USTATE OF MAINE
BOARD OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

NORDIC AQUAFARMS, INC.	)
Belfast and Northport	)
Waldo County, Maine	)
	)
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	)

INTERVENOR UPSTREAM WATCH'S POST-HEARING BRIEF

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INTRODUCTION

Intervenor Upstream Watch ("Upstream") submits this Post-Hearing Brief to assist the Maine Board of Environmental Protection ("BEP"), the Maine Department of Environmental Protection ("DEP"), The Commissioner of Environmental Protection (the "Commissioner") and the DEP Staff ("Staff") to evaluate the applications of Nordic Aquafarms, Inc. submitted under the Maine Site Location of Development Act, ("SLODA"), the Maine Natural Resources Protection Act ("NRPA"), the Maine Pollution Discharge Elimination System ("MPDES"), and a Chapter 115 Air Emission License.

Procedural Background

Nordic Aquafarms, Inc. submitted an application for a Maine Pollutant Discharge Elimination System Permit/Waste Discharge License (MEPDES/WDL) to the Maine Department of Environmental Protection ("Department') on October 19, 2018 and accepted as complete for processing on November 9, 2018. On May 17, 2019, Nordic submitted a Site Location of Development Act (SLODA) application, a Natural Resources Protection Act (NRPA) application, a Chapter 115 Air Emission License application, and an addendum to the MEPDES/WDL application. Staff began a review of those applications which precipitated requests for additional information from Nordic, the responses to which consisted of thousands of pages. During that process, Upstream and others petitioned DEP to become interveners in the application process, requested DEP to refer the applications to the BEP and to conduct a hearing.

Upstream was granted intervenor status, as were others, the applications were referred to BEP, and a hearing was scheduled to commence on February 11, 2020. Prior to the commencement of the hearing, certain of the application topics were determined by BEP to be appropriate for the hearing. Those were designated as "hearing topics". Issues raised by the applications but not

qualifying as hearing topics became designated as "non-hearing topics". Prior to the hearing, BEP required all parties to submit written testimony, with exhibits, under oath, by 5 p.m. December 6, 2019. Rebuttal testimony in the same format, under the same conditions, was filed by 5 p.m., January 17, 2020. The hearing was opened on February 11, 2020, by Robert Duschene, presiding officer. The Commissioner was in attendance for all four days of the hearing. Nordic and the interveners called witnesses and testimony was given. Witnesses were examined, cross-examined and questioned by members of the BEP and staff. The hearing was concluded on Friday, February 14, 2020. Additional comments were received until February 18, 2020 when the record was closed with some exceptions for additional comment.

Project History

In November of 2017, the Norwegian company, Nordic Aquafarms, AS, created a wholly-owned U.S. subsidiary, Nordic Aquafarms, Inc. (referred to herein as "Nordic," or "Applicant"), with the intention of expanding operations into the United States. In January 2018, Nordic announced plans to build a land-based Recirculating Aquaculture System facility in Belfast, Maine. Community reaction was initially favorable to Nordic's announcements that promised absolutely clean discharge and renewable energy solutions, including extensive solar arrays.

At this time, Upstream already existed as a small group of citizens advocating for the health of Mid-coast Maine rivers and watersheds through science and education. The group began to question the environmental footprint of this huge development in their small community. Biologists, engineers, and concerned citizens voiced enthusiasm for the concept of land-based aquaculture coupled with a drive to obtain factual, scientifically based, unbiased information to understand potential impacts that the project would have on their communities. But that enthusiasm turned to deep concern as the troubling reality of the project became apparent.

SUMMARY OF ARGUMENT

The environmental effects of this huge, industrial fish processing facility are not benign as suggested by initial press releases. As the project developed, Upstream was alarmed by a consistent pattern of insufficient and misleading information issued by Nordic. Three troubling themes consistently emerged: (1) the selected site is unsuitable for the project; (2) the application is fatally incomplete, and (3) Nordic Aquafarm's information, when provided, fails to meet the statutory and regulatory criteria.

(1) The selected site is unsuitable for the project.

Nordic is trying to fit a large, square peg into a small, round hole by selecting an unsuitable site and trying to change the site's basic character instead of seeking a suitable site. There is no better example of this than the Nordic's soil replacement plan. Nordic selected a site that contains almost exclusively spongy clay soils (a situation that caused subsidence problems for the Nordic Aquafarms AS back in Norway). To address this problem, Nordic proposes to remove the natural soils over a 35-acre portion of the site to a depth of, to depths over 50-feet (SLODA Apl., Sect. 20, Text, p. 1-2) and after removing those soils, replace the clay with gravelly soils which would be more capable of supporting the proposed tanks. Upstream estimates this soil replacement project will require roughly 45,000 dump truck loads, necessitating extensive travel over state and local highways.

Moreover, the proposed site includes nineteen (19) wetlands, swamps, marshes, and nine (9) streams. Nordic proposes to reconstruct artificially one stream and destroy the remainder. In lieu of preservation or replication of the remaining natural resources set to be destroyed, the Nordic proposes to "compensate" for the environmental damage with cash. This "pay to pollute" scheme

is wholly unnecessary when there are other available and more suitable sites which would not require such a serious destruction of natural resources.

Given the extreme measures proposed to overcome unsuitable soils and the total destruction of wetlands, combined with the fact that virtually the entire site is mature forest that would be destroyed, and that the portion of Penobscot Bay that would receive Nordic's wastewater is slow moving and shallow, it is clear the site is unsuitable for the project.

(2) The application is fatally incomplete.

Upstream has tracked the Applicant's submissions against the statutory and regulatory requirements and this review has demonstrated that Nordic's application is woefully incomplete. *See* Feb. 18, 2020 Comment Submitted by Mike Lannan regarding Nordic Aquafarms Technical Ability (tracking each statutory and regulatory requirement for the pending applications and whether Nordic has complied). A true copy of the Lannan matrix showing the incompleteness of Nordic's filings is attached hereto as Exhibit A.

The burden is on Nordic to demonstrate compliance in its applications for permits. Even so, the DEP has patiently attempted to lead Nordic through the process, with letters and memos itemizing application submissions that required clarification and modeling performed with the Department's expertise and expense. Despite this guidance, the Nordic application remains fatally incomplete.

Throughout the hearing, it was evident that Nordic had failed to provide certain required information for its permit applications, including but not limited to, financial capacity, the actual effects of wastewater discharge including far-field dilution, and onsite wildlife surveys.

(3) Nordic fails to meet the statutory and regulatory criteria.

Nordic only partially addressed other regulatory requirements, perhaps in the hope that those requirements would be overlooked during the permitting process or that Nordic would be

allowed to figure out how to comply with those sections of the regulations after the fact, as permit conditions. Nordic should not be allowed to evade meeting all filing requirements for its permit requests at this time.

The proposed project size is huge. Within the project footprint, one could fit Gillette Stadium, Fenway Park and two TD Gardens. A mistake on this application can have catastrophic environmental impacts.

Nordic has failed to address critical material requirements of the statutes and regulations, and as such, its application cannot be granted as a matter of law. All regulations and statutory requirements must be met as a precondition to the award of a permit. After-the-fact attempts at compliance is not only unlawful but constitutes an unreasonable and unacceptable risk.

This application "sets the bar" for all future aquaculture applications in the state of Maine. If the Board of Environmental Protection insists on complete compliance with applicable statutes and regulations and if the Applicant meets all statutory requirements, aquaculture entrepreneurs worldwide will note that Maine welcomes aquaculture but only aquaculture that is compliant with all legal requirements.

ARGUMENT

A. Nordic fails to meet requirements for the Maine Pollutant Discharge Elimination System ("MEPDES")/Waste Discharge License; Alternatively, Additional Conditions are Required

Nordic s has not qualified for an MEPDES permit. If the DEP staff and BEP members do issue a permit, any MEPDES permit issued should: (i) set limits on specific pollutants at levels which ensure that water quality standards are met at the site of the discharge; (ii) require monitoring of the effluent, as well as a comprehensive program to monitor the chemical, physical, and biological water quality of Penobscot Bay; and (iii) require implementation of provisions to

ensure that any bypass or unexpected problems are dealt with quickly and effectively. Prefiled Testimony, Krueger & Gulezian, p. 2.

Specifically, this section addresses U.S. Environmental Protection Agency (EPA) and Maine MEPDES regulations under the Clean Water Act (CWA) establishing Effluent Limitations Guidelines (ELGs) and New Source Performance Standards for the Concentrated Aquatic Animal Production (CAAP) Point Source Category. Throughout this section, references will be made to the specific issues of the Nordic site as reasons for requesting that additional requirements, beyond the minimum technology-based standards, be included in the ELG. Specific references will be made to applicability of the CAAP ELGs to System Type or Annual Production (lb) Subcategory 100,000 Flow-through and Recirculating (Subpart A) (40 C.F.R. §§ 451.3(a)-(d), 451.11(a)-(e), 451.12-14), 06-096 C.M.R. Chapter 582: Regulations Relating to Temperature, 06-096 C.M.R. Chapter 523: Waste Discharge License Conditions, and 38 M.R.S. §414-A[1].

Typically, ELGs are national standards for wastewater discharges to surface waters and publicly owned treatment works (municipal sewage treatment plants) that the EPA develops for new source categories under the Clean Water Act. These standards are technology-based (i.e. they are based on the performance of treatment, control technologies, and practices). These are

[1] 1. Generally. The department shall issue a license for the discharge of any pollutants only if it finds that:
D. The discharge will be subject to effluent limitations that require application of the best practicable treatment. "Effluent limitations" means any restriction or prohibition including, but not limited to, effluent limitations, standards of performance for new sources, toxic effluent standards and other discharge criteria regulating rates, quantities and concentrations of physical, chemical, biological and other constituents that are discharged directly or indirectly into waters of the State. "Best practicable treatment" means the methods of reduction, treatment, control and handling of pollutants, including process methods, and the application of best conventional pollutant control technology or best available technology economically achievable, for a category or class of discharge sources that the department determines are best calculated to protect and improve the quality of the receiving water and that are consistent with the requirements of the Federal Water Pollution Control Act, as amended, and published in 40 Code of Federal Regulations. If no applicable standards exist for a specific activity or discharge, the department must establish limits on a case-by-case basis using best professional judgment, after consultation with the Applicant and other interested parties of record. In determining best practicable treatment for each category or class, the department shall consider the existing state of technology, the effectiveness of the available alternatives for control of the type of discharge and the economic feasibility of such alternatives.]

minimum requirements in the NPDES permit. A permit may contain additional more stringent limits required to ensure compliance with water quality standards. *See* 06-096 C.M.R. ch. 513, Section 5; Prefiled Testimony, Krueger & Gulezian, p. 4.

Minimum discharge requirements are defined in Federal Regulations at 40 C.F.R. §§ 122.21 and 122.28, with effluent limitations, if applicable. Requirements include special conditions, standard conditions, monitoring, record-keeping, and reporting requirements covered under 40 C.F.R. § 122.41. However, the permitting authority has the ability to require special conditions. With PDES permits for CAAPs, special conditions may be included, as determined necessary. *Id.* The technology-based limitations or requirements in a CAAP permit will be based on the ELG, for pollutants covered by the ELGs. The permit writers using best professional judgment ("BPJ") may develop so-called BPJ limits. A water quality-based effluent limitation is designed to protect the quality of the receiving water by ensuring that state or tribal water quality standards are met. In cases where a technology-based requirement does not sufficiently protect water quality, the permit must include appropriate water quality-based limits. Prefiled Testimony, Krueger & Gulezian, p. 4.

Nordic has not provided sufficient environmental inventories to assure that a technology based effluent standard is adequate. It is significant that Maine has NO standards for discharge limits for nutrients from Land Based Concentrated Aquatic Animals Production Facilities and, except for temperature, no other standards. It is the lack of inventories by Nordic and the lack of standards by the state that necessitates water quality-based standards. Tr. 2/14/20 125:18-126:3 (J. Krueger).

I. The Site is Not Suitable for a Technology-Based Effluent Standard.

Nordic has chosen a pristine green field 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).

The unique suitability issues include: (1) a lack of a sufficient deep water current at the outfall, (2) a lack of adequate monitoring of the ocean discharge to the 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.

The sensitivity of the area suggests that water quality-based standards also be considered in addition to defining the technology as being sufficient to protect the discharge site. To evaluate a water quality standard, one needs to understand the environment that will accept the discharge including knowing inventories of fauna and flora in the environment that may be sensitive to specific effluent parameters and understanding exactly where currents, tides, and secondary circulation would carry effluent. Tr. 2/14/20 125:14-24 (J. Krueger). Nordic has failed to provide this information.

Data provided by Nordic in its application demonstrates that the background conditions are not truly known. Prefiled Testimony, Krueger & Gulezian, p. 5, top. More specifically, while entering into the record the poor suitability of this site (Prefiled Testimony, Krueger & Gulezian, p. 5, top) and the many unique and natural resources at stake, (Prefiled Testimony, T. Parent, pp. 3-6 and more) we wish to request that the permitting requirements not be limited to the use of technology-based effluent standards in this case. The DEP, as the permitting authority, may also

utilize water quality-based effluent standards. Prefiled Testimony, Krueger & Gulezian, p. 2, bottom. Additionally, Upstream has identified concerns about the lack of knowledge of the fauna and flora in the receiving waters (Rebuttal Testimony, R. Podolsky, p. 6, #6) and the insufficient modeling of flow characteristics such as appropriate inclusion of currents, tidal variations and wind shear. Prefiled Testimony, N. Pettigrew, p. 2.

II. The Nordic RAS System is Not Best Available Technology and Not a Sufficient Basis for Utilizing Technology-Based Effluent Standards to Replace Water Quality-Based Effluent Standards.

When Water Quality-Based Effluent Standards have not been utilized, Technology- Based Effluent Standards are typically applied, usually using so-called "Best Available Technology" or "Best Management Practices". If the underlying goals and objectives of the Clean Water Act are to be met, the permitting authority should require additional standards, limits, and approaches. Tr. 2/14/20 125:1-9 (J. Krueger).

The problem is that Maine has few if any water quality-based standards. Tr. 2/14/20 125:24–126:3 (J. Krueger). During the hearings, BEP member Parker stated (Tr. 2/14/20 171:2): "and I'll agree with Mr. Krueger on that one is we absolutely should be using water quality standards supported by the best technology." The absence of standards is why there is so much interest now in evaluating the Nordic version of RAS and determining if it is really the Best Available Technology.

Recirculating tank aquaculture ("RAS") may be better than growing fish in net pens, but the choice of what type of RAS to use will make a critical difference. CLOSED RAS, meaning no effluent out into a river or bay, yields all the benefits of growing fish on land without the environmental risks. The risks of discharging effluent to the bay will be significant. Partially OPEN RAS (which Nordic is proposing) allows the discharge of millions of gallons of effluent a

day into the bay. Nordic's OPEN RAS presents unacceptable risks involving the release of nutrients, pathogens, viruses, and pharmaceuticals into Penobscot Bay.

Fully CLOSED RAS is now in various stages of development in the U.S., Canada, Europe and the Middle East. These systems are often referred to as Minimum Liquid Discharge (MLD) and Zero Discharge Systems (ZDS). Aquifer-based water supplies and hydroponic outputs to utilize nutrients are examples of ways these companies are assuring sustainability. Examples of companies currently employing MLD and ZDS technologies are: AquaMaof Aquaculture, Superior Fish, and Sustainable Blue. Tr. J2/14/20 126:3–128:6 (J. Krueger). These systems are economically and environmentally sustainable. Tr. 2/14/20 173:17-174:24 (Pelletier/Krueger).

