

STATE 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

) APPLICATION FOR AIR EMISSION, SITE  
) LOCATION OF DEVELOPMENT,  
) NATURAL RESOURCES PROTECTION  
) ACT, and MAINE POLLUTANT  
) DISCHARGE ELIMINATION  
) SYSTEM/WASTE DISCHARGE LICENSES  
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PRE-FILED DIRECT TESTIMONY OF STEVEN WHIPPLE, P.E.  
MAINELY ENVIRONMENTAL LLC

1. My name is Steven Whipple. I'm the owner of Mainely Environmental LLC. Prior to starting my own firm, I was a Partner at Woodard & Curran where I worked and ran the Clean Air Act program for 18 years. Prior to that I worked at the Maine Department of Environmental Protection (DEP), Bureau of Air Quality (BAQ) in 1994 and 1995. I'm a licensed Professional Engineer in the State of Maine and hold a Bachelor of Science degree in Environmental Engineering from the University of Vermont and a Master of Business Administration from the University of Southern Maine. My technical experience is focused in the area of air pollution, including permitting, air pollution control technology assessments, and dispersion modeling. I have more than 25 years of experience practicing in this area. My professional experience and qualifications are further detailed by my curriculum vitae, which is included as **Addendum A**.

2. In October of 2018, I was asked to work with Nordic Aquafarms, Inc's (Nordic) energy consultant (Gridworks) to identify the Clean Air Act requirements that would apply to potential electrical generation equipment.

3. In December of 2018 I was asked to prepare the required DEP air license application materials to support the installation of a 14 MW electrical generating set of engines. The engines will operate intermittently to offset electricity supplied by Central Maine Power during peak local regional demand periods. The application was prepared in accordance with Maine DEP Chapter 115 requirements for a "minor new source." During the period in which I prepared the application I consulted the BAQ staff with regard to the proposed regulated equipment, emission controls, fuel burning limit, modeling applicability, and total project emissions.

4. The application was submitted on May 24, 2019 and accepted for processing on June 13. Additional information pertaining to diesel fuel storage tanks and the engine construction schedule was requested by the Department on July 2, 2019. Follow-up information was provided on July 12, 2019.

5. DEP Regulation Chapter 115 identifies which equipment must be included in an application for a minor new source and Nordic adhered to DEP's requirements and identified and addressed this equipment. Accordingly, non-emitting equipment (such as electrical heaters), mobile sources, and construction activities were not addressed as part of the application.

6. The license granted in accordance with Chapter 115 will include the following standard condition: "The licensee shall establish and maintain a continuing program of best management practices for suppression of fugitive particulate matter during any period of construction, reconstruction, or operation which may result in fugitive dust, and shall submit a description of the program to the Department upon request." This requirement will address miscellaneous construction and operation activities not listed in the air license.

7. On November 19, 2019 Nordic provided additional information to DEP in response to DEP's follow-up request for information, dated November 8, 2019. The update included refined emissions factors provided by Caterpillar (likely engine). Nordic also updated the specific location and dimensions of its proposed stacks. The underlying equipment and emission control technology remained unchanged as Nordic proposed the best available control systems in its original application to DEP.

8. Provided is a summary of the content of the air license application submitted:

- Proposed construction of eight 2 MW diesel fired electrical generating engines. Seven engines may fire simultaneously and an annual fuel limit of 900,000 gallons was proposed, which represents about 10% of the amount of fuel that could be burned if all the engines ran at 100% capacity continuously all year long.
- The Engines are classified by DEP as Non-Emergency Compression Ignition (CI) New Stationary Engines Located at Area Source of Hazardous Air Pollutants (HAP), constructed on or after June 12, 2006 and are subject to 40 CFR part 60, subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines). As such the generator sets are required to meet the most stringent Tier 4 Control Technology Standards.
- A Best Available Control Technology (BACT) Analysis was completed and identified the following controls for the primary pollutants:
  - a. For Nitrogen Oxides – Selective Catalytic Reduction
  - b. For Particulate Matter – Diesel Particulate Filter
  - c. For Carbon Monoxide and Volatile Organic Compounds – Diesel Oxidation Catalysts
- Air Dispersion Modeling. The potential emissions are below the applicable modeling thresholds identified in DEP Regulation Chapter 115. Because potential emission were below the applicable thresholds and based on consult with DEP staff modeling was not performed.

9. On December 18, 2019 Maine DEP released a report documenting the results of in-house air dispersion modeling. Air dispersion modeling inputs included Nordic's proposed emission rates and stack parameters, actual surrounding terrain parameters, 5 years of real measured representative meteorological data, and building parameters.

