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August 14, 2019 Project 171.05027

Mr. Kevin Martin
Compliance & Procedures Specialist
Maine Department of Environmental Protection
112 Canco Road
Portland, Maine 04103

RE: Additional Information Regarding
Nordic Aquafarms Inc., Land-based Aquaculture Facility
Belfast, Maine
L-28319-26-A-N

Dear Mr. Martin:

The following letter and attachments provide additional information for the applications referenced above, that based on conversations with Maine Department of Environmental Protection (ME DEP) staff or based on previous correspondence from ME DEP, may be useful in review of the applications.

This information is grouped by Site Law application section and has been formatted as a question/response document for clarity.

1. Project Description - Section 1.3.1, page 5. Specify greater detail on pipeline construction methods. Will there be dewatering? How will work be conducted in tide cycle? Will equipment be on mats? What are the winter SESC methods and construction methods compared to other seasons?

Detailed pipeline construction methods are described in **Attachment A**. As noted in the attached description, dewatering may be needed between Stations 2+70 to 5+00. Dewatering is not anticipated from Station 5+00 to 13+50 (the intertidal area). The intertidal area will be constructed during low tide as described on **Attachment A**.

SESC measures are described in **Attachment A**. Note that although pipeline construction is planned for the November to April timeframe, Cianbro will not work from boats and/or barges during severe wind and/or precipitation events.

2. Project Description - In Figure BP-1, can stationing be added so the figure is more similar to CS101?

A revised figure BP-1 with stationing is in **Attachment B**.

3. Project Description - Section 1.3.1, page 8. Is there a tree clearing plan? What is the square footage of tree removal for the pipeline?

Pease International Tradeport, 112 Corporate Drive, Portsmouth, New Hampshire 03801, Tel (603) 436-1490, Fax (603) 436-6037
400 Commercial Street, Suite 404, Portland, Maine 04101, Tel (207) 772-2891
12 Kent Way, Suite 100, Byfield, Massachusetts 01922-1221, Tel (978) 465-1822
60 Valley Street, Building F, Suite 106, Providence, Rhode Island 02909, Tel (401) 433-2160
2127 Hamilton Avenue, Hamilton, New Jersey 08619, Tel (609) 584-0090

www.ransomenv.com

Clearing necessary for construction of the pipeline through the Eckrote property will be limited to a 40-foot wide construction easement that runs from Route 1 (approximate Station 2+70) to the intertidal zone (approximate Station 5+00). This results in an overall cleared area of 9,200 square feet. However, some of this route is already cleared due to an existing berm that leads to the shed near Station 4+50 (see image below), which will limit the number of trees that will need to be cut.

4. For TRI, can Exhibit A be submitted in color?

Exhibit A in color is in **Attachment C**.

5. For TRI, page 15 is missing from the January 30, 2018 Options and Purchase Agreement.

A complete version of the Options and Purchase Agreement, dated January 30, 2018, is in **Attachment D**.

6. For TRI, have extensions been taken for the agreements? When? I think a table will help answer these questions.

Yes, extensions have been taken for the real estate agreements, and the Cassida and Eckrote agreement updates were submitted with the applications. A copy of the Belfast Water District extension agreement, which was executed on July 25, 2019, is in **Attachment E**.

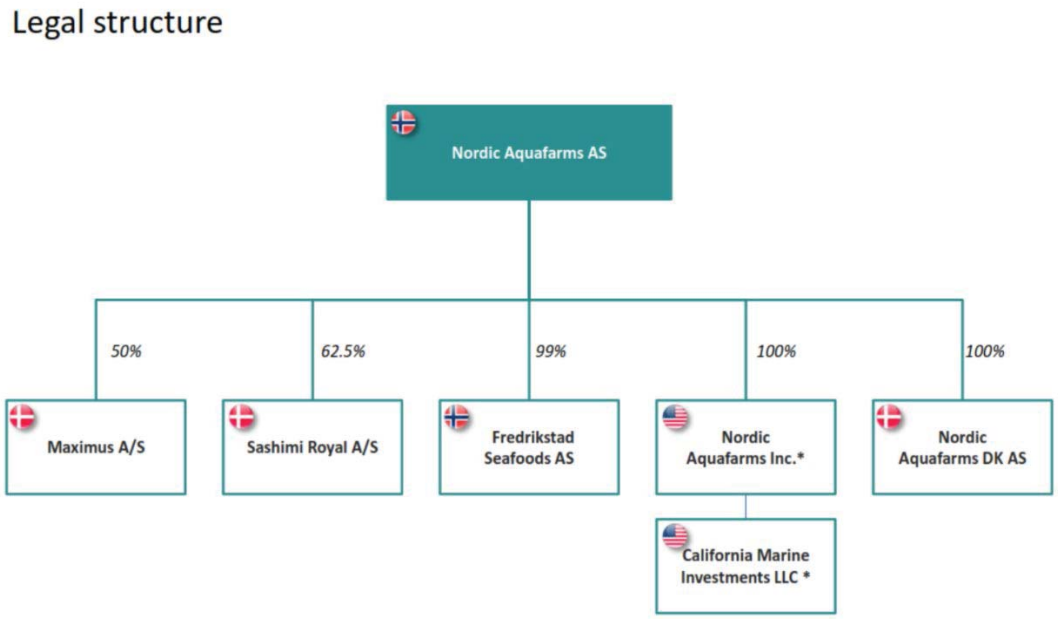
7. For TRI, please explain which stream is being referred to in Section 3.3 of the original lease agreement.