Large scale land-based finfish aquaculture is in its infancy in Maine. If closed RAS systems are where the industry, and investors, are headed, it is critically important to focus on the details to ensure Maine gets it right from the start. Tr. 2/14/20 128:7-13 (J. Krueger). Maine should be requiring the appropriate, closed system technology, particularly where Nordic's Belfast site presents a high risk of environmental degradation.

Nordic has provided no documentation that their version of RAS is viable. All that has been said is that it is better than flow through systems and that their RAS system is not financially viable at a smaller size than the proposed 33,000 metric ton size. Prefiled Testimony, E. Ransom, p. 2, #6. One way to be sure that the Nordic RAS system meets high environmental protection standards is to require a "check point" review of the small sister RAS system in Fredrickstad and look at third party reviews of the facility using industry groups such as Nofitech. Tr. 2/14/20 128:14-18 (J. Krueger).

III. The Nordic RAS is Continually Changing and Untested, Reflecting the Risks Associated with Using a Technology-Based Effluent Standard.

A good example that demonstrates that the Nordic RAS is constantly changing is Nordic's announcement during the application process that its MBR filters for intake and effluent will now be 40 nanometers (0.04 microns) instead of 400 nanometers (0.4 microns). Tr. 2/13/20 370:7-371:7 (E. Cotter/Racine). This is a big change in the treatment process; as filtering at this level presents significant new technological variables in treatment - namely clogging of the filter, pressures and pump changes, and the potential need for by-pass. Tr. 2/13/20 407:17-408:25 (E. Cotter/Racine). The 40 nanometers size is presumably offered due to concerns of virus mitigation. 40 nanometers will not remove viruses that typically are less than 1 nanometer. Tr. 384:.2-6 (E. Cotter/Racine). Even at 40 nanometers, Nordic will be unable to stop the free transmission of viruses from the outside into their system where they will be concentrated and freely discharged back into the Bay. Tr. 161:7-10, 177:19-25 (B. Bryden). This free transmission of viruses is unacceptable.

Many of the characteristics of the expected Nordic effluent will be novel in nature (unique feed, unique RAS, unique treatment, size of operation, uncertain marine water flow parameters and recirculation uncertainties, etc.). There is a need to assess and develop technology-based effluent limitations, develop proper effluent water quality-based effluent limits (WQBEL), and to determine final effluent limitations that meet technology and water quality standards and anti-backsliding requirements. WQBELs involve a site-specific evaluation of the discharge and its effect on the receiving water. A WQBEL is designed to protect the quality of the receiving water by ensuring that State water quality standards are met. Prefiled Testimony Krueger & Gulezian, pp. 7-8.

IV. The Permit Must Establish Limitations, Standards, and Permit Conditions That are Consistent with Protecting Water Quality.

State regulations provide a mechanism to derive water quality-based effluent limits. *See* 06-096 C.M.R., Chapter 523, Section 5(c)(2):

> On or after the statutory deadline set forth in section 301(b)(2) (A), (C), and (E) of the CWA, any permit issued shall include effluent limitations to meet the requirements of section 301(b)(2) (A),(C), (D), (E), (F) of the CWA, whether or not applicable effluent limitations guidelines have been promulgated or approved. These permits need not incorporate the clause required by paragraph (c)(1) of this section.

Further, this rule also states:

> Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits . . . .

Id. (d)(1)(vi).

Additionally, EPA provides Best Management Practices for CAAP facilities to address Effluent Limit Guidelines (ELGs). NORDIC has not developed a best management practice (BMP) plan describing how they will achieve the ELG requirements. The CAAP must certify in writing to the permitting authority that a BMP plan has been developed and make the plan available to the permitting authority upon request. The CAAP ELGs contain narrative requirements for management practices for flow through and recirculating facilities. Under these requirements, the Applicant must develop and maintain a BMP plan on site that describes how the company will manage the following: solids control, material storage, structural maintenance, record keeping, and training. Prefiled Testimony, Krueger/Gulezian, pp. 10-11.

Along the lines of the CAAP ELG, a NPDES permit might also contain requirements to address other considerations, such as implementing requirements under the CWA Total

Maximum Daily Load (TMDL) programs. A TMDL should be a calculation of the greatest amount of a pollutant that a waterbody can receive without exceeding water quality standards. It is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources. The calculation must include a margin of safety to ensure that the waterbody can be used for the purposes the state has designated. The calculation must also account for seasonal variation in water quality. Prefiled Testimony, Krueger/Gulezian, p. 11.

As provided under Section 4. Application for a permit [see 40 C.F.R. 122.21], Upstream has repeatedly requested that water quality-based effluent standards WQBES be developed. Steps necessary to provide WQBES include inventories of natural resources in the area that may be affected and verified modeling of how the effluent will be distributed in the bay. Upstream and others have identified that resources have not been completely inventoried over a span of multiple seasons. Rebuttal Testimony, R. Podolsky, p. 6, #6. Most concerning is the fact that there is a poor understanding of how the effluent will be distributed in the bay. Prefiled Testimony, N. Pettigrew, p. 2.

According to 38 M.R.S.A. §414-A, conditions of licenses:

> 1. Generally. The department shall issue a license for the discharge of any pollutants only if it finds that:
>
> A. The discharge either by itself or in combination with other discharges will not lower the quality of any classified body of water below such classification;

Under Maine Standards for Classification of Estuarine and Marine Waters, Section 465, the receiving waters of the wastewater discharge of the Nordic AquaFarms facility is designated as Class SB. Rebuttal Testimony, T. Parent, p. 2, #6. In relevant part, Class SB specifies the following:

> A. Class SB waters must be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture,

propagation and harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation, navigation and as habitat for fish and other estuarine and marine life. The habitat must be characterized as unimpaired. PL 2003, c. 227, §7 (AMD).

B. The dissolved oxygen content of Class SB waters may not be less than 85% of saturation. PL 2017, c. 319, §12 (AMD).

C. Discharges to Class SB waters may not cause adverse impact to estuarine and marine life in that the receiving waters must be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community. PL 2007, c. 291, §7 (AMD); PL 2017, c. 319, §12 (AMD).

V. Data Provided in Nordic's MEPDES Application Suggests That Stratification and Unacceptable Levels of Nitrogen and Oxygen Depletion Already Exist in the Bay.

Nordic failed to provide any basis for the Board to find that the discharge from Nordic's plant will not lower the quality of Penobscot Bay. Of critical importance, the record demonstrates that stratification (Prefiled Testimony, Krueger/Gulezian, p. 6) and Unacceptable Levels of Nitrogen and Oxygen Depletion Already Exist in the Bay. Tr. 2/14/20 141:7-143:3 (G. Gulezian).

A review of a table from the Normandeau Associates water quality monitoring report, which is a part (Attachment 14, p. 103) of Nordic's MEPDES permit application, illustrates several contradictions and should raise a red flag of concern to regulators. The cite is above, Att. 14.

Based on this limited set of ambient monitoring data, which is the only site-specific ambient monitoring for nutrients and oxygen levels data included in the MEPDES application, the following can be observed:

- The Normandeau ambient monitoring recorded dissolved oxygen levels below the 85% saturation criterion contained in the SB classification standard. These levels are occurring in the absence of NORDIC's discharge, which would only exacerbate the oxygen deficiency. Tr. 142:20-143:3 (Gulezian).

- Levels of Total Nitrogen monitored by Normandeau for some depth profiles exceed guideline levels for the protection of eelgrass beds, which would constitute an adverse impact to marine life and habitat in the receiving waters. These levels are occurring in the absence of NORDIC's discharge, which would only exacerbate the problem. *See* Krueger-Gulezian Pre-filed Testimony at pages 5 and 6.

- It does not appear that the Nordic water quality modeling factored the Normandeau ambient water quality analyses into their modeled water quality projections, resulting in likely underpredictions of ambient levels.

- Some of the Normandeau ambient monitoring at the discharge location indicates elevated background levels of Total Nitrogen which, if representative of longer-term values, could damage local eelgrass beds and contribute to low oxygen levels, especially when combined with NORDIC's discharge levels. The DEP's recommended background level for Total Nitrogen to be used in Nordic's modeling may be unrealistically low.

Action needs to be taken to more fully characterize background levels of Total Nitrogen in the vicinity of the discharge point, in both time and space, before discharge limits can be safely established. Monitoring be performed at multiple depths at the discharge point and at multiple locations in the bay (with locations supported by flow modeling) over the course of a year, to determine an appropriate background, as a precondition before the permit is issued. The presence and impacts of stratification of the water column in the vicinity of the discharge point needs to be investigated before the permit is issued and taken into account before discharge limits are set. Concerns about the ability of the Nordic modeling to predict accurately conditions in the near and far field are also expressed in the Upstream Watch testimonies filed by both Dr. Neal Pettigrew and Dr. Kyle Aveni-Deforge. Both identified the need for additional baseline monitoring and more accurate predictive modeling, prior to the issuance of any permit. Prefiled Testimony, N. Pettigrew, p. 8, #VI; Prefiled Testimony, K. Aveni-Deforge, p. 3.

Furthermore, Nordic's permit application states:

> The information presented here is based entirely upon numerical modeling with limited knowledge of the in-situ conditions at the proposed outfall. It is important to understand that hydrodynamic modeling is not an exact science. As such any

> predictions presented here should be considered only as estimates of the proposed dilution and plume behavior. Numerous assumptions and simplifications have been made in this analysis, which contribute to significant uncertainty in the modeling results. In general, these simplifications and assumptions are reasonably conservative, such that errors would tend to overpredict negative impacts. However, it is also possible that predictive error could underestimate impacts. Thus, it is recommended that a field data collection program be designed and implemented to provide site specific data for further analysis, and to validate the accuracy of model results.

MEPDES Application p. 95, Ransom Memo p.7.

Given what little monitored data for nutrients, oxygen, and stratification have been provided in the application, and that what little data there is suggests potential current and future problems with meeting water quality objectives, a permit should not be issued until an annual cycle of monitoring and updated modeling can reasonably demonstrate that water quality objectives will be met by Nordic's proposed discharge plans. After the fact modeling is too late. Accurate modeling is crucial to ensure that water quality objectives will be met, otherwise impacts on habitats, fisheries, and recreation have the potential to be significant. Prefiled Testimony, K. Aveni-Deforge, p. 3.

VI. Nordic Has Failed to Provide Correct Predictions of Currents and Effluent Movement in the Bay.

A central component of rationally evaluating potential environmental impacts at the proposed site is the release of nutrients into the water column and their dispersal and dilution thereafter. Three important factors exist for evaluating the discharge into the local environment: local physical oceanographic conditions, local background water quality, and wastewater composition. Correct modeling must include four seasons and be conducted before authorizing a MEPDES Permit.

Nordic's current data for the path of the dilution of the discharge is based on models that for far-field are only 2D and that do not take into account wind shear, secondary circulation, or

currents in the bay. Prefiled Testimony, N. Pettigrew, p. 2. Verification of the models are is based on very limited old data and at anomaly sites near a large methane pock area. Dr. Pettigrew provides data to suggest that NORDIC has even falsely predicted the direction of the effluent (p. 2). Dr. Pettigrew (p. 3) and Dr. Aveni-Deforge (Prefiled Testimony, K. Aveni-Deforge, p. 3) both testify that there is need for a yearlong study ; this statement is also supported by NORDIC's own scientists, see testimonies of Dill (MEPDES Application, P.95, Ransom Memo p. 7) and refer to Ramboll (MEPDES Application, p. 101, Ramboll Memo p. 4) recommendations.

Dr Pettigrew summarizes (Prefiled Testimony at p. 8):

> The 2D ADCIRC model was implemented in a limited manner, forced only by astronomic tides along the open boundary and a constant freshwater discharge from the Penobscot river to the north of the study domain. Point-sourced validation of water levels were performed under idealized summer conditions. No additional validation was performed. The particle tracking model was forced solely by the velocity fields produced by the 2D ADCIRC model under several major assumptions. Currents were vertically averaged and did not agree with known observations, constant values were prescribed for effluent flow rate and horizontal eddy diffusivity, while wind fields and waves were excluded entirely. RANSOM acknowledges the need for significant data collection efforts before substantial model validation is possible. I agree strongly with this position and suggest that a yearlong oceanographic observing effort should be fielded at least at the discharge and intake locations. These observations need to be combined with a full 3-dimensional ocean numerical model that can dynamically simulate the Penobscot Bay circulation and particle tracking.

Dr Aveni-Deforge testified (Prefiled Testimony at p. 3):

> My testimony asserts that existing knowledge of site water quality and physical oceanography is insufficient to have confidence in our understanding of baseline environmental conditions or how the process wastewater will interact with the environment. Consequently, a rational, evidence-based decision on the impacts of the proposed action cannot be made. Similarly, the future monitoring program proposed by NORDIC would not have enough baseline data of the pre-project environment at and near the project site to evaluate environmental impacts. *See* APPENDIX D p. 37**.**

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

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. 2/14/20 166:25-167:1 (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, subtidal 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.

VIII. Prior to Permitting, Nordic Must Undertake Additional, Scientifically Rigorous, Penobscot Bay Circulation Modeling.

Circulation modeling that more certainly predicts where the effluent will move through Penobscot Bay is necessary to determine the least environmentally damaging alternative for discharge. The current models provided by Nordic fail to provide data to verify their accuracy of models and fail to take into account secondary circulation, wind shear, stratification, and other anomalies associated with the Bay. *See* Appendix D.

Therefore, prior to permitting, the following modeling is required:

1. The size and location of the discharge "plume" must be defined with a rigorous, year-round study (Tr. 2/12/20 70:1–71:1 (Dill/Pettigrew)), as there is no dispute that effluent will permanently affect water conditions within an unestablished distance of the outfall. Prefiled Testimony, N. Dill, Exhibit 23, Figure 1 (depicts dilution for 2 days); *see* Tr. 2/12/20 60:1–61:10 (Dill/Pettigrew discussion on accuracy of modeling); Tr. 2/12/20 88:17–89:l-12 (Pettigrew)(secondary circulation can delay dilution). "This is a permanent change to the environment so understanding the plume dynamics and existing conditions in the receiving water is critical to evaluate any project-related changes in the water column in near-field communities and to evaluate the environmental consequences of the project." Tr. 2/14/20 154:l-18 (Aveni-Deforge). Elements of concern likely or potentially present in discharge such as: TSS, BOD, Total N, Total P, Ammonia, nutrients, antibiotics, and other chemicals of high concern (including chemicals that may only be used in emergencies) must have strict year round limits that ensure no local or regional environmental harm. Examples include any additives in the feed Nordic has still

refused to disclose the feed source and potential contaminates defined in 40 C.F.R. part 136 defined parameters, and Investigational New Animal Drugs (INADs), and viruses. The facility effluent is likely to contain viruses. The species and concentrations are disputed, especially since water treatment methods are new and largely untested, but there will be some escaping contagions. Tr., 2/13/20 384:2-22 (I. Bicknell)("there is no way to totally eliminate those risks."). Viruses are too small to be removed by filters (Tr.,2/13/20 384:1-6 (Racine/Bicknell)) and may escape UV treatment due to screening by suspended solids ("However, UV irradiation may not work in situations where turbid water (and associated poor UV transmittance) may be encountered." Written Testimony, B. Dixon, Exhibit F1, Ozonation and UV irradiation/an introduction and examples of current applications, Page 60, Concluding Remarks. *See* Appendix A.

2. As a condition of approval Nordic must provide, prior to a permit, a third party, extensive, on-going water quality and habitat monitoring analysis capable of determining impact on migratory fish, including federally endangered Atlantic salmon, and other species that use, may use or move through the discharge and pipeline location. Monitoring should incorporate protocols that initiate rapid production response, should discharge or discharge impacts exceed approved limits.

