 102.

### AIR QUALITY

Nordic was required in its application to demonstrate, “No adverse environmental effects” from its project. That included Air Quality. It is impossible to evaluate the impact of air pollution from point or non-point sources because Nordic provided only data on their eight generators. They provided no information and they were unwilling to even identify other point-source sources of emissions or any non-point sources of emissions. Without proper identification of all on-site air emissions sources Nordic’s application is incomplete and cannot be evaluated. Even if Nordic’s application for a minor source permit regarding its eight generators were to be granted (and we do not concede that it should) all other sources have been ignored by the applicant rendering the application fatally incomplete.

The comments for Upstream Watch on Air Quality are offered by volunteer Michael Lannan, P.E.

[5][6]

**INSUFFICIENT POWER FOR THE FACILITY AND THE PUBLIC**

The Applicant has applied for a SLODA permit for a Large-Scale Aquaculture Facility, but an Air Application for only a peak-shaving power plant. The power service for this section of the City and the Northport Village Corporation comes in on one main line through a very rural network of utility lines among many trees. The power supply infrastructure in this area has been stressed as more and more people choose to live and build near the ocean, increasing demand as supply remains fixed. It is most stressed in the summertime, especially when it is hazy, hot and humid. It is undependable, and often interrupted for long periods, in wind, rain, snow, and ice events. These facts will not change any time soon, so therefore **there is absolutely NOTHING voluntary about Nordic Aquafarms proposed power plant operations.**

The large-scale consumption of available power during the peak summer season is a potentially serious adverse impact to the area, and yet another example of how this site is simply unsuitable. The original plans for intermittent power from solar farms and wind power onsite, and electric equipment and vehicles to reduce their greenhouse gas footprint has not materialized. The fact that Nordic Aquafarms commissioned a sustainability study and did not provide a final report to either the City or the State is worrisome. Nordic Aquafarms has been boasting that they will reduce Greenhouse Gases and Global Warming, yet they could not or did not provide a favorable sustainability report into the record. The Applicant has not presented any evidence that the ancillary power plant is sufficient to meet the power needs on-site. Will this facility consume most, if not all, the available power on a good day, or on a weather intensive day, or on a hazy, hot and humid day, compromising power delivery to other customers?



Nordic has stated that they have a very high electrical load, but has not provided calculations or presented evidence, or provided any definitive testimony that they can supply sufficient power to their facility with seven out of eight engines running for any time period, much less an extended time period. **Nordic has said, on the record, that the maximum power output of the peak-shaving plant is not sufficient for all operations during peak summer demands or during emergency events.** It was stated that if the power plant is used for emergency power, the facility will be in some sort of modified operations.

Therefore, all we know is that at some undefined times, the facility will need more than the 14 MW of power that are available and will be compelled to modify operations. “Reduced operations,” like so many things in their applications, are not defined. How long can the facility operate in reduced operation mode? There is no information in the record identifying power usage during reduced operation mode, a comparison to the normal mode, or normal mode, especially after it simply changed its entire heating and cooling plan in one statement.

Nordic’s Air Application **only provided equipment and cutsheets** for the 8 engines. When DEP requested information on the combustion equipment necessary for the wastewater plant, fish processing plant, surface water pre-treatment plant, groundwater pre-treatment plant, city water dechlorination plant, ocean water pretreatment plant, heating and cooling, and all the pumping system associated with moving water around in the tanks, pulling it from the ocean and discharging it as well, the generic response was “everything is now going to be electric”. As ridiculous as that sounded, it also instantly created significantly higher unknown peak and average demand on the existing electrical grid., This added demand would significantly affect their sustainability report that was never provided. Unfortunately, the added demand cannot be calculated because neither the original demand nor the equipment changes were ever identified.

Even before switching to “all-electric”, the Applicant claimed that the maximum output of 14 MW was not sufficient to run the facility. Given that a peak shaving plant cannot run at maximum output and remain under warranty and 14 MW is not sufficient output, redundancy for their “peak-shaving” power plant is crucial when the power plant will be run for back-up power. There is only one spare engine for seven duty engines. With 8 engines installed, it is not unlikely that more than one engine will be out of service, or the combined system will not function in unison for maximum allowable power output. With seven duty and one standby engine, there is only a 14% redundancy factor. They will need many portable generators in prolonged power outages, whether or not they can maximize the power from the peak-shaving power plant.