The stream referenced in Section 3.3 of the lease agreement is S8.

8. Financial – Explain the relationship between Nordic, Inc., Nordic DK, and Nordic AS.

Nordic Aquafarms, AS is a Norwegian private company formed in 2014 having organization number 814 603032 and location Gamle Fredrikstad, Norway. Currently there are 20 shareholders of the 25,270,758 shares outstanding, raising of NOK 520,111,916 (USD 63,661,189 fx USD/NOK 8,17) for the company. See shareholders discussion in **Appendix 3-A** of the SLODA application.

The U.S. entity, Nordic Aquafarms, Inc is a wholly owned subsidiary of Nordic Aquafarms, AS. Nordic Aquafarms DK AS, one of our Danish entities, is also a wholly owned subsidiary of Nordic Aquafarms, AS. Thus the U.S. and Danish entities are sister subsidiaries of the parent, Nordic Aquafarms, AS. See full organization structure below displaying the reporting relationships and percentage ownership.



Nordic Aquafarms AS, as parent company, is the head company, responsible for raising capital performing corporate functions, administration and governance over the entire ownership. Nordic Aquafarms DK AS employs our design engineers for the company who are predominantly engaged in the design and engineering effort for RAS technology that will be implemented in the Belfast (and California) project. While this Danish engineering team is providing the design, they will also participate in the equipment and infrastructure installation, process qualification and start-up of the RAS.

9. Financial – Provide estimated ranges of funding percentages from equity capital, debt, and cash flow from operations (i.e., 30% equity, 40% debt, and 30% cash flow). App 3A provides general descriptions of the three funding sources but estimate percentages from each of these categories would be useful.

The funding will be a mix of equity, debt and cashflow. Cashflow is included in this estimate as construction is planned over several phases, a portion of which will become operational during the life of the project and contribute in the later phases.

The Board of Nordic Aquafarms, AS resolved to permit, build and operate a U.S. based RAS operation. Everyday this financial commitment is demonstrated by employment and pursuing permitting in the U.S. The investors expect to provide a significant portion of the required capital. Prudently however, final funding is subject to final permits and resolution of any type of appeal. Additionally, several U.S. banks have approached Nordic Aquafarms, Inc. as well as continued financing interest in the Nordics.

At this time estimated split of sources of funding for the project is shown in the below matrix.

Estimated Funding by Source	Equity	Debt	CF	Total
Project Phase 1 Mix	70%	30%		
Project Phase 2 Mix		80%	20%	
Total Project Combined	40%	50%	10%	100%

For more discussion on timing of sources over the course of the project see **Financial Capacity 3.0** in the Site Law application.

10. Financial – The BDO Audit Report in App 3D notes that there are attached lists for 1) shares issued and 2) cash raised. Please submit a copy of those files.

The BDO audit shown in **Appendix 3-D** confirmed the share-count and funds raised. The schedule referred to by BDO appeared in **Appendix 3-A** and is shown below.