3. As a condition of approval, prior to granting a permit, protocols for intensive internal system water quality monitoring must be available for third party review, and results of on-going internal systemic monitoring must be made available for third party analysis. A repeated objection to the Nordic application is insufficient and incomplete monitoring of the effluent. Tr. 2/14/20 137:4-17 (Krueger). The application currently only states bi-weekly initially to much less later. What is missing is an inclusive list of potential contaminants, (including virus and bacteria), as well as how and where samples will be collected and analyzed.

4. Enforceable Concentration-Based Standards need to be developed. *See* Appendix B.

5. If approved, the permit should provide for revision or revocation in the event that subsequent aquaculture projects in or near Penobscot Bay, if any, are found in the aggregate with the NORDIC development to have an adverse impact on the migratory fish that use the Bay, such as Atlantic salmon, sturgeon, shad and alewives, or other marine organisms as per baseline information and monitoring.

6. If unpredicted contamination of the effluent occurs it must result in an automatic cessation of operations as a permit condition. As of now, Nordic should provide bypass conditions, its plans regarding how it will respond to an unpredicted contamination of the effluent, as well as any contingency plans. Otherwise, a single, centralized MBR treatment facility, with a factor of 10x reduction in filter size, means that any problem with any production tank or the chlorinated processing facility has no place to go should a problem develop. *See* Appendix C.

7. Agricultural waste disposal needs to be specifically addressed, including how waste stored at the facility can potentially affect surface water runoff. Will these wastes be frozen, dried, stored inside, what are the storage time frames, where will the wastes finally go, what are contingencies for the waste disposal? If collected and treated, can they be included in the effluent stream?

8. Feed source and testing must be provided. Many toxic ingredients have been associated with feed sources and can therefore be associated with the effluent composition. Prefiled Testimony, Krueger/Gulezian, p. 17, V. Since Nordic refuses to disclose its feed sources, it is not possible to identify or predict the toxins or pathogens introduced by the feed source into

the waste or effluent stream or the concentration thereof. This must be revealed and modeled prior to issuance of any permit or there is risk that the effluent discharge will be unlawful ab initio.

IX. There is insufficient data to verify that the state Tidal Water Thermal Discharge Standard[2] will be met; in fact testimony provided during hearings suggests that this standard will NOT be met.

Temperature is a unique kind of pollutant[3]. In testimony offered by N. Dill, P.E., who modeled wastewater discharge behavior for Nordic, in his August 14, 2019 response concerning temperature, the author used lower temperatures for their effluent output (13 degrees Celsius) and higher extremes of bay temperature (70 degrees F). This paints a picture of a small 0.2-degree Celsius increase in the bay. Upstream disputes the 70-degree high temperature, and instead submits the temperature used should be derived from Northeastern Regional Association of Coastal Ocean Observing Systems ("NERACOOS") data. NERACOOS data has been collected 24/7 at buoys in the Penobscot Bay over several years. Using this more extensive data set the highest reading for 2018, for example, was 64.3 degrees F. During testimony, Dr Dill agreed that the effluent temperature is really predicted to be 15-18 degrees C, not the 13 degrees C cited. Tr. 2/14/20 76:14-22 (N. Dill). So, the temperature of the effluent temperature can be 5 degree C more than modeled and the temperature in the bay is not likely to ever be as high has been modeled.

Dr. Dill estimated the size of the mixing zone and the temperature dilution that might be expected, even with the incorrect temperature ranges (lower than accurate effluent temperature and higher than accurate bay temperature). The effluent mixing zone is based on a model that does

[2] 06-096 C.M.R. Chapter 582, § 5: REGULATIONS RELATING TO TEMPERATURE
"No discharge of pollutants shall cause the monthly mean of the daily maximum ambient temperatures in any tidal body of water, as measured outside the mixing zone, to be raised more than 4 degrees Fahrenheit, nor more than 1.5 degrees Fahrenheit from June 1 to September 1. In no event shall any discharge cause the temperature of any tidal waters to exceed 85 degrees Fahrenheit at any point outside a mixing zone established by the Board."

[3] Temperature is considered to be a "non-conservative" pollutant. It is not measured as concentration and is instead a property of water. Thermal energy is not "in" the water in the same sense that copper atoms and ammonium ions are in water. Thermal energy is absorbed by the water molecules, which is manifested as temperature and a proper-ty of the water.

not include factors that could allow for aberrant temperature variations and secondary circulation events. Nordic's own calculations using their CORMIX model and corroborated by the testimonies of Wood and Dill suggest a 3 degree increase in Winter and a 1.2 degree increase in Summer. Tr. 2/14/20 89:2-94:1 (Wood/Dill). CORMIX models are +/- 50%.

To summarize, based upon the +/- 50% accuracy of CORMIX modeling one could support a Delta T of 4.5 degrees in the winter and 1.8 degrees in the summer. A permit should not be provided if there is data that suggests that the permit might violate a regulation.

Further, to verify the models provided, additional data should be collected over several seasons to take into account anomalies in the currents and wind, and sub circulations within the bay. Testimony by Dr. Dill supports testimony provided by Dr. Pettigrew and Dr. Aveni-Deforge, as Dr. Dill agreed that additional data should be collected to predict the effects of the effluent on the bay. Dr. Dill agreed that Dr. Pettigrew was correct that additional data would improve the modelling. Nordic consultant Ramboll recommended more than a year ago that additional data is necessary to validate modeling. Dr. Dill confirmed the need for additional testing at hearing:

> Mr. Wood: When Mr. Pettigrew was here I think you folks talked and that additional information in the bay locally and larger would be a good thing and would you be willing to -- if you were to if people were to collect that data, use that to refine your model when it comes to the far-field because that is a little less defined than in the rule where the far-field is -- I mean the near-field is pretty well defined in how you calculate that, so would you be open to refining your model if additional data is collected?
>
> Dr. Dill: Oh, yeah. Absolutely.

Tr. 2/14/20 93:16-94:1.

Upstream's witness John Krueger provided another way of looking at the amount of heat that the effluent will be putting into the bay on an average day. He used the heat capacity of water, the number of gallons of water disposed of in a day, the average temperature of the effluent and

the average temperature of the bay from a nearby Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) buoy to calculate the total heat transferred into the bay on an average day. The average amount of heat transferred to the bay every day is the equivalent of the heat produced by burning 10,000 gallons of gasoline a day or the electric energy consumed by 10,000 homes a day. Tr. 2/14/20 131:22-133:1.

The rate of mixing of the discharge plume with the water column will help determine the rate at which heat is dissipated. Nordic needs to better define the so-called mixing zone with real data from all seasons. Heat transfer, just like nutrients, can be exacerbated by stratification where heated effluents can be entrained in distinct layers in the water column, and subject to different forces such as wind and weather. The modeling process also needs to take into consideration secondary circulations that can create isolated pockets of plumes distinct from an average dispersal.

Nordic's unverified modeling data is insufficient for ensuring compliance with all environmental permitting requirements. There is a tremendous amount of heat being transferred daily and must be accounted for. It would be wrong to create a permit that might exceed one of the few regulatory standards. Accurate modeling must be coupled with verified data. Nordic's Ramboll consultants recommended over a year ago that Nordic collect more data to support their modeling. Nordic's failure to collect sufficient data makes it impossible to model the characteristics of Nordic's discharge. Without the required data and modeling, the permits should not issue. Tr. 2/14/20 134:21-135:12 (J. Krueger).

X. The Project Effects of Warmer Temperatures to the Bay Present Unacceptable Risks.

The temperature of the effluent water at the depth of discharge will always be warmer than the bay. Tr. 2/13/20 318:17 (Cotter). The warmer water is preferred by some species, including

lobster. Tr. 2/13/20 32:8 (Torangeau), Tr. 02/14/20 51:22–52:1 (T. Parent). Higher temperatures are harmful to some species ("…temperatures above the physiological range of a fish species triggers a stress response that can negatively impact immune function…", Written Testimony, B. Dixon, Exhibit B-1, Impacts of Low Temperature on the Teleost Immune System, p. 18, Introduction).

Rebuttal Testimony, Podolsky, p. 3, last paragraph – p. 4 NVC/UPSTREAM R1 Page 4 of 19: "Regarding temperature, the discharge waters may average between 15˚F and 20˚F warmer than the ambient temperature of Belfast Bay and west Penobscot Bay. The volume of warm water may be in excess of 7 million gallons per day of wastewater discharge between the Little River and Islesboro Island when the facility becomes fully operational (Phase 2). By Nordic's own admission, this discharge of thermally charged water will create a permanent thermal anomaly in the vicinity surrounding the discharge pipe which, depending upon the plumes movement with time, tide, wind and wave, may impact 1-2 miles north/south and 1 mile east/west and cover an area equivalent to between 1 and 2 square miles, equal to between 700 and 1500 football fields."

It is a critical omission that in item #21, Fiorillo fails to even mention the impact to benthos from this permanent, thermal pollution anomaly. It is vitally important and relevant to this project to fully understand the impact of the thermal anomaly because it will directly impact water column species, such as phyto- and zooplankton, larval fish and invertebrates and thereby the benthos and other species in the food chain that depend upon the water column. Similarly, if the benthos experience impacts in the vicinity of the thermal discharge so too will the fish, waterfowl and human livelihoods that depend upon this benthos."

Nordic's discharge of warm effluent has the potential of attracting fish to the very area of the Bay that will be infused with the highest concentrations of pollutants, in what has been

described as a "bird feeder effect". A discharge of warm effluent containing pathogens and pollutants is not only irresponsible, it is contrary to the recovery efforts of endangered Atlantic salmon and short-nose sturgeon, as well as the overall restoration of the Penobscot Bay.

XI. Nordic fails to demonstrate that dredging will not cause environmental harm.

Nordic has failed to submit adequate and complete information on dredge or fill. Information is lacking or not consistent with application materials and information provided at public hearings. Of particular concern is the amount of dredge and the route that this dredge material will be taken, and the final location of the dredge material.

Aside from the dredging project is the concern that currents and flow will further disrupt existing mercury in the floor bed. Nordic has failed to assess properly mercury and how currents may affect dispersion. Nordic has failed to collect sufficient samples from the actual pipe route. Prefiled Testimony, E. Ransom, p. 44, Fig.18-1. Nordic has not utilized the Penobscot River Mercury Study (PRMS) procedure to sample and test for mercury. Tr. 2/12/20 155:5-21 (Tucker/Ransom). The PRMS is a court-ordered study that examined mercury contamination from the former Holtra-Chem chlor-alkali plant in Orrington, Maine. *Id.* Testimony provided to DMR by Dianne Kopec, PhD as part of the DMR submittal process on March 2, 2020 provided detail on the proper sampling, (PRMS) that was not used, as well as the severity of existing mercury concentrations in the location of the proposed routes.

Nordic samples taken revealed at least one location with a mercury concentration of 239 nanograms/gram (ng/g). Prefiled Testimony, E. Ransom, p. 46, Table 18-3. Concentrations over 200 ng/g justify closing an area to lobster and crab harvest. Dr. Kopec provided data from a 2009 sediment project where cores from three sites were sampled approximately 2 km north of the proposed Nordic pipeline dredging area. The surface sediment mercury concentrations from the

three sites were over six times greater than background sediment mercury concentrations for estuaries along the central Maine coast. Values of mercury exceeded 340 ng/g.

Surface sediment concentrations are most relevant to mercury contamination of biota, unless the sediment is disturbed. Most sediment mercury is in the inorganic form which has limited accumulation in organisms. Mercury in surface sediment is exposed to methylating bacteria in an environment amenable to transforming the inorganic mercury into organic methyl mercury, which is highly bioavailable, and which biomagnifies in aquatic food webs. If the sediments are disturbed and mixed, then the inorganic mercury sitting in the deeper sediment can also be methylated and enter the food web. Tr. 2/12/20 332:4-11 (K. Tucker). Mercury concentrations in surface sediment are directly related to mercury concentrations in benthic foraging marine organisms.

Dr. Kopec, as part of her written testimony to DMR, goes on to state: "it is important to conduct thorough sediment core analyses of the specific area proposed for dredging to install the NORDIC intake and discharge pipelines. This work should follow the coring and analytical methods used in the Penobscot River Mercury Study in order to generate an accurate description of the sediment mercury concentrations at all relevant depths. Cores should be sectioned for mercury analysis in 1 cm slices to a depth of 20 cm, then in 2 cm slices to a depth of 40 cm, then in 5 cm slices to a depth of 90 cm. This method will ensure a full characterization of the distribution of mercury in the sediment underlying the proposed pipeline route and allow the regulatory agencies to make informed decisions on any risks to biota associated with the proposed dredging and how best to dispose of any dredge spoils."

Current studies should also include the effects of secondary circulation patterns or even the pipes' ability to alter current flow and the current's potential to disrupt mercury in the reuse of dredged spoils and the surrounding sea floor.

The application review must be halted while the Applicant conducts and provides comprehensive testing for mercury and additional seafloor and water column baseline assessments along pipeline routes, taking into account currents, the pock marks, mercury contamination, methane gas, sediment turbidity and scouring on the unstable bay floor. The pipes that carry the effluent present an environmental concern as the dredging of the pipe area and the resulting flow of effluent on the bay floor will extend already existing mercury contamination. In addition to an inadequate sampling of the actual pipeline route, Nordic has not utilized the Penobscot River Mercury Study (PRMS) procedure to sample and test for mercury. Other studies associated with the PRMS provide data demonstrating the severity of already existing mercury contamination. Nordic samples taken found at least one with a mercury concentration of 239 nanograms/gram (ng/g). Prefiled Testimony, E. Ransom, p. 46, Table 18-3. Concentrations over 200 ng/g justify closing an area to lobster and crab harvest.

XII. The MEPDES Application is Incomplete and not Compliant with Statutory Requirements.

The Department should not begin the processing of a permit until Nordic has fully complied with the application requirements for that permit. See Chapter 543 (UIC) and this Chapter (NPDES). Nordic's applications are not complete. Please see Exhibit A (February 18, 2020 Comment and matrix by Mike Lannan). Nordic's applications also fail to satisfy Clean Water Act Requirements and provide safe effluent to the Bay

a. Inadequate Testing

Effluent Testing should Include 40 C.F.R. part 136 defined parameters. Nordic lists four industrial detergents, four disinfectants, four therapeutants, and five "emergency" compounds for disease control. MEPDES Application, Questions #10 & 11, Attachment 3, p. 216-219. Documented is the inadequate evaluation of baseline stratification of temperature, oxygen and

nitrogen, and inventories of fauna and flora in the bay. Testing of the effluent for multiple potential contaminants beyond the listed parameters of the permit is insufficient.

Comprehensive screening analyses of waste streams are a documented process to assure a better understanding of the composition of the waste stream. There is no feed analysis and no known source of feed and there is no requirement through the MPDES application to test for feed ingredients. Effluent testing should not be limited to nutrients, but periodically tested for 40 C.F.R. part 136 defined parameters. Refer to Lists of methods by analyte; from 40 C.F.R. 136.3 Table IA: Biological, Table IB: Inorganics, Table IC: Non-pesticide organics, Table ID: Pesticides, Table IE: Radiological (if deep aquifer water with radon is included as input), Table IF: Pharmaceutical, Table IG: Pesticide active ingredients, Table IH: Ambient Biological. Prefiled Testimony, J. Krueger, p.17.