All non-stationary generators will have a significantly higher air pollution to power ratio, so even if they are used “in lieu of” engines that are out of service, the emissions will be significantly more and the facility would exceed ambient air quality standards. The need for temporary power and portable combustion systems is so obvious that DEP has added and conditioned in the Chapter 115 draft air permit, even though the Applicant is on the record saying “everything, including the trucks, will be electric.” Once added to the draft permit, they are on-site combustion sources that add to the overall air pollution emitted from the facility. This is simply a fact, whether or not they are defined as a source in the Chapter 115 permitting language or the State SIP program. The “potential to emit” calculation must include these units in conjunction with the power plant engines.

## **INCOMPLETE MODELING**

**It was clear during the permitting process that DEP could include only the Chapter 115 sources in their dispersion modeling analysis for the Chapter 115 license because those were the only sources identified in the permit Application and responses**

**to Requests for Information. Considering the power plant emission alone could be fine, IF the air and SLODA permits were simply for a stand-alone, peak-shaving power plant, but they are not. The peak-shaving power plant is an ancillary function to the Nordic Aquafarms fish factory. Therefore, per federal and state permitting rules, the Chapter 115 Application is for the full facility regardless of whether the Applicant only submits information for the peak-shaving plant.**

DEP air dispersion modeling was hampered by the Applicant's failure to supply complete information. It is unclear why the Applicant did not model air dispersion themselves, negotiating modeling parameters with the DEP, then submitting the results for DEP review. If the Applicant had completed the dispersion modeling themselves, they could have made sure all of the possible air pollution sources and downwash factors such dog-houses, stack enclosures, and rooftop equipment were included per the Applicants design concept. It is impossible for DEP to model anything that is not supplied.

Due to the incomplete information in the DEP's air dispersion model, the record was extended past the BEP hearing date especially to allow for updated air dispersion modeling. This is acknowledged in the draft Order, Page 8:

*“The Board conducted a public hearing from February 11 through 14, 2020, with one evening session devoted to receiving testimony from the general public. At the conclusion on the hearing on February 14, 2020, the Presiding Officer allowed the record to remain open to the parties for specific limited evidence to be entered into the record for further comment and evaluation. These submissions included: additional air dispersion modeling to estimate ambient air concentrations from the proposed project;...”*

It was unclear at this time whether the Applicant had provided sufficient information to address the concerns, especially regarding downwash, raised by Upstream Watch in testimony.

Upstream Watch volunteered to work together with DEP and the Applicant to develop a protocol for this next round of modeling to ensure that it would be complete and final. This afforded the Applicant the opportunity to correct the record by modeling ambient air quality from all sources, both construction activities, and operations and maintenance, and any combination thereof (i.e. Phase 1 Operations during Phase 2 construction), and to meet with Upstream's expert to complete the process in a concise and rapid manner. Upstream Watch's offer was rejected.

Again, the Applicant elected to have DEP model the facility based upon their interpretation of the transcript and testimony. Upstream Watch obtained the revised model from DEP and added a few items that are shown on the plans in the record (doghouses on additional buildings, stack enclosures, and buildings). Revised dispersion modeling did not demonstrate compliance for either the peak-shaving power plant, and/or the fish factory facility as a whole with the state ambient air and federal Clean Air Act ambient thresholds. Upstream Watch informed the BEP of noncompliance in the last round of comments allowed. Upstream Watch was extremely surprised the BEP did not again instruct the Applicant to make these changes to correct the model, as the request and the type of structures missing and added in by Upstream Watch were nearly identical to requests made by DEP at the hearing. Instead the record was closed with the last and most recent testimony from Upstream Watch, which demonstrates that it is very possible that the peak-shaving power plant alone would exceed the ambient air limits, and therefore the entire fish factory would exceed the ambient air thresholds.

## ADDITIONAL AIR QUALITY IMPACTS

The Applicant never addressed many of the items that arose as reasonable testimony in the hearings, some of which were still on the minds of the Board members during the deliberations, such as; What if Phase 2 is not built? What about particulates during construction? What about air pollution from construction? What about the combined impacts from Phase 1 operating while Phase 2 is under construction, etc.? For example, at the deliberation discussion on May 20<sup>th</sup>, participants considered limiting engine use during Phase 1 operations when less emergency power would be needed, in order to allow for Phase 2 construction emissions, but:

- (1) The Applicant rejected the hypothetical question of any engine limitation;
- (2) The application is for a peak-shaving facility from Day 1, for typical power needs, not only emergency power; and
- (3) The Applicant has provided no construction equipment specifications or specific sequencing scenarios with respect to air or noise adverse impacts, from either phase 1 or Phase 2. It is thus impossible to determine mathematically how many engines would need to be restricted. It is possible no engines could be able to be operate at times, and construction activities would need to be adjusted.