#	Shares issued	Cash raised	Time	Comment
1	150 000	3 672	nov.14	
2	187 425	183 525	dec.14	
3	59 875	58 629	dec.14	
4	170 375	0	dec.14	new equity from contributions in kind (shares in Fredrikstad Seafoods)
5	500 000	489 596	jan.15	
6	425 001	416 158	mar.15	
7	537 499	526 315	mai.15	
8	858 121	840 265	sep.15	
9	2 000 000	1 958 384	feb.16	
10	266 667	489 597	may.16	
11	335 052	795 595	aug.16	
12	5 154 640	12 239 904	dec.16	
13	4 128 866	9 804 162	jun.17	
14	416 667	1 223 991	jun.17	
15	2 000 000	6 119 951	dec.17	
16	4 739 295	16 242 382	may.18	
17	3 341 275	12 269 064	dec.18	
Total	**25 270 758**	**63 661 189**		

11. Technical Capability – Please submit the information for the selected construction manager.

Gilbane Building Co. has been retained to provide Construction Management services throughout the design and construction phases of the project. This will include procurement and management of all construction subcontracts for the upland site. Gilbane Building Company is a family-owned, global, comprehensive construction and facilities-related solutions firm. With 145 years of experience, and more than 45 offices worldwide, their 2,900+ multidisciplinary professionals are capable of executing multiple, geographically dispersed projects, performing over 500 concurrent projects – each adhering to Gilbane's commitment to safety and quality. Founded in 1873 and incorporated in 1908, Rhode Island based Gilbane Building

Company is a privately-held, family-owned corporation and a wholly-owned subsidiary of Gilbane, Inc. As a family operated company, the leadership and vision of the fourth and fifth generation of Gilbane family members has built the company into one of the world's leading construction management firms. Gilbane has recently been ranked #5 in the country for Manufacturing Building projects by Engineering News Record.

The office responsible for this project will be Gilbane's Northern New England district office which delivers a full range of preconstruction and construction services to institutional, public and commercial clients in Maine, New Hampshire, and Vermont. As one of the largest providers of construction services in Northern New England, they bring a depth of national experience blended with a local presence. Just as important are their long-standing, established relationships with subcontractors, suppliers, and local officials, allowing us to expedite construction services throughout the region. Other projects delivered by Gilbane in the region include 18 projects in Belfast for Bank of America, Concord Hospital East and North wing additions, New Hampshire Correctional Facility for Women (designed by SMRT, Inc), and several significant higher education projects.

The Gilbane team will be led by Project Executive Shawn Shelley. Shawn has over 29 years of experience in the construction industry and 6 years of experience in architecture. Having built more than $490M and 650,000 sq .ft. of manufacturing and process facilities, he is one of Gilbane's most experienced industrial process builders and has managed some of Gilbane's most technically complex projects. Shawn will be involved with this project from kick-off through final closeout and will participate in all critical design phase meetings, establishment of site logistics, and communication with stakeholders. He has experience with several large scale phased site preparation projects including mass excavation, soil erosion containment, and management of environmentally sensitive sites. Shawn also serves on the University of Maine Industrial Advisory Board for construction management students and is a past recipient of the U. Maine's Francis Crowe Society award.

In addition to Shawn's leadership, Gilbane will also be leveraging the experience of their regional Environmental Manager Mark Winslow. Mark directs Gilbane's environmental solutions division and brings nearly 30 years of in-depth experience to the team in industrial hygiene and environmental compliance. In his role, Mark provides environmental support for various Gilbane projects located within the New England area. This support consists of work scope development, bid scope review, peer review, estimating, exposure analysis protocols, regulatory compliance, and more. Mark will visit the site regularly and will be available for review of critical tasks such as SESC establishment, major storm event review, and other environmentally sensitive activities.

12. *Noise – Confirm that no Northport requirements apply to the project.*

As indicated in the Acentech Noise Impact Assessment provided as part of the Site Law application materials, noise levels will be at or below 35 dBA at the Belfast/Northport line. This noise level is expected to comply with Northport requirements for noise.

13. *Noise – Are there any permanent noise-producing features on the north side of Building 1?*

Most permanent noise producing features are located inside the buildings, and the building layout has been developed so that outdoor noise producing features (such as diesel generators) are located between Buildings 1 and 2 so that noise impacts are minimized. Some permanent noise producing features (building exhausts) are in roof top penthouses stepped greater than 90 feet inward from the northern edge of Building 1.

14. Noise – Please confirm that sounds from the WTP are included in the noise model results.

Yes, sounds from the WTP are included in the noise model results.

15. Visual – Provide drawings of all building elevations with colors and building materials identified. How do the buildings fit with the existing surroundings?