Additionally, the monitoring points and monitoring frequency is insufficient. There has been no evaluation of a more detailed monitoring program. DEP agencies have not evaluated the effect of feed composition on the waste discharge or even the ratio of protein efficiency. The ratio directly impacts the nitrogen discharge. Prefiled Testimony, J. Krueger, p. 24. Regulators have not addressed Investigational New Animal Drugs (INADs). *Id.* at 12. If an INAD is used will there be a complementary analytical method provided and analyses provided? Current regulatory review has not addressed potential audiological effects of RAS outfall pumps and other sound sources on marine life, fish, shellfish and mammalian life, in receiving the waters. In addition to Effluent Analysis there should be testing of any untreated collected storm waters from the facility. The large area of asphalt surfaces on the site will become conduits to carry any spillage of stored materials or processed materials into storm water drainage. Drainage from the asphalt surfaces should be contained, treated, and tested before disposal into the bay. Applicant should be asked to

demonstrate a current baseline and to provide follow up data showing that it has prevented harm from the noise of the effluent (audiological waste) to marine life.

Fish Feed (Prefiled Testimony, J. Krueger, p. 17, V)

A significant reason to seek testing for multiple chemical and biological parameters in the waste discharge (in addition to those mentioned previously) is the major unknowns associated with the fish feed. There are multiple papers that suggest that some fish feeds used for land-based aquaculture have contained toxic chemicals. While the Applicant suggests that there will be no toxins in the feed, there is no statement at this time about what the feed may be, and the Applicant refuses to reveal its fish feed selections. In addition, certification standards for fish feed have not been specifically referenced to provide assurance that the feed will not have toxins present; therefore, only monitoring, after the fact, can provide assurances that toxins are not entering the waste effluent as a byproduct of the fish food.

Prior to the issuance of any permit, Nordic should be required to perform testing, or reveal the test results of others from trusted sources, to show that currently available fish food will not provide toxins to the waste stream, as assurance that the products it chooses for fish food need not provide toxins.

b. Virus and Disease Introduction to the Bay

Bill Bryden provided multiple examples of concern in his testimony and submissions in response to DMR. Nordic has modified their application to include a 0.04-micron filter (40 nanometers) in the final MBR centralized treatment system. No filter is stringent enough to filter out viral particles, which may be less than 1 nanometer in size. The filters suggested by Nordic of this size would clog even more frequently. Tr. 2/14/20 173:9-11(B. Bryden). No design modifications have been provided to address this significant change in the application, as smaller

filter sizes will require significant engineering efforts. Once a pathogen entered a larger recirculating system, it would be extremely difficult to clear it out and would probably involve, at a minimum, euthanizing all the animals and bleaching the system. In the summary that Bryden provided to the DMR as part of the hearing extension, he cited the concern that large mortalities will exist primarily from: 1) local external known contagions entering the facility, 2) contagions entering the tanks via the eggs, 3) unknown concerns because we don't have tools for identifying and quantifying the viruses and pathogens that will enter the bay.

No monitoring plan is provided for virus and bacterial contamination in the discharge. Detailed sampling criteria, enforceable limits, and analytical protocols need to be developed. Examples of concerns include:

- Infectious salmon anemia (ISA) or ISAv (v for virus) is endemic to the Atlantic.
- Infectious Pancreatic Necrosis (IPN) or IPNv is endemic to Atlantic Canada and therefore probably Maine as well.
- Aeromonas salmonicida is also common in the North.

c. Bill Bryden's testimony to DEP and DMR demonstrates Nordic failed to meet effluent virus guidelines:

- No survey of contagions that can be amplified
- No updated screening for all known major pathogens by USA or Maine managers of hatcheries
- No consideration for contagion modeling in effluent, i.e. numbers per gallon based on various scenarios of prevalence in the tanks
- No mass mortality plan
- No consideration of alternative production models that reduce impacts on environment, reduce antimicrobial use, etc. (i.e. aquifer only water source, zero effluent, etc.)
- No discussion of likely mortality rates nor causes

- No discussion of fish attraction to warm effluent, permanent feature issues, as suggested by Dr. Podolosky
- No discussion of gyrs concentrating contagions and effluent entertainment into river mouth as suggested by Dr. Pettigrew
- No cap on antibiotic use to offset design issues such as surface water use
- No local salmon eggs available, Williamsburg Treaty was signed to prevent introduction of foreign eggs carrying known and unknown contagions not native to the region

APPENDIX B: There is a need for Enforceable Concentration Based Standards.

The application provides maximum daily amounts for: TSS, BOD, Total Nitrogen, Total Phosphorus, Ammonia, pH, Temperature (summer/winter), salinity, also average daily values, and finally concentrations. (MEPDES Application at 206) We wish to be assured that the concentration values are enforceable. The proposed Monitoring program provided by NORDIC is not sufficient either in what will be monitored nor the frequency. Providing an enforceable concentration based standard provides assurances that large slugs of contaminants cannot be released, and provides additional assurances any spills or contingency failures can be observed and monitored. As an example, NORDICs's Sashimi Royal shows factors 3 variation in N discharge day to day. See EPA Form VI.B Question VI.B Attachment.

Only ten pollutants are listed in the application. *Id.* at 206-207. For these, a maximum daily value is listed as well as the average daily concentration. Nordic should be asked: What are the maximum concentrations that might exist in the effluent, under what circumstances might that occur, how will these concentrations be prevented and how will these concentrations be measured, reported, and if necessary mitigated?

Nordic should be required to demonstrate what variation in percent removal of treatment can be expected and under what circumstances? As an example, if phosphorous removal is reduced by just one percent, from 99% to 98%, the amount of phosphorous in the effluent would double.

Nordic should be asked how that will be managed to prevent additional pollution. Same for a reduction to 95% or 75%, variability is not uncommon in large scale manufacturing operations.

APPENDIX C: Lack of plans and mitigation to respond in the event of an unpredicted effluent outflow.

Given the size of this facility and lack of data to support how a large facility such as this can operate in a pristine location, there is reason to suggest a scaled back application or to incorporate special conditions into a permit. And to incorporate preventive requirements, such as requirements to install process control alarms, containment structures, good housekeeping practices, and the like.

A chief concern with the treatment process is the need for assurances that mistakes will not cause huge releases to the bay. Nordic should be asked for a detailed explanation of how errors in continuous flows will be contained before contaminant laden effluent is released to the bay. If needed, will containment structures be provided to bypass discharge to the bay? Nordic should be asked where containment structures are located on its plans on file as part of its application, or if such containment is not provided on the plans, where will/can it be located, how large will it be and how will it function with the other plan components? For example, if the storage facility is full and there is additional need, what is the plan? If the storage facility fails, how will it be emptied and what effect will emptying it have on the process and the character of the discharge?

There should be written contingency plans in addition to reporting requirements. While there is a bypass option: (2) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (m)(3) and (m)(4) of this section. How will 7.7 million gallons/day be handled in the

event of a system failure, or if there is a need to clean out a tank? Considerations should be given to the use of multiple MBR treatment systems attached to smaller tanks, so that a disruption will not be associated with huge volumes of discharge. Consideration should be given to provision of a large storage tank to contain unsuitable discharges.

There are virtually no contingency plans offered by Nordic nor opportunities with regulatory authorities to evaluate contingency plans. The need for contingency involves several different needs. One 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 of the combined treatments could fail. How will the Applicant contain 7.7 million/gallons a day of untreatable wastes? Also, the chlorinated waste from the fish processing unit also enters this same centralized MBR treatment. Chlorine can reduce the MBR treatment, since MBR is biological. There is little monitoring in the plan, so problem wastes could be simply discharged, and no one would know. 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. High nitrogen levels appear to be the cause of the event.

APPENDIX D: Modelling Currents.

According to Dr Neal Pettigrew: RANSOM Consulting Inc. used a steady-state mixing model and a 2D (vertically averaged) circulation model based on the shallow water equations to estimate the effects of 7.7 million gallons per day of wastewater discharged between Little River and Islesboro Island. The modeling done at this point does not appear to be sufficient to accurately examine the outcomes of the proposed wastewater discharge on the local and far-field regions of Penobscot Bay. As RANSOM states, the steady-state mixing model has limited applications for

very short periods of less than an hour or so due to changing tidal currents. In addition, an unreasonable assumption of ambient current speed at the depth of 11.5 m (near bottom discharge) was an order of magnitude too large. This choice would significantly overestimate the mixing and dilution calculations. RANSOM has used a 2D (only 2 dimensional) ADCIRC model based on vertically averaged shallow water equations. In other words, the method assumes that the density is constant over the entire water column, and the velocity is vertically averaged. In the vast majority of Penobscot Bay, the density and currents are functions of depth in all seasons. In addition, the modelers considered only forcing by tidal height from the outer boundary of the bay and constant freshwater inflow from the Penobscot River. They ignored wind forces and waves, suggesting that this omission would only reduce calculated turbulence and thus make their calculations more "conservative". RANSOM's 2D model shows the mean flow to be southward (seaward) in the proposed discharge region. However, observed oceanography current data in Penobscot Bay and 3D models including observed wind forcing show that the vertically averaged mean subtidal circulation flows northward in the discharge region and this flow turns clockwise (anticyclonic) around the north point of Islesboro and joins the southward flow on the east side of Islesboro. Data, including drifters, have shown clockwise flows around Vinalhaven Island as well, and with strong winds from the SW or NW. 3D modeling has shown that even the surface mean flow is essentially clockwise around Islesboro. In fact, in the absence of winds one expects estuaries and bays connected to a river at its head, to have "outflow" at the surface and "inflow" in the lower layer. Prefiled Testimony, N. Pettigrew, p. 2.

Without access to current data, RANSOM used only tidal height data to validate their 2D ADCIRC model. Prefiled Testimony, N. Dill, p. 4, #13. Tidal heights are very easy to simulate, and thus do not make a strong case for their model validation.

Since the location of the proposed wastewater discharge is planned at a depth of 11.5 m, and also very near to the bottom, this discharge is likely to occur in very slow mean flow and the flushing time could be much greater than suggested by RANSOM. In addition, the local circulation will be altered by the strong pumping of discharge and intake. I suggest that the best method of understanding the potential effects of Nordic Aquafarms' proposal would be a year-long oceanographic experiment at the discharge and intake locations and a high-quality 3D numerical ocean model with horizontal mesh scales of 25 m or smaller. Prefiled Testimony, N. Pettigrew, p. 3.

Most numerical models of Penobscot Bay (e.g. Humphreys and Pearce, 1981; Burgund,1995; Xue, et al., 1999) have shown landward transport (vertically and horizontally averaged currents) west of Islesboro and seaward east of Islesboro. In the cases of strong wind stress from the west (in years 1 and 2) the Princeton Ocean Model (POM) showed surface currents moving landward west of Islesboro and turning clockwise at the north point of the island and joining the seaward currents on the east side of Islesboro.

Salinity records from buoys and boat surveys (not shown) suggest that the river water flows seaward preferentially on the eastern side of Islesboro and fresh waters from the river generally do not appear in the surface waters of the outflow east of Vinalhaven Island. Thus, the primary exit route of Penobscot Bay River water appears to be east of Islesboro, and west of Vinalhaven, with a lesser amount of river-freshened water confined to a shallow layer on the west side of Islesboro. One would expect that outflow from the Passagassawakeag River would contribute to the freshened waters observed west of Islesboro. Both POM and early testing of our developing FVCOM model show that significant winds from the NE or SE can shift the river outflow to the west side of Islesboro. Prefiled Testimony, N. Pettigrew, p. 7.

Dr. Kyle Aveni-Deforge adds from testimony to the BEP (Prefiled Testimony, pp. 5-6): "The Applicant is relying on the present dispersal model to forecast good dilution of the proposed discharge and evaluate environmental risk. Because the dispersal model is not strongly driven by on-site measurements, the Applicant may be underestimating the risk of discharge to the local environment. In fact the only data I have been able to find for the peri-Islesboro currents indicates that net flow, in the 1970's through 1990s, had a residual clockwise flow. The risks associated with underestimating the dilution and dispersal of the outfall could have consequences to a variety of ecosystem functions and services, affecting the stability of local ecosystems as well as how humans can take advantage of the environment."

B. Nordic fails to Meet Financial Capacity Standards Required by the Site Location of Development Act.

Nordic is required to demonstrate it has the financial capacity to design, construct, operate, and maintain the proposed development in a manner consistent with state environmental standards and the provisions of the Site Location of Development Act (or "Site Law" or "SLODA"). *See* 38 M.R.S. § 484(1) and 06-096 C.M.R. ch. 373. 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.[4], 06-096 C.M.R. ch. 373, § 2 (A). Nordic has failed to demonstrate financial capacity to construct, operate, or maintain this facility. Tr. 2/11/20 81:6–83:10.

Nordic has demonstrated a lack of good faith by indicating on the SLODA application check list that items were attached that were not in fact provided. *See* SLODA Application Form D*; see also* Tr. 2/11/20 81:6–83:10. Nordic has also demonstrated a lack of good faith by

[4] 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.

submitting financial assessments prepared by sources that were not financially independent of the Applicant without suitable disclosure. Rebuttal Testimony, M. Reeve, at 1-2.

Nordic has not requested a deferral of compliance with this aspect of the SLODA. No reason for a deferral has been provided. No credible plan to obtain financing or names of institutions that might provide financing have been provided.

Construction is set to begin with excavation, blasting, and backfilling of sensitive intertidal and subtidal habitats for placement of two 30" diameter, 6,400-foot-long intake pipes and a shorter, 36" diameter discharge pipe. Nordic's SLODA Application, Section 16, at 1, 5. Rerouting of Route 1 will be required, including blasting and "dewatering" of nearby wetlands. Nordic's SLODA Application Section 1, at 6.

"The main facility buildout will begin with. . . initial clearing of the forested areas," and continue with excavation of building footprints to final depths of over 20 feet, including ledge removal, probably by blasting. Nordic's SLODA Application, Section 16 at 11-12. From the outset of construction, Route 1 will have been disrupted and degraded by heavy truck traffic hauling soil and rock from the site. All forest, wetlands, streams, and indeed most of the soil and an unknown amount of bedrock will have been removed from the site. Sensitive marine habitats will have been blasted. This lovely wildlife habitat at the junction of the Little River and Penobscot Bay will be lost forever, regardless of how the project progresses. To award a permit to Nordic, and allowing environmental destruction, without full and proper financial assurance, is a violation of the public trust in the air, water and other natural resources, and cannot be tolerated.

I. Nordic Has Failed to Make the Requisite SLODA Application Submissions with Regards to Financial Capacity.

Nordic was required to provide evidence to demonstrate financial capacity, including cost estimates, time schedule for construction, evidence of funds, and evidence demonstrating that its

proposed financing is clearly linked from the financing institution to the applicant. In addition, the SLODA Application form requires that any applicant for whom funding is required, but a final commitment of all necessary money cannot be made until all approvals are received, provide evidence of a cash equity commitment, a financial plan, and a letter from an appropriate financial institution indicating an intention to provide financing.

a. Cost Estimates

The regulations require that Nordic provide:

> 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.

06-096 C.M.R. ch. 373, § 2(B)(1).

Nordic provided a brief chart with insufficient detail to assess the credibility of cost estimates. Prefiled Testimony, B. Chandler at 2; Tr. 2/11/20 81:11-18. The Board cannot determine financial capacity or financial proficiency with this scant information. The cursory chart does not itemize activities as required by Ch. 373(2)(B)(1). Sewers and water supplies may be included in "site piping" (does this also include saltwater intake and wastewater discharge pipes?) or in "infrastructure." The cost of structures ("buildings") is combined with "process equipment." Roads are combined with "site finishes." Utilities, pollution abatement and landscaping are not itemized. Site restoration is not addressed although the facility has a limited useful life by Nordic's admission.

Chapter 373(2)(B)(1) notes that itemization of major costs should not be limited to the list of costs provided. This large, complex project with huge environmental and cultural impacts on the region demands sophisticated budgeting. Cost estimates based on such broad categories are

unreliable and cast doubt on the feasibility of completing the project within the projected budget. Nordic has repeatedly made changes to construction plans, including a new filtration system for wastewater effluent, purchase of additional freshwater from Belfast Water District, considerably higher air emissions stacks, a revised heating system, and other changes. With the lack of cost estimates and budgeting, it is impossible for Nordic or the Department to know whether modifications are cost effective or can be implemented within budget constraints. Therefore, Nordic has not satisfied this requirement.

b. Time schedule.