Most, if not all topics associated with items other than the peak-shaving power plant differed between the air licensing deliberations and the SLODA air quality deliberations. They came up in conversation, but were not included on the formal slides for the SLODA discussion. As a result, these topics were not specifically addressed in the draft SLODA findings of facts so that one could **quantitatively** determine whether air quality limits are exceeded, or whether the consumption of assimilative capacity would amount to an unreasonable adverse air quality impact.

The proposed power plant will consume up to 90+% of the assimilative capacity directly around the facility and double, triple, or quadruple the background pollution levels for a large area of influence in Northport and Belfast during peak summer conditions when it is operating. The air pollution from this ancillary source alone suggests that the site is not suitable, that this facility would have an “Unreasonable adverse impact on air quality,”

**When one does consider the minor downwash structures missing from the last DEP modeling and quantitative answers to some of the deliberation and testimony questions noted above, the only conclusion can be an “Unreasonable Adverse Impact on Air Quality”. DEP’s dispersion modeling has demonstrated that there is essentially no addition assimilative capacity for additional emissions sources. And there are other emissions sources.**

**DEP modeling has not taken into consideration:**

1. **The added traffic from construction, operations, and maintenance;**
2. **Non-road emissions from construction operations, and maintenance;**
3. **There are other activities on-site that will occur from operations and maintenance.**

These factors will increase emissions from the facility. That is simply a fact.

**MISSING TRAFFIC AIR POLLUTION ASSESSMENT**

**Construction traffic will emit pollutants.** BEP mentioned that the topic of traffic was a local issue, but that does not mean that construction traffic emissions do not need to be properly estimated and provided to the record, and included in the air permitting and SLODA adverse air quality assessment.

Traffic information in the record does not properly identify construction, operations and maintenance truck and passenger vehicle trips for a 200,000 pound a day fish production factory, including all the ancillary services necessary to build it, run it, and maintain it. During construction alone, the facility would need to remove thousands upon thousands of truckloads of unsuitable and unstable soil, a forested area, and an old water treatment plant. It will also need to bring into the site thousands upon thousands of truckloads of gravel to replace most of the soil, material to fill in the wetlands, material for stormwater work, millions of cubic feet of concrete and cement (unless it builds a concrete or cement plant onsite which is not in the record and would create additional emissions), topsoil, asphalt, rebar, and truckload after truckload of new equipment for a 7.7 million-gallon treatment plant, in-situ wastewater treatment and other process tank equipment, fish hatcheries, the ancillary power plant, the three different water treatment processes, countless pumps and generators, an education center, utility galleries throughout the site, the outfall dredging and construction. The list goes on, and on. Upstream has testified that it is extremely likely that the construction emissions alone during either Phase 1 and/or Phase 2 could exceed air quality standards. The record and DEP determinations do not consider traffic emissions, and therefore the Applicant has not met the burden of proof for their proposed construction project.

During operations the facility must bring in feed for millions of fish, equipment and supplies for a water and wastewater treatment facility that rivals those necessary for a city, supplies for fish, employees, visitors to the education center, etc. Again, the list goes on and on. In the draft Findings it states:

***“While vehicles, such as those transporting fish product or waste product from the facility, delivering materials or driven by employees presumably will result in emissions, the Board finds the scale of activity is consistent with what is reasonably expected at a comparable industrial facility, and, based on its professional judgement and experience, will not result in an unreasonable impact to ambient air quality.”***

**Given the location**, abutting the backyard of residents, churches, nature trails, etc., **comparison with a “comparable industrial facility” is irrelevant to assessing the impact of air pollution from this project on the neighbors.** With limited open space, rare birds, and quiet areas, the neighborhood surrounding this site and the historical use in this area, regardless of new zoning, has a much lower threshold for air, noise, odor, and dust from traffic than a historically industrial area. Comparison with industrial facilities that are probably appropriately sited does not refute “*unreasonable impact to ambient air quality*” from this facility. Comparison with industrial facilities that probably have different facility-wide pollutant sources does not refute “*unreasonable impact to ambient air quality*” from this facility.

The Applicant cannot justify the statement that there are minimal air quality impacts from traffic because it simply has not provided sufficient information to the record to do so. As noted in the draft findings, traffic will clearly increase the air pollution emissions, probably in an amount “comparable” to other “industrial facilities.”

Considering additional pollution emissions from traffic, Nordic has not provided credible evidence of “No Unreasonable Adverse Effect On Air Quality” (Ch. 375, 1), so the permit must be denied.