Building architectural elevation drawings are in **Attachment F**. The proposed development visually is largely self-contained within the site with the exception of selected views from U.S. Route 1/Northport Avenue southbound (approaching the site from Belfast) and Perkins Road looking south between existing residences. Please refer to the Visual Assessment report included with the Site Law application for detailed description and images.

16. Visual – How far out was the viewshed analysis conducted? out to 1 mile? Did it cover both NRPA and SLODA scenic requirements? More detail on surrounding areas is required.

The visual assessment (VA) was conducted to distance limits determined by field reconnaissance in conjunction with GIS and other mapping resources of the surrounding area to determine potential locations from which the proposed development could be viewed.

The following are approximate plan (not along ground) distances from photo point to closest building surface, as shown on **Attachment G**:

a. from Perkins Road to B1: 570 ft
b. from US1 (near church)
    - to B7: 1500 ft
    - To B2 1350 ft
c. from Belfast trails to B2: 350ft
d. from Northport trails: 1000 ft
e. from US1 to B8: 200 ft
f. from ocean
    - to B8: 1500 ft
    - to B2: 2300 ft

The VA was performed in accordance with Chapter 375 and Chapter 315 and intended to meet both SLODA and NRPA requirements. Note that APPENDIX A: MDEP VISUAL EVALUATION FIELD SURVEY CHECKLIST (Natural Resources Protection Act, 38 M.R.S.A. §§ 480 A - Z) submitted with the application was completed and establishes “Distances Between the Proposed Visibility Activity and Resource (in miles).

As submitted in the VA for the proposed development, two areas that could be considered public viewing areas within 2,000 feet were assessed and include the McLellan-Poor Preserve in Northport and the Little River Community Trail in Belfast. The report concludes that there would be no unreasonable adverse impact to these areas.

The proposed development is located in the southern portion of the City of Belfast. Approaching the site from the north along U.S. Route 1 / Northport Avenue one passes through an area given to mixed residential, institutional, light industrial, and commercial development. The existing development varies in size (residential to large light industrial), setback from the traveled way (40 feet for residences to 135 feet to the neighboring Little River Church to 280 feet to the light industrial building northeast of the site), contrast (scale and color), and spatial dominance. With respect to contrast and spatial dominance (as defined in Chapter 315) the area north of the site can then be characterized as being relatively open with low-density mixed development (structures). Approaching from the south, the development pattern is more residential with the occasional commercial structure and predominantly wooded.

As described in the VA report, the existing site is largely wooded with the exception of a portion in the northeast which has been logged and is somewhat open to view from southbound Rt. 1 over the prevailing mixed-use development broken by occasional breaks of trees, notably at or near the project property line, and similarly from Perkins Road between residential structures. As further described in the VA report, the bulk of the proposed development will be screened from view by established vegetation contained largely within land under local municipal control and that retained by the neighboring preserve. New plantings will reinforce this buffer in areas currently open to further the screen.

As demonstrated in the VA report's visual model simulations, the proposed development will not create an unreasonable adverse impact on the public viewing areas. Further, to the extent it will be viewable from existing traveled ways, it will not be incompatible with existing development in the area, will not be viewed as overly contrasting in scale, and will be subdominant to the surrounding landscape composition due to relatively low building height, topographic position, and surrounding existing vegetation.

17. Visual – Provide a lighting detail plan. Is the north side of Building 1 all downward lighting?

Please refer to the site electrical plans in **Attachment H** showing photometric information for proposed site lighting and the revised site electrical narrative. Lighting on both the north side of Building 1 and south side of Building 2 (the outer perimeter of the buildings with the most potential exposure) comprises full cut-off shielded luminaires. They are for security/emergency purposes, will be triggered by motion sensors, and therefore off most of the time.

18. Visual – It would be helpful on Figure 1 in plan view showed the locations and directions of the section profiles drawn in Figures 10 and 11.

Please see Figure 1a in **Attachment I**.

19. Visual – Are the photos A through D on Figure 1 January and leaf off conditions? Is the proposed building visible from Photo E?

Photos A through F were taken in October 2018. The intent of Figure 18, View at Trail to Target (safety green vest placed 100 feet from shoreline) is that the combination of vegetation density (intervening trunks/branches/foliage) and mix (evergreen/deciduous) with width of preserved vegetative buffer area (260 feet minimum plus additional landscape area) would obscure views to the proposed development. Refer also to the section/line of site views in Figures 10 and 11.