The regulations require applicants to provide "[t]he time schedule for construction of all phases proposed." 06-096 C.M.R. ch. 373, § 2 (B)(3).

Nordic provided no indication of time needed to complete "tranches" or "phases." Prefiled Testimony, B. Chandler, p. 2. Arrangement of timely financing and comparisons of performance to budget are impossible without time estimates. Nordic has not satisfied this requirement.

c. Evidence of funds.

The regulations also ask that applicants provide evidence of funds, which can be a letter of commitment or intent to fund, self-financing, a government agency, or a evidence that the funding is included as part of a non-profit organization's budget or fundraising.

Nordic, in its application, indicated it was providing a "[l]etter 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.

06-096 C.M.R. ch. 373, § 2(B)(3).

Nordic has not provided a letter of "intent to fund". Tr/ 2/11/20 46:16-24; 81:19-24. A "letter of interest," (not a "letter of intent,") is included from EKF, a Danish government institution. It notes interest in "possible participation" in providing a "credit export guarantee." It is the only letter provided, EKF is not a source of funding, and it states clearly that this is "not a binding offer," but depends on future analysis of the project. SLODA Application, Section 3, Finance, Appendix 3-C. Therefore, Nordic has not satisfied this requirement.

d. Corporate structure.

Moreover, 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. 06-096 C.M.R. ch. 373. § (2)(B)(3)(a). The Applicant for this permit is Nordic Aquafarms, Inc, a Delaware corporation whose sole shareholder is the Norwegian Company, Nordic Aquafarms, AS. Nordic's SLODA Application Form A at 1; Prefiled Testimony, B. Chandler at 2.

Nordic revealed new information at the BEP hearings that the Maine project would eventually be organized as a separate limited liability company. Tr. 2/11/20 47:20-48:16. The Maine LLC is not included in any chart of corporate structure that has been provided to the Board, and no financing links have been described with financial institutions or with related entities.

Nordic has presented evidence that the shareholders of Nordic Aquafarms, AS, the parent company, are wealthy Norwegian individuals and family investment groups. Prefiled Testimony, B. Chandler, Nordic Exhibit 2, at 6-7. As shareholders, however, their only risk is the value of their stock. The Board and executives of Nordic Aquafarms, AS, will be responsible for Maine

financing decisions; "the board always holds the final decision on timing and source mix prior to each tranche." Prefiled Testimony, B. Chandler, Exhibit 2, at 4.

Nordic, AS, Board members, who are also the primary shareholders (Prefiled Testimony, B. Chandler, Nordic Exhibit 2, at 6) fully control availability of funds for the Belfast project. They are shielded from liabilities of the Maine project by the corporate structure— Nordic LLC, Nordic Inc, and Nordic AS. Prefiled Testimony, B. Chandler at 2.

Nordic and its affiliates can walk away from a failed project at any time risking only calculated amounts that they have purposefully dedicated to Maine (LLC) or U.S. (Inc.) projects. Liabilities of the California project could compromise Maine financing. Citizens of Maine and Belfast cannot dodge the burden of an abandoned environmental accident or miscalculation, or a plant that is outdated by changing markets or technology.

e. SLODA Application Form Requirements

In addition to the above requirements, the SLODA application form requires three additional items to demonstrate financial capacity for Applicants such as Nordic, "[i]f funding is required, but a final commitment of all necessary money cannot be made until all approvals are received." SLODA Application, Section 3, Financial Capacity, B, Financing, 3, Other.

i. <u>Cash Equity Committed to the project, with 20% of total project cost considered normal.</u>

There are no funds committed to this project beyond the permitting process. Nordic has raised only about 12% of the cost of this project in its history to fund the parent company and four existing subsidiaries. Tr. 2/11/20 51:13-17; 81:25; 82:13. Nordic has not satisfied this requirement.

ii. Financial Plan for the remaining financing.

No financial plan has been provided. Rebuttal Testimony, M. Reeve, at 1; Tr. 2/11/20 82:14-25. Nordic proposes to finance construction and early operations with equity (see above), debt, and cash flow from operations. Prefiled Testimony, B. Chandler at 3. Regarding debt, they simply state that "NORDIC is in dialogue with both Norwegian Banks and US banks with regards to financing of the project…." Prefiled Testimony, B. Chandler, at 5, Nordic Exhibit 2. There are no projected Profit and Loss or Cash Flow financial statements to evaluate the feasibility of cash flow at any time during construction or operations. Tr. 2/11/20 82:20-22. Nordic has not satisfied this requirement.

iii. Letter of Intent to provide financing.

No such letter is provided. Rebuttal Testimony, M. Reeve, at 1; Tr. 2/11/20 83:1-6; *see also* above. Nordic has not satisfied this requirement.

Therefore, applying the Department's regulations, a SLODA permit cannot be granted for this project, when:

- Nordic has failed to satisfy any of the requirements of SLODA Chapter 373;
- Nordic has failed to provide any of the documents required by the DEP's SLODA Application;
- Nordic has demonstrated a lack of good faith by indicating compliance on the application checklist without providing the designated documents;
- Nordic has disregarded financial ethics by providing financial documents that lack independence without suitable disclosure; and
- Nordic has failed to request or provide a reasonable case for deferral of a Department finding of financial capacity.

C. 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 cannot demonstrate its project will have no unreasonable effect on runoff/infiltration relationships, its application should be denied.

I. 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 groundwater surface to 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 on-site 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.

II. 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.

D. Nordic's SLODA Application Should Be Denied Because Its Project Will Have An Unreasonable Adverse Effect on Ground Water Quantity.

According to Chapter 375 with regards to ground water quantity:

> The Department recognizes the importance of maintaining an adequate supply of ground water [A] for drinking purposes. The Department also recognizes that the depletion of ground water resources can result in the intrusion of salt water into potable ground water supplies [B] and can affect the hydrologic characteristics of surface water bodies (peak flows, low flows and water levels) resulting in adverse effects on their assimilative capacity and recreational use, as well as on certain wildlife habitats [C]. Additionally, new wells can cause a lowering of the ground water supply to the point where existing wells run dry, particularly during the late summer and early fall [D].

06-96 C.M.R. ch. 375, § 8(A).[5]

I. Adequate supply of ground water for drinking purposes.

According to Nordic's application, [f]reshwater obtained from on-site groundwater and surface water sources will be treated and used as process water for fish rearing, while freshwater for food processing and domestic use will be provided by the BWD public water supply." SLODA Application, Section 15, Groundwater, P. 1, 15.2, Sources & Quantity. Nordic's application states the project is anticipated to use approximately 1,205 gallons per minute (gpm) of freshwater. SLODA Section 01, Description, Sect. 1, Text, top of P. 3. Nordic identifies three sources of freshwater it proposes to depend upon for its project:(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,

[5] *See also* 06-096 C.M.R. ch. 375, §§ (8)(B)(1) "In determining whether the proposed development will have an unreasonable adverse effect on ground water quantity, the Department shall consider all relevant evidence to that effect, such as evidence that: (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 changes in ground water flow patterns, or cause unacceptable ground subsidence."

Investigation Report, P. 4. Total yield from these sources is exactly the required 1,205 gallons per minute.

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, the pipe system would need serious upgrades. Prefiled Testimony, B. Bryden, p. 10. Therefore, Nordic requires 705 gallons per minute (455 gpm from wells + 250 gpm surface water) from on-site sources to meet its fish-rearing needs.

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).

Equally problematic is that poor water quality in the reservoir will increase the likelihood of disease within the system and thus requires rigorous treatment.[6] Prefiled Testimony, Bill Bryden at 4.

II. Depletion of ground water resources can result in the intrusion of saltwater into potable ground water supplies.

[6] 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.

At least one of Nordic's test wells showed saltwater intrusion. Tr. 2/11/20 160:17-19 (Neilson). Nordic claims the saltwater was there before the pump test was conducted. *Id.* 197:7-11. How did it get there? Gravity should push water downhill – down gradient and away from the shore, not toward it. How did the saltwater get into the well unless it was by pumping? Nordic cannot avoid drilling in this location to meet freshwater needs. *Id.* 198:9-10.

III. 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.

IV. New wells can cause a lowering of the ground water supply to the point where existing wells run dry.

Nordic water 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. Mobileat 15 (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, p. 13. Nordic refused to guarantee that they would provide a new well or connection to City water (with Nordic paying water bills for ten years).

V. Nordic fails to demonstrate that there will be no unreasonable adverse effect on ground water quantity.

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 is an understanding that the estimated yields for each source assume conditions that are unlikely to exist on the proposed site:

1. 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 drainage infrastructure. *See* Commentary, SLODA Section 4, Effects on Runoff/Infiltration.

2. Surface water yield is based on existing on-site conditions, including the Lower Dam, which is in such bad condition that it may fail, eliminating the supply altogether. Prefiled GEI at 24, Lower Dam Observation. "Unless repaired and maintained, these dams will not survive to maintain current assumptions." Prefiled Testimony, GEI, at 7.

3. 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. Additional amounts would require extensive upgrades to City pipe infrastructure.

4. Maximum estimated yield from each water source is required to meet freshwater needs. (455 gpm + 250 gpm + 500 gpm = 1,205 gpm required).

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.

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." However, no such report exists. Tr. 2/11/20 161:15-19 (M. Mobile). Therefore, Nordic has not satisfied its obligations pursuant to the regulations to provide this information.

VI. If the Board Decides to Issue a Permit, it Should Impose as a Term of Condition of Approval Reasonable Requirements to 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, 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.

06-096, C.M.R. ch. 375, § 8(D)(1)-(3). Therefore, Upstream urges that if the Board were to approve Nordic's application that the Board impose the following reasonable requirements:

- 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.

E. 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 can 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.

I. Most natural wetlands on the development site will be destroyed or severely compromised and those remaining will not be adequately protected.

In determining whether the developer has made adequate provision for buffer strips, the Department will 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.

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.

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. It's 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.[7] 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.

II. 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 40-foot-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.

[7] 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.

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.

III. Nordic has not provided any buffer strips to shield the Little River Trail from unsightly developments.

Nordic has also failed to present any evidence that it plans to use adequate buffer strips to shield adjacent uses from unsightly developments and lighting. Buffer strips between the Little River trail and the west sides of buildings 1, 2, and 3 have not been assessed for visual buffering (1,200 ft. of trail assessed. SLODA application, Section 6, Visual Assessment Report, page 8, Findings) and are not sufficient to block views from the trail. (See SLODA Section 14, Scenic Character) Buffers on the Route 1 and Perkins Road are young trees that will not provide adequate buffering for years, and then only if they are properly maintained.

New planting intended to shield the development from Rt. 1 and Perkins Road consist of young trees no higher than 12'-14'. SLODA application, Civil Engineering Drawings, LP501, NRPA Application, Attachment 13, Appendix 13-A, pp. 25 – 26, Appendix B. It will be many years before these trees are large enough to provide shielding for 40-foot high buildings. Years of growth and rigorous maintenance, including appropriate pruning, disease and wildlife grazing

control, and replacement of dead and dying specimens will be essential before these planting will reach a functional size. Nordic's provisions for landscape management include only oversight of initial planting, and cursory monitoring of riparian buffers for "five years unless otherwise specified by a condition of approval issued by the MDEP." NRPA Application, Attachment 13, Appendix 13-A, p. 17, 6.0.

Applications for approval of proposed developments shall include evidence that affirmatively demonstrates that adequate provision of buffer strips, when appropriate, will be made, including information such as the following: the location and width of all natural buffer strips to be retained and legal provisions for the maintenance of all buffer strips and architectural screens. 06-096 C.M.R. ch. 375, § 9(D)(1), (3). However, no natural buffer strips will be retained. Stream 9 will be excavated and rebuilt to serve as drainage. Similarly, Nordic does not have a maintenance plan to assure long-term effectiveness of riparian or visual buffer plantings. There is no legal deed, description nor conservation easement as indicated to assure preservation of Stream 9.

While the Department may, as a term or condition of approval, establish any reasonable requirement to ensure that the developer has made adequate provision for the establishment of buffer strips *see* 06-096 C.M.R. ch. 375, § 9(E), imposing terms and conditions would be largely ineffective due to extensive development of the site that entails removal of all natural water quality, wildlife habitat, and visual qualities. Artificial landscaping is inadequate to visually screen a development of this size in a residential and farming area of a small, seacoast town. Therefore, as Nordic has failed to make an adequate provision for buffer strips in accordance with the regulations, a permit cannot be lawfully granted.

F. Nordic's SLODA Application Should Be Denied Because Its Project Will Have an Unreasonable Effect on Scenic Character.

The regulations acknowledge that "[t]he Department considers scenic character to be one of Maine's most important assets . . . visual surroundings strongly influence people's behavior." 06-096 C.M.R. ch. 375, § 14 (A). Therefore, when determining whether the proposed development will have an unreasonable adverse effect on the scenic character of the surrounding area, the Department shall consider whether "(1) [t]he 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.; and (3) [s]tructures will be designed and landscaped to minimize their visual impact on the surrounding area." *Id.* § 14 (B)(1)-(3).

I. Nordic's design of the proposed development fails to take into account the scenic character of the surrounding area.

Nordic's design of the proposed development fails to take into account the scenic character of the surrounding area. and will destroy the exceptionally beautiful entry/exit point to Belfast along Route 1, destroy the aesthetic and recreational value of the Little River Trail and spoil the traditional residential and farming character of the area. At the request of Nordic Aquafarms, Belfast changed the zoning designation of the site specifically for this development. Tr. 2/13/20 205:21-24 (Lannan). The existing character - modest, traditional homes and farmland - is consistent with the previous residential zoning. The only non-retail commercial buildings in the area are the two low, modestly appointed buildings of Mathews Brothers that blend nicely into the surrounding farms. Those two buildings together are less than half the footprint of just one of the Nordic grow-out buildings. SLODA Application, Section 05, App. 5-A, p. 9.

The development site is at the entry point of Rt. 1 into the City of Belfast. SLODA Application, Sect. 01, Sect.1, text, p.18. To the east, the mouth of the Little River expands into Penobscot Bay; to the west, the historic, 1800s brick pumphouse stands above the waterfall of the lower dam. Prefiled Testimony, Bryden, p. 2. This exceptionally lovely scene along Route 1 provides a beautiful and welcoming introduction to Belfast for residents and visitors. The Little River Trail, cherished by the Belfast Community as a picturesque and peaceful retreat within the city, skirts half of the perimeter on the south and west sides of the development site. Tr. 2/11/20 34:9-19 (Public, Cutting), 65:10 (Merkel), 75:21-23 (Piper).

The rural character of the area to the north is exemplified by an aerial-view painting that hangs in the Metropolitan Museum of Art in New York City, "Little River Farm" (now Good Karma Farm, on Perkins Road), by Yvonne Jacquette, 1979[8].

The Bayside Historic District, in the Town of Northport, visited on the Department site visit of October 24, 2019, lies less than 1 ½ miles south of the facility site. Listed in the National Register of Historic Places, this remains an active summer community, a place cherished by multiple generations of families and benefitting from an active rental market. The village beach and pier are crowded in summer with boaters, swimmers, and recreational fishermen of all ages. Nordic's wastewater discharge point is located less than ¾ mile north of the Edna Drinkwater Elementary School waterfront (the only public school in Maine with its own beach), and less than 1 ½ miles from the village pier and beach. SLODA Application, Sect. 01, Sect.1, text, p.18.