#### **MISSING OTHER NON-ROAD ACTIVITIES DURING CONSTRUCTION**

In addition to trucks, there must be bulldozers, excavators, lifts, graders, dump trucks, stripped land, stock piles of topsoil, stock piles of very fine unsuitable soil, stock piles of gravel, unpaved roadways, scraping of earthen material, crushed stones or rocks, crushing and stockpiling of blasted material, etc. Again, the list goes on and on. Each and every one of the examples above have emission factors and usage factors. They are readily available from large projects such as the Boston Big Dig, and from the Department of Trans-



portation, and the EPA (the EPA AP-42 emissions factors). Manufactures have more specific equipment emission data, and there are many historical studies available on the internet for dust emissions. Air quality determinations are often required for large water and wastewater infrastructure projects, therefore the following statement is simply not accurate for construction emissions from this fish factory:

*“Emissions from construction activities are not directly considered in the Department’s air dispersion modeling because this emission type is fugitive, not easily quantified, and is temporary for the duration of construction.”*

These types of fugitive emissions are not exempt. They are easily estimated and defined. The statement about “not easily quantifiable” cannot be justified. It may be very hard to assess VOC leakage from an industrial facility, but it was never suggested that there is a VOC concern from this facility. Since CO, NO<sub>x</sub>, and PM<sub>2.5</sub> are readily quantifiable from construction point, area, and volume sources, the Applicant is deficient by not examining these emissions for Phase 1 and Phase 2 construction, separately and concurrently. Construction at this site will not be temporary. It will extend for years and the area will be exposed to the emissions for years.

## **MISSING CONSTRUCTION EQUIPMENT SPECIFICATIONS**

The draft findings of facts also includes the following statement:

**“Most of the site alterations will be carried out in the construction of Phase 1, when the generators would not be in operation. However, to reduce the emission potential from construction equipment the Board is requiring the applicant to use lower emission vehicles that meet Tier 2 emission standards.”**

There is no data or calculation to suggest that this requirement will prevent violation of clean air regulations. This appears to be a compromise between the concerns expressed at the BEP hearings in testimony by Upstream Watch and suggestions by Board members that the cost of Tier 4 equipment would be excessive and prohibitive. It is not the BEP's responsibility to consider cost with respect to Clean Air Act compliance, and there is no indication that even Tier 4 engines could meet emissions requirements considering the quantities of materials to be removed, stored, moved, hauled and replaced during a multi-year construction schedule. Calculations based estimates of construction activities and equipment over time are essential to evaluate contribution to air pollution from the many simultaneous construction operations. Simply requiring Tier 2 equipment does not protect the existing uses in the neighborhood. If, based on diligent air quality assessments, Tier 4 equipment is required to meet air quality standards, it cannot be dismissed on a cost basis. It should be proposed as a condition, and, if it is cost prohibitive, it is simply another example of how this site is not suitable.

**The Applicant cannot justify the statement that there are minimal air quality impacts from non-road construction equipment during construction and/or during operations, because it has not provided sufficient information to the record to do so. Non-road equipment produces emission, and sometimes this will occur simultaneously with plant operations. The Applicant has not provided evidence that it will have "No Unreasonable Adverse Effect On Air Quality" (Ch. 375, 1) so the permit must be denied.**

#### **MISSING OTHER AIR EMISSIONS FROM THE FISH FACTORY**

There are other non-road emissions from operations and maintenance combustion activities included in the draft Chapter 115 facts of findings and conditions (regardless of their status as temporary or portable). They may be de minimus, not triggering a permit threshold, but their impact potential is simply not zero. They would have been easy to quantify

and locate, if the Applicant had provided equipment specifications layouts and exhaust locations.

**The Applicant cannot justify the statement that there are minimal air quality impacts from other combustion equipment during construction and/or during operations, because it simply has not provided sufficient information to the record to do so. Clearly the air pollution increase from other combustion operations is not zero, but likely “comparable” to other industrial facilities, so the permit(s) must be denied.**

There are ZERO emission locations provided from wastewater treatment, water treatment and pump station operations. The applicant is on the record first stating that odor control would not be required, and then that it would be required, but it was never developed. The Applicant is also on the record stating that there are exhaust locations for ventilation and heat relief, and that there is equipment located outdoors. There is no discussion of noise potential or ventilation requirements for these processes and equipment. This Applicant was asked to provide these on multiple occasions in the DEP’s RFIs, but the applicant consistently and repeatedly refused.