20. Visual – What are the views from the ocean? Can you see the buildings?

Please see Figure 19 Penobscot Bay View (Elevation 10' +/-) and Figure 20 Penobscot Bay View (Elevation 48' +/-) in **Attachment J**. These views are computer modeled simulations developed in similar fashion to those shown previously and demonstrate that the proposed development can't be seen until observer is approximately 48' above water.

21. Buffers – Provide the tree cutting plan for the bypass on LP101.

A revised plan LP101 is in **Attachment K**, which shows areas of tree removal and restoration.

22. Flooding – Are there additional impacts to Stream 9 from the additional flow due to stormwater? Specify why or why not.

Additional impacts to Stream 9 from the additional flow due to stormwater are not anticipated. The stormwater contributing to Stream 9 is being stored in subsurface tanks and discharged using an outlet control structure to maintain flows in the stream at or below existing conditions prior to discharge.

Please contact me with any questions or comments.

Sincerely,

RANSOM CONSULTING, INC.

Digitally signed by Elizabeth M. Ransom, P.G.
Date: 2019.08.15 14:05:28 -04'00'

Elizabeth M. Ransom, P.G.
Senior Project Manager

EMR:jar

ATTACHMENT A

Construction Details

Additional Information Regarding
Nordic Aquafarms Inc., Land-based Aquaculture Facility
Belfast, Maine
L-28319-26-A-N

Ransom Consulting, Inc.
Project 171.05027.008

Nordic Aquafarms
Seawater Access System – Construction Narrative (rev. 7-17-19)

Table of Contents:

1. **Seawater Access System Description**:
   The seawater access system functions to draw seawater into the pump station and to discharge treated water from the waste water treatment plant (WWTP), which are housed in a common building along with the water treatment plant (WTP). Seawater access piping includes 2 - 30" diameter intake pipes and 1- 36" diameter discharge outfall pipe. These pipes will be a very durable high density polyethylene (HDPE) with a 3" wall thickness, predominantly side by side in a common trench within the buried zone as well as the exposed portion upon the seafloor. This configuration will begin at the Nordic pump station/water treatment building at the former Belfast Water District property and be routed underground beneath US Route 1 and proceed through a local upland easement path to the shoreline and out through the intertidal and submerged water zones to the pipe end points. The two intake pipes will extend several thousand feet beyond the discharge pipe termination point. The intake ends will have support structures and screens and the discharge will have a diffuser end. This construction plan is based on the system as shown and detailed on the Woodard and Curran "Issued for Permit - Draft" drawings dated 05-02-19. Further planning and detailing of this plan will follow when the final design is complete.

   Construction will involve trench excavation and backfill, blasting of non-digable rock as encountered, excavation and backfill along the intertidal mudflats and submerged sea bottom, and placing pipes exposed and anchored along the seafloor. Techniques will be further explained in subsequent sections of this document.

2. **Construction Approach**:
   a. Schedule: The seawater access system will commence upon Agency permit issuance anticipated approximately late summer/early fall 2019 and be complete by April 2020. The upland construction zones including the Route 1 crossing will occur in warmer fall weather prior to the major holidays. The waterborne construction will occur in the November to April timeframe.

   b. Sequence: Further detailed subsurface exploration (borings) in both upland and tidal zones will be performed before final design and construction start to better understand the soils and rock. This information will be used for the final design and to determine the best/least impactful construction methods. Installation will begin with the upland underground piping, starting with the portion directly beneath Route 1. Then the pipes from Route 1 to the new pump station building to the west and the pipes from Route 1 to the east toward the seashore will follow simultaneously. Lastly, the intertidal (mudflats) and submerged piping will be constructed during the late fall and winter season.

   c. Environmental: For this seawater access portion of the project, Cianbro's Corporate Environmental Manager will oversee the construction to ensure full compliance with all environmental requirements. Construction crews will be staffed with qualified craftspeople to install and maintain the environmental BMP's; plus one team member will be dedicated to daily inspections and reporting of environmental conditions. The responsible erosion control personnel will check equipment and erosion control

measures continuously. In predicted weather events whereby excessive rain/snow is forecast, additional resources will be readied and crews lined up to monitor and respond according to the event.