Any submission pursuant to this section of SLODA should include, but is not limited to, sketches of the proposed development indicating how the development fits into the scenic character of the area. 06-096 C.M.R. ch. 375, § 14(C)(1). Nordic has not submitted any

[8] https://www.metmuseum.org/art/collection/search/482511 (last visited Apr. 29, 2020)

sketches or photographs to show how the development fits into the scenic character of the area, and no drawings have been submitted to illustrate the architectural style of the buildings.

II. This huge development will have an unreasonable visual impact in this suburban/rural location.

Nordic viewpoint locations used to evaluate visual impact of the project from the public Little River Trail were located only along the first 1,200 feet of the trail. SLODA application, Section 6, Visual Assessment Report, page 8, Findings. This short section, less than one-quarter of the mile-long trail between the Belfast Water District and Perkins Road trailheads, is exceptionally distant from and downhill on uneven topography from the development site and not representative of the trail as a whole. *See* SLODA Application, Engineering Drawing C-102). The remainder of the trail, a section that presents hikers with a sense of remoteness as they pass between mature woods and a pond-like section of the river at the most distant area from roads, would be far more exposed to the proposed building. Exhibit 14-1, NRPA Application, Attachment 5, Plans, App. 5-A, Map, overlay Prefiled Testimony, E. Ransom, Add. A, p. 36, App. 2-C, Site Plan. Two points along trail indicated.

Nordic states that this area will experience "no unreasonable adverse impact to public viewing areas as they are adequately buffered by existing and maturing vegetation and, because they are under public ownership in perpetuity, the vegetation will remain and only increase in buffering effectiveness." SLODA Application, Section 6, Text, p. 2, final paragraph. In fact, public ownership/conservation implies a lack of vegetation management, and as the forest matures there will be less foliage at lower levels and increasing lines of sight to the buildings.

Nordic assessed visibility towards the buildings at one viewpoint. "Overall, the density of the vegetation quickly occludes views to objects more than approximately 100 feet distant. To illustrate this, a photo was taken approximately 200 feet in from the parking area looking upslope.

A safety-green vest was hung from a tree at approximately 100 feet from the shoreline. This was the farthest point beyond which the vest could not be seen." SLODA Application, Section 6, Visual Assessment Report, at 8, Findings (*see* last page of this document). In fact the visibility, especially in a photograph, of a green vest hung in a green forest within reach of the ground is far from representative of the visibility of building walls that are over 1,000 feet long and 40 feet high, with 65-foot high smokestacks.

Any submission pursuant to this section of SLODA should include but is not limited to landscaping plans for minimizing the visual impact of the parking lots, mining operations and other types of developments. 06-096 C.M.R. ch. 375, § 14(C)(2) Landscaping plans that address visual impacts of the development on the Little River Trail do not exist. Long-term maintenance plan for landscaping that provides effective screening year-round must be completed by a landscape architect in the State of Maine.

III. Nordic has failed to demonstrate structures will be designed and landscaped to minimize their visual impact on the surrounding area.

With nine buildings, two of which are each over 336,600 square feet, (SLODA Application Sect. 01, Description, Sect. 1, Text, p. 3) with 40-foot walls (Tr. 290:18-21 (M. Lannan)) and 65-foot air-emissions stacks, the development will not be in keeping with the surrounding area. Buildings, roads, and other artificial structures and surfaces will cover nearly all of the building site (Exhibit 14-1, NRPA Application, Attachment 13, Compensation, p. 10, Belfast Aquaculture Project Wetland Impact Mapping). Landscaping is far from extensive (SLODA Application, Section 01, Sect. 1, Text, P. 21, Overall Site Plan AP001, Trees represented by small circles). The development will visually dominate the area, and there is little space left for plantings that could minimize visual impact.

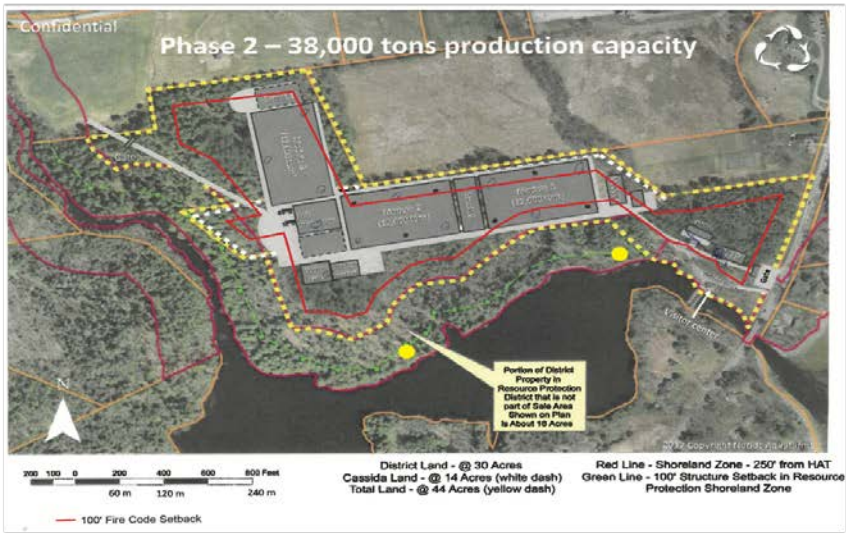
Impact on the village of Bayside could result from the wastewater effluent plume. The wastewater plume, with pollutants expected to concentrate to the south (Prefiled Testimony, N. Dill, p. 31, (p. 8, Oct. 2 Memo)), will be a permanent feature along the Northport shore. Degraded water quality could encourage algal growth and effect marine fauna, seriously compromising the scenic, recreational, and aesthetic appeal of the village. *See* Comments, SLODA 15, Wildlife & Fish. Wastewater effluent from the development will diminish visual and recreational values of the historic community of Bayside and reduce real estate values.

Nordic has presented no architectural drawings to indicate that there is any effort to match facades to existing surroundings. Nordic has not provided adequate buffer strips to shield Route 1 or Perkins Road from unsightly developments. *See* Commentary, SLODA 9, Buffer Strips, B, Scope, 3, Shielding. Landscaping trees are proposed to be 12 ft. or less. Application engineering drawing 065-LP 501. It will take at least 5-10 years before they provide any screening effect for 40-foot-high buildings. Deciduous trees will provide no screening for six months of the year. The aesthetic and recreational value of the Little River Trail will be destroyed. *See* Visibility from Public Areas, above. No plantings are proposed between the buildings and the trail (SLODA Application, Section 01, Sect. 1, Text, p. 21, Overall Site Plan AP001) and the understory of unmanaged woodlands will not provide visual buffers.

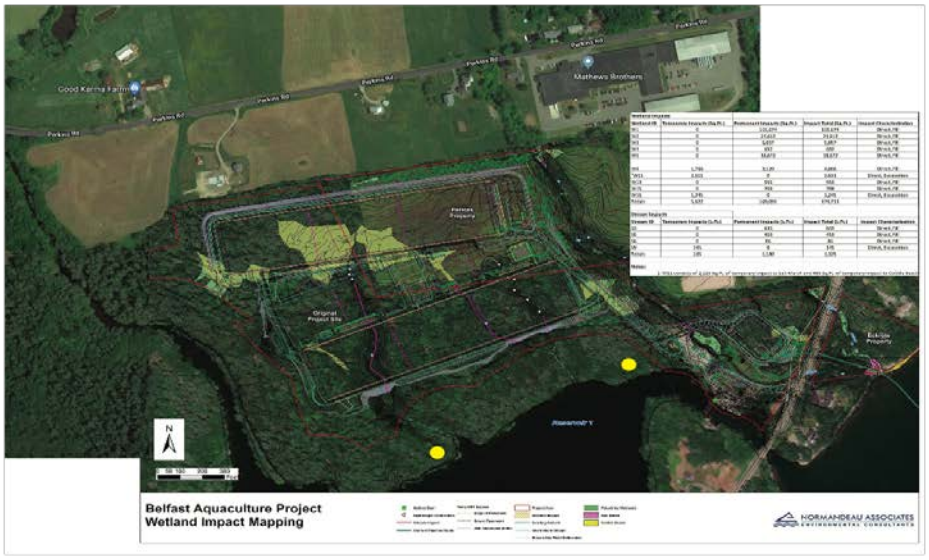
Therefore, Nordic's application should be denied as it has presented not affirmative evidence of any effort to ensure that design of the proposed development takes into account the scenic character of the surrounding area; and to the extent it does not, that it has taken no measures to mitigate and minimize the visual impact of the development and, more specifically, the structures that will be built on the site.

G. Nordic's Project Fails to Protect Wildlife and Fisheries

The Department recognizes the need to protect wildlife and fisheries by maintaining suitable and sufficient habitat and the susceptibility of certain species to disruption and interference of lifecycles by construction activities.



The top map *(p. 36 of pre-filed Direct Testimony of Elizabeth M. Ransom 12/11/2019 Addendum A and Exhibits 6&7)* shows the Little River hiking trail with a green dashed line. The bottom map *(Natural Resources Impact Compensation Plan by Normandeau Associates Inc., App 5-A Impact Map)* is of the same scale. Sally Brophy, a professional graphic designer, used Nordic's maps submitted into the record, and distance measuring software to place yellow circles at 200 feet from the parking lot and 1,200 feet along the hiking trail - clearly showing that the furthest point at the bottom of a sloping landscape was used in the Nordic visibility studies. This is not representative of the trail visibility as a whole.



I. Maintaining a Suitable and Sufficient Habitat:

a. MARINE ENVIRONMENT

Discharge Plume: Nordic Aquafarms fails to address the permanent, ongoing effect on marine wildlife of the discharge plume that differs thermally, chemically, and possibly biologically from natural conditions. Rebuttal Testimony, R. Podolsky, pp. 3-6, points 4-6.

While the size and location of the discharge "plume" is contested, the effluent will permanently affect water conditions within some distance from the outfall. Prefiled Testimony, N. Dill, Exhibit 23, Figure 1 (depicts dilution for 2 days); *see also* Tr. 2/12/20 60:1–61:10 (Dill/Pettigrew discussion)(accuracy of modeling).

"This is a permanent change to the environment so understanding the plume dynamics and existing conditions in the receiving water is critical to evaluate any project-related changes in the water column in near-field communities and to evaluate the environmental consequences of the project." Tr. 2/14/20 154:18 (Aveni-Deforge).

Conditions of the "plume" will differ from natural conditions in several ways:

i. **Temperature***:*

The temperature of the effluent water at the depth of discharge will always be warmer (by 5 to 28 degrees) than existing conditions, and it will differ from existing surface water by up to 32 degrees warmer to possibly cooler for a short time in the summer. Tr. , 2/13/20 318:17 (E. Cotter). Warmer water is preferred by some species, including lobster. Tr. 2/13/20 32:8, Tr. 02/14/20 50:22–51:1 (T. Parent). Higher temperatures are harmful to some species ("…temperatures above the physiological range of a fish species triggers a stress response that can negatively impact immune function…", Written Testimony, B. Dixon, Exhibit B-1, Impacts of Low Temperature on the Teleost Immune System, p. 18, Introduction).

ii. Salinity*:*

Effluent will consist of a mix of bay water and freshwater, thus will be less saline than the receiving bay waters. The effluent salinity level will be more attractive to some species, including lobster, than existing conditions. Tr. 2/13/20 32:5, 34:7.

Nordic's warm, less saline wastewater effluent has the potential of attracting fish to potentially harmful conditions.

iii. Pollutant Concentrations:

Wastewater treatment is projected to remove 99% of most nutrients and 85% of nitrogen. Treatment systems are unproven at these levels (MEPDES Permit Application, p. 78, Question 18, Attachment 10), and, in the case of 99% removal efficiency, a reduction of just 1% (99% reduced to 98%, for example) efficiency would double nutrient discharge levels. Efficiency diminution of 10%, even for a short time, would result in a dramatic and unmodeled impact to the bay and all that is in it. When the plant is operating at full capacity and at full projected efficiency, discharge will include on average:

- Nitrogen, 673 kg (1,484 lbs) per day
- Phosphorus, 5.8 kg (13 lbs) per day
- Formalin/Formaldehyde, periodic use, estimated 3,500 liters (925 gal.) per year (MEPDES Form 2D, P. 3&4, pp. 206-207. 238)
- Various cleaners and medications, periodic use (MEPDES application, Questions #10 & 11, Attachment 3, pp. 216/238)

Some of these chemicals are likely to occur in different forms or compounds in the wastewater than are found naturally in the bay.

iv. Nutritive Value:

The effluent is likely to contain fewer Total Suspended Solids than existing conditions (Tr. 2/13/20 406:11-407:2 (E. Cotter)), indicating fewer feed particles, those particles would be no larger than .04 micron and most would be dead after passing through the effluent treatment system. Natural food sources, including plankton, will be removed from the area by intake filters. NORDIC has not performed adequate studies to quantify this effect. "The screen itself is proposed to be a 1-inch slot size wedge wire mesh, which will be too large to reduce the intake of larval and egg life stages. As mentioned for finfish the significance of this impact cannot be accurately quantified at this time, as no ichthyoplankton data were collected for this project." Prefiled Testimony, T. Parent, p. 8, #21.

v. Diseases:

The facility effluent will contain viruses. The species and concentrations are disputed, especially since water treatment methods are new and largely untested, but there will be some escaping contagions. Tr. 2/13/20 384:2-22 (Bicknell)("there is no way to totally eliminate those risks."). Viruses are too small to be removed by filters (Tr. 2/13/20 384:1-6 (Bicknell)), and may escape UV treatment due to screening by suspended solids: "However, UV irradiation may not work in situations where turbid water (and associated poor UV transmittance) may be encountered." (Written Testimony, B. Dixon, Exhibit F1, Ozonation and UV irradiation/an introduction and examples of current applications, Page 60, Concluding Remarks).

Nordic does not address the effects of the plume anomaly on wildlife:

The effect of the project on wildlife is discussed in the SLODA Application, section 07, Wildlife & Fisheries, Natural Resources Report and Prefiled Testimony of T. Parent.

Nordic notes several species of concern: American eel (Anguilla rostrata), alewife (Alosa pseudoharengus), blueback herring (Alosa aestivalis), winter flounder (Pseudopleuronectes americanus), rainbow smelt (Osmerus mordax), Atlantic salmon (Salmo salar), Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus), and short-nose sturgeon (Acipenser brevirostrum). Scallops, blue mussels, and softshell clams are also addressed. Evaluation of disruption of marine organisms focuses only on the pipeline route (disturbance during construction), intake pipe opening (capture in filters), and discharge location (primarily water movement), ignoring water quality. Prefiled Testimony of T. Parent, p. 3, #10 – p. 9, #24.

- Nordic failed to consider the effects of the plume with temperature and salinity that could attract some organisms to unusual, suboptimal conditions while exposing them to non-native viruses and possibly suboptimal feeding conditions.

- Nordic failed to study the response of sessile and burrowing organisms to the unnatural water quality in the plume.

- Nordic failed to perform adequate surveys of water movement 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. Mobile organisms would have dispersed due to the disturbance, and subsurface organisms would not be visible.

- Nordic fails to demonstrate that it will meet the DEP 2018 criteria for wastewater discharge. "The water body is Marine Class SB." Rebuttal Testimony, T. Parent, p. 2, #6. In these waters "Discharges 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." Rebuttal Testimony, T. Parent, p. 4, Nordic Exhibit 37.

vi. Blasting & Dredging:

Nordic fails to address the effects of blasting and dredging on sessile marine organisms.

Nordic states that scallops, blue mussels, and softshell 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. 2/12/20 123:16–125:2 (L. Walsh)(describing excavation method.