There is ZERO information in the record on these obvious needs, and regardless of Nordic providing ZERO information, the odor or noise emissions from these activities will not be ZERO. Impacts will depend upon the selected design and equipment for ventilation and odor control. Effective odor control for fish and fish waste during normal operations can be very expensive. Odor control necessary for upset conditions, which in this case could include a very large fish kill, will be extremely demanding. There has been no discussion of air quality impacts from the wastewater treatment plant, the water treatment plant, sludge storage and handling, or fish slaughtering processing or storage, on a good day, much less a day with upset conditions. Noise control similarly can be very expensive. Absorbing it, blocking it, or redirecting it all costs money and noise control measures must be explained in

detail, into the record, if DEP is to make a favorable finding. This Applicant's strategy of ignoring obvious requirements or further requests for missing information cannot be tolerated. Without specific information about odor and noise control measures, the DEP cannot design appropriate conditions or determine that the project will control noise or odor sufficiently to meet the standards of Ch. 375, 10 and 17.

**The Applicant cannot justify the statement that there are minimal air quality impacts from process and equipment that have odor potential or noise potential or nuisance dust potential during construction and/or during operations, because it simply has not provided sufficient information to the record to do so. Clearly the air pollution increase from odor- or noise-producing operations is not ZERO, but likely "comparable" to other industrial facilities. Given the size and intricacy of this proposed facility the undisclosed potential impact to air quality from odor and noise is substantial, so the permit(s) must be denied.**

It is not typical for a facility to claim that all equipment and vehicles will be electric. If this claim were really the goal of the Applicant, an Applicant must substantiate it, because although it is a laudable goal, it is simply not practical or cost effective at this point in history to convert EVERYTHING to electricity. While some activities can be easily transferred to battery operated or "plug and play", many, especially construction and other high power-use activities, cannot.

The decision to go all-electric likely created a huge cost burden that will be prohibitive for some equipment. The added cost for this claim has not been defined or included in Nordic's cost estimate. With no specifications provided for equipment to satisfy the "everything will be electric" claim, the Application fails to meet its burden of proof with respect to

“unreasonable adverse impact to air quality,” it is impossible for DEP to assess the credibility that no additional fossil-fuel-dependent equipment will be required in the facility, and the SLODA Application must be denied.

**The Applicant has not credibly demonstrated that “everything else will be electric”. The Applicant simply has not provided sufficient information to the record to do so. Clearly the air pollution increase from odor or noise producing operations is not ZERO, but likely “comparable” to other industrial facilities. Given the size and intricacy of this proposed facility the impact on air quality from odor and noise is substantial, so the permit(s) must be denied.**

While these expectations may seem excessive when compared to requirements for a “comparable facility,” they are not intended as generic expectations for all facilities. For comparable facilities, that do not use all, or more than all, of their allowable emissions in one ancillary process, each and every other small source likely would not be a concern. Similarly, it is understood that construction air emissions, noise, and other factors could not be a concern for a much smaller facility, or one that was proposed in a location with better buffer or existing utilities. These expectations are appropriate and necessary for this particular proposed facility. The regulations specifically provide the Department with the authority to require the level of information needed to enable it to determine whether a proposed project meets the standards of the Site Location Act. This level of expectation is commensurate with the size and intricacy of this specific project, and of the substantial impact it will have on its neighborhood. The extent of these comments and these expectations is simply a reflection of the lack of suitability of this specific site for the Applicant’s proposed huge and poorly-defined facility.

**CONCLUSION**

Nordic did not satisfy the application requirements of SLODA or NRPA. That leaves the BEP with an easy decision – the permit must be denied. Otherwise why have application requirements at all? And the application requirements cannot be fulfilled by permit conditions allowing after the fact studies that should have been conducted prior to the application. To allow that betrays the trust the people place in the Department of Environmental Protection and the Board of Environmental Protection. And to do so defies the will of the legislature that created application requirements to protect the citizens of Maine. The forgoing expressed concerns should not be taken to mean that concerns and arguments advanced by Upstream Watch earlier in this process are waived in any way.

Respectfully Submitted, this 5th day of October, 2020.

INTERVENOR,  
UPSTREAM WATCH

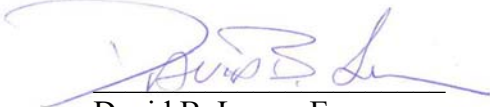
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CERTIFICATION

I hereby certify that a copy of the foregoing was electronically mailed this 5th day of October, 2020 to those indicated on the attached Service List.



David B. Losee, Esq.

**Board of Environmental Protection**  
**Nordic Aquafarms, Inc. / Site Law, NRPA, MEPDES/WDL, and Air Applications**  
**Service List revised February 6, 2020**

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**Official Copy for Filings *by 5:00 pm*  
to Robert Duchesne, Presiding  
Officer c/o Ruth Ann Burke**

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**Board of Environmental Protection**  
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