3. **Route 1 Crossing (Station 2+00 to 2+70)**:
    a. Summary: The new pipes to be installed beneath Route 1 will be approximately 25' to 30' feet below the existing pavement and require a substantially large path, approximately 70' in length in an east west direction. Based on preliminary subsurface explorations, bedrock is present and rock removal will be necessary to achieve the proper pipe profiles. Landowner and neighborhood access, space constraints, size and depth of the jacking and receiving pits, and potential wetlands impacts highlight numerous concerns whereby directional boring and/or jack and bore are not well suited to this situation. Additionally, micro-tunneling was explored, which requires a 30' space between the pipes, high jacking forces in the bedrock and much space for this equipment-intensive operation and was thus ruled out. Therefore diverting traffic and performing an engineered deep excavation is viewed as the most predictable, stable and least impactful approach. The excavation will be limited to the route and length necessary to cross directly beneath Route 1 which eliminates the need for temporary jacking and receiving pits. A temporary traffic bypass will be designed and constructed as depicted on the attached map. This two-lane bypass will divert all traffic flow to the west of the current roadway onto the Applicant's property to allow installation of the buried pipes beneath Route 1. The crossing will be effective to stub the pipes beyond the Route 1 limits so that once Route 1 is re-established to its original configuration, the pipe installations can continue safely in either direction. The bypass will be a detour roadway construction with engineered lane widths, curvature radii and road base, pavement and markings. Once the pipes are installed, Route 1 will be restored in kind and this bypass removed to enable further pipe installation to the pump station.

    b. Construction: Prior to the bypass installation, environmental controls, dewatering, and stabilization of the nearby existing wetlands and topography will be engineered and installed. Ditches and sediment traps will be maintained and ground water from the excavation be pumped to sediment bags or settlement ponds. The new temporary road base will be fully installed, paved and marked prior to any deep excavation commencing. The bypass will include barriers and signage to slow and control the traffic flow plus intermittent construction crossing to handle import and export of materials incidental to the construction.

    Installation of the Route 1 crossing will begin with drilling and blasting of the deep rock followed by pavement removal and a temporary plunge/sediment pool within the pavement removal zone for any water to be pumped from the deep excavation. An initial cut will excavate the surface to bench down to a lower elevation. Then a stacked trench box or temporary sheet pile stabilized structure will be installed and maintained to provide for safe deep access. Deeper sump holes within the excavation will collect ground water for pumping into sediment bags or pools and pumping will remain continuous with perforated sump pits and well suited pumps for this application. Due to

the confined nature of this excavation, excessive storm events like rain or snow do not present much additional effort beyond adding a pump and sediment bags. This trench box/sheeting structure will extend down to stable bedrock and be tied back to soil anchors and/or temporary pilings in order to provide for the maximum clearance within the structure to place the large pipes. The excavated materials found to be suitable for future backfill will be stockpiled within the bypass area as much as possible to reduce exporting across traffic, but unsuitable materials will be removed from this tight site upon excavation. The blasted rock will be excavated and likely crushed in this zone for use as backfill for the new road base. The new HDPE pipes will be placed and bedded, then backfilled to subgrade whereby the Route 1 roadway will be reconstructed to MaineDOT standards and reopened to normal traffic.

4. **Route 1 to the New Pump Station Connection (Station 2+00 to 0+00)**:
    a. Summary: Once the temporary bypass lane is removed, the installation of approximately 200 feet of new piping from the westerly stub end at Route 1 to the new pump station building can commence (along with construction in an easterly direction through the local landowner easement described below). The pump station foundation will be in place at this time with pipes stubs through the foundation wall in which to connect. The 36-inch discharge pipe will be at a much higher elevation than the two 30-inch intake pipes throughout this zone and across Route 1. The three pipes gradually converge to a side-by-side configuration near the shoreline approximately 600 feet from the pump station. Once pipes are complete and backfilled, the surface area between Route 1 and the new pump station will be graded, restored and vegetated.

    b. Construction: This 200-foot zone will be an “open cut” excavation by benching down and sloping the sides back for a safe and workable site except closest to Route 1 and the new pump station which will both need trench boxes or sheeting for safety and to prevent undermining. Erosion and sediment controls to divert runoff to strategically placed settling ponds and temporary sediment bags will be used to pump water from the ponds and excavations. Clearing and grubbing will begin this zone and stockpiles at the site will be surrounded with cutoff ditches and stabilized with seed and mulch. Then line drilling and blasting of any non-digable rock will be followed by excavation. Stockpiling spoils adjacent to the trench will decrease construction interface with the traveling public, but unsuitable and unwanted material will be exported with dump trucks. During excavation, sumps will be maintained to collect groundwater that will be pumped to sediment bags and/or pools. Meanwhile, the three new HDPE pipes will be prefabricated to length nearby to expedite installation immediately upon a completed excavation. These tough pipes can be prebuilt full length in this zone and pulled into the hole for mating to the stub ends which will speed the construction and minimize the earthen disturbance. Once the deeper intake pipes are installed, the trench will be backfilled up to the discharge pipe elevation. The discharge pipe will then proceed in the same manner. Backfill will bury the pipes completely between Route 1 and the new pump station within the new water treatment building. Finally, the surface area will be graded and planted with final erosion controls as designed.