Nordic did no study to determine if, when, or which organisms are likely to re-inhabit the disturbed area.

vii. Nordic failed to test for mercury along the dredge route for the intake and discharge pipes, and evaluate effects of released mercury on marine organisms:

Nordic submitted only two core samples for chemical analysis, cores #A6/7 and #B3. Neither of these samples is located on the pipeline route. *See* Fig. 18-1. Analysis was focused on suitability of dredged materials for solid waste disposal. The samples are depth composites. Core #A6/7 combined sediments from 2 cores, one from the surface to a depth of 1 foot, and one to a depth of 3' 9". Core #B3 combined sediments to a depth of 6' 5". Prefiled Testimony, E. Ransom, p. 43/48, Exhibit 7, 18.0, Solid Waste, 18.1.1, Sediment Composition pages 1 &2 (EPA letter of 3/6).

Mercury content of core #A6/7 is less than 103 nanograms/gram. Mercury content of core #B3 is 267 nanograms per gram. Prefiled Testimony, E. Ransom, p. 43/48, Exhibit 7, 18.0, Solid Waste, 18.1.1, Sediment Composition, Table 18-3. Background level of mercury in this area is estimated to be 51 – 55 nanograms/gram. Prefiled Testimony, E. Ransom, p. 43/48, Exhibit 7, 18.0, Solid Waste, 18.1.1, Sediment, P. 4, paragraph 2.

Local citizens are concerned that dredging could release additional mercury into Penobscot Bay, contaminating fish and shellfish that are highly valued by recreational fishermen

and other consumers. Tr. 2/11/20 38:12–20 (Public Testimony, J. Murphy). Commercial fishermen are especially concerned that release of additional mercury just 6 miles south of waters that are closed to lobster and crab fishing due to HoltraChem mercury contamination would devastate their local fishing grounds, their livelihoods, and the prospects of young fishermen. Tr. 2/12/20 358:9-17 and 361:6–14 (D. Black).

The core samples tested by Nordic indicate that: (1) Mercury levels in the sediment to be disturbed are likely to be considerably higher than background levels; and (2) Mercury levels vary considerably from one spot to another within the project area.

In summary, Nordic has failed to analyze the potential effect of releasing buried mercury on (1) marine organisms, including finfish and shellfish, (2) commercial fisheries and (3) recreational fisheries.

b. WOODLAND ENVIRONMENT

This site, taken as a whole, is a special and locally rare ecosystem. It provides essential habitat for overwintering, migratory, and breeding birds and mammals and provides wildlife corridors between diverse habitats. This connectivity from upland to shoreline and intertidal habitats is extremely important in this area, where most of the shoreland is developed.
The site contains over 50 acres of mature, carbon sequestering woodlands, 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). There are 19 wetlands, including freshwater Wetlands of Special Significance, and streams of NRPA significance under the Natural Resources Protection Act (NRPA)." NRPA Application, Attachment 9, p.1, bottom; NRPA Application, Attachment 9, p.

6, Table 9-2; Numbers and designations were updated in response to DEP request in November 5, 2019-Nordic Response (includes Att. A-F), Normandeau, p. 17-19.

Virtually all wetlands and streams would be eliminated (*see* Commentary, SLODA 9, Buffer Strips), along with the maturing, carbon-sequestering forest, meadowlands and soils that also provide essential habitat for birds, bats, and numerous other species.

Proposed buildings, roads and walkways would cover the site except for a strip along the Little River and the Lower Reservoir of approximately 250 – 500 feet. There is a severely constricted "corridor" between existing building 10, the proposed fishpond viewing area, and Building 8, the water treatment plant.

This project does not preserve sufficient habitat to sustain existing on-site wildlife. This project eliminates corridors and connectivity essential to wildlife as they move between saltwater, freshwater, forest, wetlands, and open fields. Cumulative impacts to multiple habitat types will be significant.

"I was surprised that the lack of sufficient biological surveys coupled with a failure to analyze all permanent impacts were not discussed in the Pre-Filed Direct Testimonies referenced here. Rarely, have I seen such a client-centric disposition and approach to a Natural Resource Report. These deficiencies are particularly concerning given the fact that the project will have profound and permanent impacts to uplands, wetlands, inter and subtidal and water column habitats and to the biological food chains upon which so many species, including human livelihoods, depend." Rebuttal Testimony, R. Podolsky, p. 6.

II. Disruption of Lifecycles by Construction Activity

a. MARINE ENVIRONMENT

Pipeline construction will entail excavation, including blasting, and refill. Sessile and burrowing organisms will be disrupted at all lifecycles.

b. WOODLAND ENVIRONMENT

Destruction of the woodland, meadowland and wetland habitats has the potential to significantly impact the lifecycles of resident, overwintering and migratory species, especially birds, but also mammals and amphibians. Nordic has failed to provide any information concerning noise and light pollution that are hazardous to wildlife.

Nordic has failed to conduct sufficient on-site surveys to determine what animals would be impacted.

Successful migration to similar habitat is unlikely due to the lack of comparable combinations of riverine, woodland, meadowland and shoreland habitat in the area. Most species are already experiencing general and habitat loss and degradation. Remaining habitat is already occupied; there is no room for immigrants.

III. Scope of Review.

In determining whether Nordic has made adequate provision for the protection of wildlife and fisheries, the Department shall consider all relevant evidence to that effect, such as evidence that a buffer strip of sufficient area will be established to provide wildlife with travel lanes between areas of available habitat. Other areas of concern include:

a. MARINE ENVIRONMENT

Nordic has failed to demonstrate that the discharge plume and discharge current will not disrupt migratory movement of catadromous and anadromous fish into the Little River or to other locations. The Prefiled Testimony of T. Parent discusses the life cycles and some potential threats to several species of migratory finfish. Nordic gave no consideration of potential effects of plume velocity or water quality on fish behavior or "travel lanes" used for migration.

b. WOODLAND/WETLAND ENVIRONMENT

The strip of land that will remain, essentially the shoreland zone and property set-backs, represents a meaningless fragment of the former, complex habitat.

Nordic has failed to provide adequate buffer strips to serve as connectivity, or "travel lanes" for wildlife.

Wetland remediation and stream remediation will not adequately compensate for permanent elimination of habitat, and habitat connectivity. Please refer to Commentary, SLODA Buffers, B, Scope of Review, #2.

c. Proposed alterations and project activities will adversely affect wildlife and fisheries lifecycles.

This huge facility, with 20 acres of buildings, most with 40-foot high walls, discharging 7.7 million gallons of fish-production wastewater into Penobscot Bay every day, will clearly have an adverse effect on upland wildlife and marine wildlife and fisheries lifecycles.

Nordic has failed to consider how pipeline construction will entail excavation, including blasting, and refill. Sessile and burrowing organisms will be disrupted at all lifecycles. See A, 1, Marine Environment, b, Effects of Blasting and Dredging, above.

According to T. Parent, Prefiled Testimony, p. 8-9, #22-23, "Three in-water activities may result in elevated underwater sound pressure during construction; 1) drilling, 2) hydraulic rock breaker (hoe ram) and 3) blasting. Manmade underwater noise has the potential to cause

behavioral disturbances, hearing impairment or threshold shifts, physical injury, or mortality to marine organisms. When a fish with a swim bladder is exposed to a sound wave, gas in their swim bladder expands and contracts more than the surrounding tissue during the periods of under pressure and overpressure, respectively. This can cause the swim bladder to oscillate resulting in tissue damage and possibly rupture. Hearing loss in a fish is likely to result in reduced fitness from decreased ability to detect and avoid predators, locate prey, communicate with peers, or sense physical environment." "Soft-start" of equipment is intended to mitigate this effect. Increased turbidity will result from pipeline construction activities."

Nordic has conducted no research or study of the potential effects of construction activity on behavior and success rates of migrating fish. Nordic has failed to adequately test mercury levels in marine sediments along the pipeline disturbance route.

Nordic has failed to demonstrate that the discharge plume and current will not disrupt migratory movement of anadromous fish. See B 1, above. Nordic has failed to address possible impact of the discharge plume on the mussel farm located approximately 2 miles south-southeast of the outfall, in the direction of plume travel, according to modeling by N. Dill. Prefiled Testimony, N. Dill, p. 31. Nordic has failed to analyze ongoing effects of disturbing marine sediments containing mercury in unknown concentrations.

Nordic will extensively excavate approximately 20 acres of woodland, wetland and meadow for construction of buildings, and intensively develop the 57-acre site. All habitat will be destroyed. Animals will avoid construction noise and activity. The construction schedule has not been determined, but lifecycle stages will be disrupted regardless of the season, contributing to loss of habitat of concern.

The 57-acre site will be reduced to a fragmented habitat that will restrict the presence of specialist species that require conditions which currently occur on the site. *See* Maintaining Habitat, 2, Woods Environment above and Commentary, SLODA Buffers, B, Scope of Review, #2.

Nordic has not conducted a study of deer wintering areas.

d. Nordic does demonstrate Protection of Habitat of any species declared threatened or endangered by the Commissioner, Maine Department of Inland Fisheries and Wildlife or the Director of the U.S. Fish and Wildlife Service.

There are multiple species present at the project site that are protected species, which Nordic fails to demonstrate will be protected.

Finfish:

According to Nordic (Prefiled Testimony of T. Parent, p. 4):

> "14. The Atlantic salmon is an anadromous species which is native to the Gulf of Maine. The Gulf of Maine Distinct Population Segment (DPS) was first listed as Endangered in December of 2000, and subsequently reaffirmed as endangered in 2009. The Gulf of Maine, and more specifically the Penobscot River, provides habitat to one of the only remaining viable runs of wild Atlantic salmon. Despite management efforts, stocks have continued to decline since the species was federally listed.
>
> 15. Short-nosed sturgeon, "Listed as endangered in 1967…
>
> 16. The Atlantic sturgeon is currently federally listed as threatened in the Gulf of Maine distinct population segment. In the rest of their range which extends down to Florida, they are listed as endangered. The threatened listing for the Gulf of Maine indicates that the Atlantic sturgeon is at significant risk of becoming endangered in the next 20 years."

Atlantic Salmon:

According to Nordic,

> "Juveniles are documented to use Belfast Bay, as a western corridor of Penobscot Bay to get from their natal waters within the Penobscot River to the ocean. This would only be true of the smolt portion of the juvenile life stage as the other stages remain exclusively in freshwater. Although smolts are known to venture past the project area during emigration, they are almost entirely surface oriented, which would prevent them from ever being in the vicinity of the intake and discharge of the proposed project, as these

> structures will be fixed to the seafloor. Adults use the entirety of Penobscot Bay, including the project area of Belfast Bay when they travel back to the Penobscot River on their way to spawning habitat. However, adults are not resident in the Belfast Bay. Although adults are not as surface oriented as smolts, a healthy salmon on its way to spawning ground will have more than enough burst speed to make it virtually impossible to be affected by an intake with a through-screen velocity of less than 0.5 ft/sec. Atlantic Salmon will only use the project area as a potential path on a migratory route. They will not use the project area for spawning, nursery, forage, or shelter, so impacts to this species are expected to be insignificant to nonexistent."

Prefiled Testimony, T. Parent, p. 5, #14.

In fact, Salmon returned to the Penobscot River in record numbers in 2019. Active and expensive efforts are under way by Maine and federal entities to revive the Penobscot River populations that migrate through the impacted portion of Penobscot Bay. The discharge plume would affect surface waters. Juvenile and adult fish would be exposed to the discharge plume.

Nordic's wastewater treatment will not eliminate all viruses. There will be some escaping contagions. Tr. 2/13/20 384:2-22 (I. Bicknell)("there is no way to totally eliminate those risks."); *see also* Comments, MEPDES, p. 6.

Viruses with minimal effects on optimally managed, farmed fish could be devastating to struggling wild populations: "[G]laringly absent from #14 [T. Parent Prefiled Testimony] is a discussion of the fact that Atlantic salmon who come into contact with Nordic discharge waters might reasonably be exposed to biological agents, such as fish-borne diseases, not removed by Nordic's Effluent/Wastewater treatment technology. Any Atlantic salmon so exposed might become vectors for diseases at a time when this imperiled population is in a vulnerable, rebuilding phase." Rebuttal Testimony, R. Podolsky, p. 5.

Nordic wastewater will contain viruses that could infect and devastate wild Atlantic salmon populations. Salmon eggs will be purchased from outside sources and can introduce pathogens, especially non-native viruses, to the system. Young fish also carry pathogens. Eggs purchased from distant locations are frequently infected with pathogens that do not occur

naturally in local waters. For example, eggs purchased from a major Icelandic distributor have repeatedly been found to be infected with viruses, and their use in aquaculture operations has introduced foreign viruses to ocean waters where they did not exist before. Tr. 2/14/20 164:14–165:5 (B. Bryden).

The Williamsburg Treaty, signed by the United States, applies to Atlantic salmon and is designed to prevent pathogens from traveling between regions. Tr. 2/14/20 164:7-14 (B. Bryden). Nordic has stated that they will not import non-native fish. Tr. 2/13/20 342:25-343:1 (I. Bricknell). In accordance with The Williamsburg Treaty, Nordic should be prohibited from introducing any fish that are not Maine-raised into their system and Nordic should be prohibited from introducing any eggs that are not Maine-raised into their system.

All listed species:

· Nordic failed to research or study the potential effect of the possibly attractive, unnatural thermal and chemical qualities of the discharge plume on listed juvenile or adult Atlantic salmon, foraging or migrating short-nosed sturgeon, or migrating subadult or adult Atlantic sturgeon, all of which they note are potentially present.

· Nordic failed to research or study potential effects of unnatural virus populations in the plume on vulnerable wild populations of listed finfish species, especially Atlantic salmon.

· Nordic failed to research or study the potential effect of unnatural currents and salinity in the area of saltwater intake and discharge on migration behavior of listed Atlantic salmon, Atlantic sturgeon, or short-nosed sturgeon.

· Nordic failed to demonstrate that this project will not unreasonably disturb the valuable habitat in this area of three species; Atlantic salmon (endangered), short-nosed sturgeon (endangered), and Atlantic sturgeon (threatened, likely to become endangered).

e. UPLAND ENVIRONMENT

Nordic fails to demonstrate that its project will not degrade the upland environment.

Nordic failed to survey the species present in the upland areas of the project,including:

Birds:

"Of the 19 water bird species with a high likelihood of using the TWWH associated with the intake and outfall pipes, based on e-bird records, three are listed as SC (greater scaup, lesser yellowlegs, semipalmated plover), and four additional species are designated as SGCNs (common eider, least sandpiper, long-tailed duck, semipalmated sandpiper)." A. Fiorillo, Prefiled Testimony, p. 4, #11.

"Though I am not an advocate for solely relying upon online data sets such a e-Bird, when such sources point to not fewer than 21 species of birds being either Special Concern or Species of Greatest Conservation Need, responsible parties simply must conclude that multi-season, field surveys are justified, and set about to get this important data." R. Podolsky, Rebuttal Testimony, bottom of p. 2.

"10. Birds – A project-specific avian survey was not conducted…." A. Fiorillo, Prefiled Testimony, p. 4.

Nordic failed to conduct on-site bird surveys in the estuarine shore and intertidal zones affected by the project. It cannot be known if any listed bird species use this area.

Bats:

According to Nordic, "15. All of Maine's eight bat species are listed, and based on known distribution and the habitat available, all have some potential to be present during the summer. The forest cover on-site provides ample summer roosting habitat for the foliage-roosting species (eastern red, hoary, and silver-haired bat, all listed as SC) as well as the northern long-eared bat (State Endangered SE, Federally Threatened FT), which roosts under loose bark and tree trunk crevices and hollows. Structures on-site and nearby provide potential summer roosting habitat for little brown bats (SE) and big brown bats (SC), and forest edges and the nearby reservoir provide suitable feeding areas for all these species as well as the eastern small-

footed bat (State Threatened ST). No other listed mammals are expected to be present. Tree removal in winter will avoid any impact to bat species." Prefiled Testimony, A. Fiorillo, p. 5. In fact:

Tree removal in winter will remove suitable roosting habitat for returning migratory bats. Similar habitat is limited nearby and likely to be fully utilized by previous resident populations.