10. DEP's extensive modeled coverage of the surrounding areas includes discrete points (receptors) adjacent the proposed project at a density of 20 meter spacing, which provides a good understanding of potential ambient air impacts around Nordic's plant. Notably, many receptors were included in areas of potential public access to the south of the plant adjacent to the Lower Reservoir. Receptors generally start within about 100 feet of the proposed plant buildings. Areas inaccessible to the public, without being accompanied by Nordic Staff, such as building footprints and service areas, are not included in the modeling. An exception is the parking area to the southeast of the site which may be used to access the area adjacent to the Lower Reservoir. However, modeled receptors encircle this area and provide representative air quality impact results. Only temporary access for parking will be permitted in this area, which will be checked and observed periodically.

11. DEP modeling results documented compliance with applicable Ambient Air Quality (AAQ) and Class II Increment Standards. Of note is the 1-hr NO<sub>2</sub> AAQ standard. DEP modeling shows a maximum modeled impact of 123 ug/m<sup>3</sup>. The standard is 188 ug/m<sup>3</sup>, which includes a background concentration of 39 ug/m<sup>3</sup>. Modeling shows compliance with all applicable standards. It is also conservative for the following reasons:

- The model assumes seven engines running simultaneously at full capacity all year long. In actuality this will not be the case and likely overpredicts the annual and even the short-term impact results.
- The engines are intended to run during high local regional electrical demand periods such as for a few hours in the late afternoons in the summer when many households are running air conditioners. Nordic intends to only run the engines intermittently and will not run them continuously throughout the year.
- With regard to the most notable short-term ambient air quality standard, 1-hr NO<sub>2</sub>, the 1-hr standard is actually based on an average of many hours of operation and meteorological conditions. The standard is defined as a 3-year average of 98th percentile of the yearly distribution of 1-hour daily maximum concentrations. Because the engines will only intermittently operate the likelihood of seven engines operating during the worst-case meteorological conditions that resulted in the averages calculated by the model are extremely unlikely. Actual impacts will likely be considerably lower than the compliant impacts predicted by the model.


12. DEP documented that Nordic's proposed engines meet the Class II Increment standards as well. Increment standards are much more restrictive than health based Ambient Air Quality standards and are intended to demonstrate that a project to be located in an "attainment area" will not consume a permissible fraction of the available Ambient Air Quality Standard.

13. In summary Nordic's project:

- The project is “minor” and proposes state of the art air emission controls;
- Meets all applicable Clean Air Act requirements, including Chapter 115 licensing standards;
- Air dispersion modeling prepared by the DEP conservatively demonstrates compliance with all applicable ambient air quality standards; and
- DEP Regulation Chapter 115 requires implementation of “Best Management Practices” to address miscellaneous potential fugitive emission sources including construction and operation activities.

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Dated 1/13/2020

By. 

Steven Whipple P.E., Owner, Mainely  
Environmental LLC

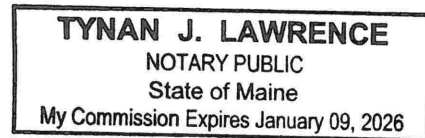
STATE OF MAINE  
County of Cumberland, ss.

January 13, 2020

Personally appeared the above-named Steven Whipple and made oath as to the truth of the foregoing pre-filed testimony.

Before me,

  
Notary Public / ~~Attorney at law~~



# STEVEN N. WHIPPLE, P.E.

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## Professional Profile

I have worked as an environmental engineer in the field of air quality since 1993. Since 1995 I have practiced as a consulting engineer for a variety of manufacturing, commercial, educational, health care, legal, and government agencies. Projects typically include permitting, regulatory compliance review, environmental impact mitigation, regulatory reporting, control technology analyses, air dispersion modeling analyses, green energy applicability and program implementation, and environmental operations and management.

## Work Experience

### May 2017 to Present - Mainely Environmental LLC

President and Sole Proprietor - Provide environmental consulting engineering services.

### April 1999 to May 2017 - Woodard & Curran

Sr. Principal & Shareholder – Developed and ran the Air Permitting and Compliance program at Woodard & Curran. Also provided environmental engineering services to clients, including multi-media project development permitting, compliance support, environmental program operations management, and green energy applicability and program implementation.

While at Woodard & Curran I served on several Board of Director committees including Marketing and Personnel.

### June 1995 to April 1999 – NMC Environmental Group

Engineer – Worked as a consulting engineer providing air permitting and compliance engineering services to entities throughout Maine.

### June 1994 to June 1995 – State of Maine Department of Environmental Protection, Bureau of Air Quality

Licensing Engineer – Worked with companies throughout the state to identify applicable clean air act requirements and draft construction and operation licenses.

### Summer 1993 – State of Maine Department of Environmental Protection, Bureau of Air Quality

Air Quality Scientist – Interned with the Bureau of Air Quality and assisted the Chief Meteorologist with air dispersion modeling for industrial sources.

## Education

M.B.A., Finance, University of Southern Maine

B.S., Civil/Environmental Engineer, University of Vermont

## Professional Registrations

Licensed Professional Engineer, ME, 9109

Licensed United States Coast Guard Captain, 100 Ton Inland Waters

## Board Associations

Trustee, Unity College, 2014 - Present