5. **Upland Easement – Eckrote Property (Station 2+70 to 5+00):**
    a. Summary: This upland zone of underground piping will extend approximately 230 feet from the easterly Route 1 new pipe stub ends to the shoreline at approximately the high tide line. The piping will leave the Route 1 crossing which is also located at the Eckrote (Landowner) driveway curb cut and will continue at a roughly 90-degree angle from Route 1 through an apparent existing old access road toward the shoreline. This access road is raised (”horseback”) and was likely constructed on a filled embankment long ago. It is bordered to the north and south by low wetland areas. We plan to remove the necessary trees and lower this horseback elevation several feet prior to beginning construction to decrease the current erosion of the existing steep banks during the construction period. Although the intake pipes at Route 1 are quite deep, the new piping only requires 5 feet of backfill cover. Therefore, the trench depth is significantly reduced near the shoreline at this lower elevation. Excavation through most of this zone will require trench boxes or sheeting in order to remain within the narrow 40-foot easement. This entire zone will require sheeting for the deeper westerly portion and trench boxes and/or sheeting for the shallower excavation toward the seashore. Additionally, a three-sided sheet pile cofferdam will be necessary at the existing stream/shoreline interface to cross that area with the least impact, continue the stream flow and to provide a dry space for mating the pipes that extends out to the bay. The Landowner easement provides for the Eckrotes to participate with the final restoration design and appearance within jurisdictional regulation.

Upland route looking east over the “horseback” roadway zone at the Eckrote property

b. Construction: This 230-foot zone will likely be done in two halves of approximately 115 feet each due to the need for some working space. Construction will begin closest to Route 1 and extend half the length to the shoreline enabling use of that remaining area to place materials. Some trees will be cleared to begin this zone and the old shed that sits on the edge of a slope will be removed as directed by the landowner. The erosion and sediment controls to divert runoff and handle water will installed to suit the next step which will need to be altered to suit the final excavated condition. Then the existing grade will be cut to a lower elevation followed by the application of stabilization fabric to cover the entire newly sloped surroundings that will be maintained for the entire construction duration until permanent seeding can be done the next growing season. Silt fence, ditching and sediment bags will be installed for this stage. Next, line drilling and blasting of any non-digable rock that exists will occur before any further excavation to utilize the existing soils as blast cover. Sheeting and tiebacks or stacked trench boxes will be installed and excavation will occur within this stabilized space. Stockpiling spoils adjacent to the trench is not practical so most excavated spoils will be trucked away, sorted and stockpiled for return and reuse later as backfill in this same trench. During excavation, sumps will be maintained to collect groundwater that will be pumped to sediment bags, as there is no space for sediment pools. A temporary power service will be installed to provide pump power and pumps will be monitored during

work shifts and off hours. Back up pumps will be on the site and ready for use if necessary. The HDPE pipes will be prefabricated nearby to the proper length and pulled in for mating to the stub end at Route 1. The easterly end of the trench and coffer/box structure will remain open for mating pipes in the next zone.

Once the first 115 feet of the pipes are installed and backfilled, the coffer/box structure will be jumped ahead for the next 115 feet to the shoreline that will repeat in the same manner. A three-sided coffer cell at the stream/high tide intersection will be installed to provide dry space for pipe mating below tide and allow the stream to remain flowing.

Once the pipes are installed and backfilled, the coffer structures will be removed and the surface area will be graded and planted with final designed erosion controls and as agreed with the landowner.