Nordic did not conduct on-site bat surveys at any time of year despite noting probable presence of listed species. Year-round, including winter, use of the area by bats has not been studied.

Tree removal will displace any existing bat populations, whether resident year-round or part-year.

(c) Seabird nesting islands;

(d) Significant vernal pools;

Nordic failed to survey for vernal pools at an appropriate time of year.

(e) High and moderate value waterfowl and wading bird habitat.

According to Nordic, "12. Tidal Waterfowl and Wading Bird Habitat –Designated TWWH will be temporarily impacted during the construction of the area to be trenched and the installation of the intake and outfall pipes. This impact area is located in larger intertidal area that extends roughly from the mouth of the Little River southwards for about ¾ of a mile to Browns Head, a Point on the Northport, ME shoreline, covering over 4 million square feet. The value of TWWH is associated with feeding habitat that it provides for waterfowl and wading bird species, generally intertidal mudflats, eelgrass and mussel beds where they can forage for aquatic invertebrates. The intertidal area that will be impacted by the project has a cobbly and firm

substrate and does not support any mussels, eelgrass, or shellfish beds." Prefiled Testimony, A. Fiorillo, p. 5.

In fact, Nordic's representative acknowledged that shellfish are present: [Duchesne] "I think it says in the testimony and what you just said there are no known mussel beds there, when we did the site visit there was a flock of 50 common eiders out there right at the entrance of the Little River. Their primary food is mussels. So can you qualify a little bit more how you know there are no mussels in the area at least in that section? …

Tylor Parent: We're not claiming that the site is completely free of mussels, however, it is not going to have a fisheries impact." T. 2/12/20 284:12-23 (Duchesne/Parent).

Nordic failed to conduct year-round on-site bird surveys in the estuarine shore and intertidal zones affected by the project. Nordic failed to conduct meaningful surveys of intertidal and subtidal sessile and subsurface organisms that might serve as food sources for birds. Nordic failed to study the response of sessile and burrowing organisms to the unnatural water quality in the plume. Nordic did no study to determine if, when, or which organisms are likely to re-inhabit the intertidal and subtidal areas disturbed by pipeline construction. Nordic failed to study the potential effect of single-point stormwater discharge to the Little River below the dam. *See* Prefiled Testimony of M. McGlone, 6. Diversion of Upgradient Runoff, and Commentary, Ch. 587, Drainways, A, Scope, 1, Water Courses.

f. Shorebird nesting, feeding, and staging areas.

Nordic failed to conduct adequate bird surveys. Nordic failed to evaluate the effect of altered nutritional value of discharge water on shorebirds. Nordic failed to consider the effect of altered temperature and chemical qualities of discharge water on shorebirds.

Applications for approval of proposed developments shall include evidence that affirmatively demonstrates that the developer has made adequate provision for the protection of wildlife and fisheries, including information such as the following, when appropriate:

(1) The location of natural buffer strips and adequate provision for their maintenance.

Nordic fails to provide meaningful buffer strips to allow for marine or upland wildlife movement. See B, Scope of Review, 1, Buffer strips, above. Nordic fails to provide any plan for landscape maintenance. *See* Commentary, SLODA Section 9, Buffers, B, Scope, 3, Buffer Strips.

(2) Plans to mitigate adverse effects on wildlife and fisheries through means that at a minimum include, but are not limited to, design considerations (#1), pollution-abatement practices (#2), the timing of construction activities (#3), and on-site (#4) or off-site (#5) habitat improvements or preservation (#6).

1. Design considerations are not adequate to mitigate adverse effects on upland wildlife since the entire site will be developed. *See* A, Preamble, Maintaining Suitable Environment, 2, Woods Environment.

2. Wastewater treatment systems do not adequately mitigate effects of thermal, chemical or biological pollution of Penobscot Bay waters. *See* comments on MEPDES application and A, Preamble, Maintaining Suitable Environment, 1, Marine, a. Discharge Plume, above.

Technologies allowing zero-effluent, or Closed RAS systems that would eliminate wastewater discharge to the bay are available. NORDIC has refused to consider this approach. *See* MEPDES comments, P. 2, II, Best Available Technology.

3. Timing of construction activities is not adequate to protect bats. A. Fiorillo states that “Tree removal in winter will avoid any impact to bat species.” This precaution is not

adequate to preserve resident bat populations. *See above*, B, Scope of Review, 3, Disturbance, b. Habitat, 2, Woodlands, a. Bats.

Nordic has failed to conduct surveys of waterfowl, shorebirds, and sessile and burrowing marine organisms that provide them with food. Without this information, impact of pipeline construction on sea- and shore-bird populations is unknown. *See above*, B, Scope of Review, 3, Disturbance, e, Waterfowl & Wading Birds.

4. On-site mitigation consists primarily of rebuilding and replanting Stream 9 following extensive excavation. This is unlikely to preserve or improve wildlife habitat. *See* comments, SLODA 9, Buffer Strips, B, Scope of Review, 1, Water Bodies, S9.

5. Off-site, NORDIC proposes to compensate for wetland destruction with a payment of $654,171.10. NRPA application, Attachment 13, Appendix 13-A, Impact Compensation Plan, P. 13, 4.2, In Lieu Fee.

Nordic's proposed compensation package should include compensation for the total area of streams and wetlands that are identified as partially disrupted. The upper reaches of S(tream)3, S5, and S6 are included as permanently filled. The remaining lower reaches of these streams will no longer function and should be included in the compensation formula. Landscaping around the remains of S3, S5 and S6 should not be considered on-site wetlands compensation since it will no longer function as a wetland. Wetlands W2, W5, and W6 are identified as partially filled, but water inflow to each of these wetlands is severely reduced or eliminated by upslope buildings (W2, Bldg 1 / W5, Bldg 2 / W6, Bldg 8). The entire area of these wetlands should be included in the compensation formula. Wetlands and streams identified by Broadwater Environmental (10/9/19 letter) should be included in the compensation formula. *See* comments, SLODA Section 9, Buffer Strips, B, Scope of Review, 1, Waterbodies.

6. Plans include no habitat improvement and mitigation is inconsequential.

This unique and rare ecosystem provides essential habitat for migratory and overwintering birds, and is a transition zone from coastal wetlands and shoreland habitat to riverine, wetland, upland and reservoir habitat. This connectivity from shoreline and intertidal habitats is extremely rare in the area, as most all of the shoreland is developed. These natural qualities would be completely eliminated by this development. Noise and lights from the facility will render the remaining reservoir habitat far less conducive to wildlife, especially birds. The stripe of land that will remain along the river will be reduced to a fragment of forest that will in turn be highly vulnerable to edge effect and will likely suffer from high level of tick infestation due to the degradation of habitat.

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 off-site 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, 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.

H. Chapter 500, STORMWATER

1. Basic standards.

The basic standards apply to all projects described above. The Applicant must demonstrate that the erosion and sedimentation control, inspection and maintenance, and

housekeeping standards specified in Appendices A, B, and C to this Chapter, respectively, are met, and that the grading or other construction activity will not impede or otherwise alter drainageways so as to have an unreasonable adverse impact on a wetland or waterbody, or an adjacent downslope parcel.

Upstream Watch has reviewed stormwater management with its own consultants, examined the site, and reviewed the application materials supplied by Nordic Aquafarms. We agree that, if carried out correctly, the plan is adequate; however, it is an extremely complex plan. In order to assure effective execution and minimize the many substantial environmental risks, excellent management and oversight is essential. Upstream Watch recommends permit conditions requiring the following:

- A suitable management plan is devised and approved by DEP prior to issuances of any permit, including sequencing and contingencies for unexpected events.
- A manager is designated for the overall installation who has suitable knowledge and experience and is approved by DEP.
- A supervisor with relevant knowledge and experience is required to be onsite every day.

2. 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.

Nordic's proposal would entirely remove 8 of the 9 drain ways from the site (*see* NRPA Application, section 13, attachment 13, appendix 13A, Impact Compensation Plan, especially p. 6, table 2, Permanent Impacts to Wetland Resources) and substitute therefor a perimeter drain intercepting surface water arriving at the site from upgradient areas, diverting all that water around the site and into the Little River downgradient of the site near the ocean. *See* Prefiled Testimony of M. McGlone, 6. Diversion of Upgradient Runoff.

(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.

Except for stream #9, all drain ways will be removed (reference above) and the land recontoured to eliminate drainage swales and streams to create a near-flat construction platform. All drainage arriving at the site from off site will be diverted into the perimeter drains. *See* Prefiled Testimony of M. McGlone, 4.

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.

Nordic fails to address the permanent effects of upslope building activity on the lower reaches of streams 3, 5, and 6. Nordic proposes landscaping the lower portion of S3 as wetland compensation. This will no longer serve as a stream and therefor landscaping is not wetland compensation. Nordic demonstrated lack of diligence regarding watercourses and wetlands. Response to DEP inquiries necessitated a comprehensive study that identified serious oversights in the application. November 5, 2019, NORDIC Response (including Att. A-F), P. 17-19, Normandeau Memo.

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

Nordic's submissions so not show the preservation of drain ways by easement or otherwise but the total destruction and removal of all natural, on-site drain ways. *See* NRPA application, section 13, attachment 13, appendix 13A, Impact Compensation Plan, especially p. 6, table 2, Permanent Impacts to Wetland Resources. Nordic fails to provide for continued maintenance of landscaping buffers and maintenance plans for riparian buffers are short-term. *See* commentary, SLODA Section 9, Buffers, B, Scope, 3, Shielding. Nordic refers to a 75-ft. deeded buffer along Stream 9, but does not provide a legal deed. SLODA Application, Section 10, Buffers, bottom of *P*. 1.

C. Terms and Conditions.

The Department may, as a term or condition of approval, establish any reasonable requirement to ensure that there will by no unreasonable alteration of natural drainage ways.

BEP cannot lawfully issue a permit under Chapter 587. Nordic completely disregards the SLODA requirement that natural drain ways be preserved. Nordic fails to provide a maintenance plan or legal deeds to assure long-term maintenance of landscaping.

Finally, Upstream Watch incorporates herein all arguments and citations to the record submitted on this date by Northport Village Corporation with its post-hearing brief, and Upstream preserves all elements of the Northport Village Corporation brief for any future appeal. Upstream Watch also incorporates all arguments and factual citations submitted by Attorney Kim Tucker regarding Nordic failing to demonstrate right, title, and interest in the intertidal land and other land necessary for the project. [9]

CONCLUSION

The Site selected by Nordic is unsuitable. Evidence of unsuitability abounds.

Nordic has failed to justify the removal of 50 acres of woodland and wildlife habitat, down to bedrock and beyond, that is a scenic and recreational gem for the City of Belfast.

Nordic has failed to justify threatening one of the last migration routes for an increasing population of Atlantic salmon to and from their largest remaining breeding grounds in the United States.

Nordic has failed to justify risking the quality of Northport's shoreline, including a heritage of family reunion and a lucrative rental market.

Nordic has failed to justify risking the quality of shallow, constricted Bay waters with wastewater effluent, despite initially citing a need for deep water currents.

Nordic has failed to justify risking traditional fishing grounds and innovative aquaculture ventures, the livelihood of local families.

[9] Including, without limitation, the Renewed Motion to Dismiss for Applicant's Lake of Administrative Standing (Title, Right or Interest "TRI") Pursuant to 06-096 C.M.R. ch. 2, § 11D filed February 18, 2020 and all exhibits appended thereto pertaining to the ownership history of the contested property.

Nordic has failed to justify industrializing the lower reaches and the estuary of the Little River, displacing shore birds and anadromous fish.

Nordic claims to have looked at over 40 sites on the Maine coast. It chose the worst site. The unsuitable character of this site suggests that Nordic had a business deal in place and performed a "study" to justify a decision they had already made. The evidence that this is so could not be clearer. This site doesn't work.

The application is fatally incomplete. Nordic's applications had to meet the requirements of the Maine Site Location of Development Act, Maine's Natural Resources Protection Act and the Maine Pollutant Discharge Elimination System. Nordic failed to qualify for a permit under any of these three laws.

Nordic claims that they will build this facility for 500 million dollars, despite no documentation of costs, and frequent substantial design changes throughout the past two years. Nordic claims they have this money available, despite never naming a credible funding source. Nordic claims there is plenty of freshwater, despite depleting the source with perimeter drains, saltwater intrusion in their wells, and an old, failing dam. Nordic claims that they will have a negligible effect on wildlife, despite never conducting any serious wildlife surveys. Nordic claims that their effluent will have negligible effects on Penobscot bay waters despite minimal attention to the complex patterns of water movement, chemistry, and life in the bay. Nordic claims that their facility will produce no odor, despite handling truckloads of fish every day. Nordic claims that their technology is state-of-the-art, despite rapidly increasing options for zero-discharge, land-based facilities. Nordic claims to have the technical know-how to run an experimental, second largest in the world, complex operation despite the inability to fill in a

complete permit application that is still not complete after repeated attempts by DEP staff to get clarification.

Upstream Watch submitted to the record in this case a "Matrix" prepared and maintained by Michael Lannan of Tech Environmental. This matrix tracks the progress of the constituent parts of Nordic's applications. As the Matrix reveals, many material aspects of the application requirements remain incomplete.

Nordic failed to demonstrate that its application meets the requirements of the Federal Clean Water Act, codified in Maine as the MPDES permit program.

An egregious violation of the Federal Clean Water Act and of Maine's MEPDES program occurred after the close of the record. The record closed on February 18, 2020 for all but some air pollution modeling and for receipt of a report from the Department of Marine Resources (DMR). DMR was to comment on the effect of the installation of Nordic's pipes and the dredging therefor, on fish. Following DMR's procedural failures a hearing was conducted in Belfast on March 2, 2020. At that hearing Nordic revealed for the first time that it intended to de-water its dredge spoils and discharge the wastewater into the Bay. The location of the de-watering operation was not clear from the presentation.

The new information revealed in the hearing presentation included that Nordic intends to haul dredge spoils 5.5 miles across the Bay, through fishing and lobstering areas and near swimming areas and mooring fields (the "haul route"). It was not clear where the spoils water was to be released or discharged into the bay, at the site of the dredge excavation or along the 5.5 mile haul route across the bay. This is important information as there are residences, businesses, fishing, lobstering and boating and other recreational activities along that haul route. Further, oceangoing ships approach Searsport Harbor via a channel that appears to intersect the barge

haul route. As far as the record reveals, Nordic has not revealed this haul route plan to the Coast Guard.

It is axiomatic that a discharge of wastewater into Penobscot Bay requires an MPDES permit from DEP. To discharge wastewater into the Bay without a permit is both a civil violation and a criminal violation of the Clean Water Act. Nordic has not even filed a permit application for this newly announced discharge.

Nordic's failure to complete properly the application requirements deprives the BEP of the ability to make a reasoned or a defensible decision of the Nordic permit applications. The permit process is not a free form exercise. The burden of proof of compliance with the rules and completion of the application material is Nordic's responsibility. Nordic's numerous failures compel denial of the applications.

The Maine BEP, acting in good faith, in compliance with the law, and in good common sense, has no choice but to deny all Nordic's applications.

DATED at Belfast, Maine on May 4, 2020.

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CERTIFICATION

I hereby certify that a copy of the foregoing was electronically mailed this 4th day of May, 2020 to those indicated on the attached Service List.

David J. Perkins