6. **Intertidal – Mudflats (Station 5+00 to 13+50):**
    a. Summary: Beyond the coffer cell described above lies the mudflat zone extending approximately 850 feet from the shoreline and mean high water line to the mean low water line. There are no docks, moorings or structures nearby and this flat is closed to clamming and shell fishing. Existing bathymetric survey information of the proposed intake/outfall pipeline route is the current basis for planning and executing this pipe installation. Rock outcroppings and boulders dot the area of this flat and fairly stable surface. The pipe trench will be less than 10 feet deep in this zone leaving the pipes buried in approximately 5 feet of cover. It is anticipated that bedrock is below the proposed trench requiring no blasting but if bedrock or large boulders are encountered, small concise and controlled blasting will occur. The construction will be timed to coincide with the low tide cycle during daytime hours for access and construction activities in this zone. Due to the flat and stable surface, it is envisioned that open-cut trenching and side casting the material is the quickest and least impactful method to install the pipes in this zone. The excavated trench is expected to be approximately 12 feet to 15 feet wide at the bottom with mildly sloped sides making the trench width at the top (mudflat level) approximately 30 feet wide. The trench will be over-excavated to allow for in-washing of material during several tide cycles while the pipes are being placed and backfilled. Pipe installation within the mudflat zone is expected to take 2 to 3 weeks to complete. All tidal and intertidal pipe will be installed utilizing a Float and Sink Method. The initial plan is to preassemble six lengths of pipe line at 1000 feet long and one at 400 feet long for the intertidal and offshore runs. Blank flanges will be installed at each end of the three pipes in a run. The outboard flanges of each run will have valves and air pressure monitoring to aid in submerging the pipe. The pipe section will be floated to the mudflat location during a high tide cycle, anchored and allowed to rest/float as the trench is constructed.

    b. Construction: The intake and discharge pipes will be prefabricated in appropriate lengths at another location, floated and towed to the site and temporarily moored alongside the trench route. The pipes will ride the tides and set on the mudflat during low tide for a short period while the trench is prepared. The alignment and location will be established with simple grade stakes and offsets. Several excavators will be staged at

the upland easement area and will crawl directly on the mudflats to dig the trench as tides allow. Temporary wood crane mats will be used to bridge over the stream outlet at the shoreline to maintain stream flow and provide for excavator passage. An excavator will begin at the shoreline following the outgoing tide and as the tide goes, additional excavators will crawl into place to dig the trench, primarily working in the dry. Excavators will be walked back out from the area as the tide cycle returns. Working simultaneously over several tides, the trench will take shape as far out as the low water line will permit. Multiple excavators will allow the trench to be constructed in sections simultaneously, reducing the overall work time within the mudflat. The excavated material will be side cast to the opposite side of the trench route from the staged pipes. The width of temporary impacts through this zone is estimated to be approximately 100 feet, including excavator travel, side cast, and pipe laydown. Floating silt boom will be used to contain the work area during tide cycles. Through the use of multiple excavators, it is envisioned to take only a few days for the trench to be ready for pipe installation. The pipe will be positioned into the trench on an outgoing tide and joined to the receding pipe at the 3-sided coffer at the shoreline. Then the pipes will be backfilled with the excavators shaping the trench surface to the original mudflat line. Then the excess soil, rocks and boulders will be removed and disposed of, leaving the mudflat in the same profile appearance as originally found. The most seaward pipe ends will protrude up out of the trench and float to enable attaching the next length of pipe which means the outward portion of the trench will be backfilled later once this piece is joined and submerged with the next piece of piping beyond. This will be located in the vicinity of the mean low water line to suit excavation with the tides in that the flat terrain provides little time at low tide to do much work. In the event ledge is encountered before the desired trench depth is achieved it will be profiled and submitted for evaluation. Ledge removal will be accomplished with a hoe ram or an excavator with a ripper tooth or a qualified blasting contractor with experience in underwater ledge removal.

7. **Submerged in Water and Buried in Trench (Station 13+50 to 36+00):**
    a. Summary: The excavation equipment in this area will be barge-mounted and will continue trenching and pipe installation in the same manner until the water becomes too deep. At that point, excavators will be replaced by a barge-mounted crane with a clamshell bucket. In these submerged zones the trench will be over-excavated to account for wash-in between tide cycles. The trench bottom will be approximately 8 feet to 10 feet deep and 16 feet wide with mildly sloped sides to suit the soils encountered. Approximately 30,000 cubic yards of material will be handled (side cast and replaced within the trench with some removed for disposal) to install the pipes in this zone. Turbidity curtain will be used surrounding the barge or immediate work area as appropriate to tides, currents and depth of water. The impact corridor width in this zone will be approximately 100 feet to accommodate dredging and placement of side cast material.

    b. Construction: For all remaining waterborne construction activities, Contractor will be in regular contact with the mariner community, local Harbor Master and the US Coast Guard. The trench and pipe alignment will be established and maintained with

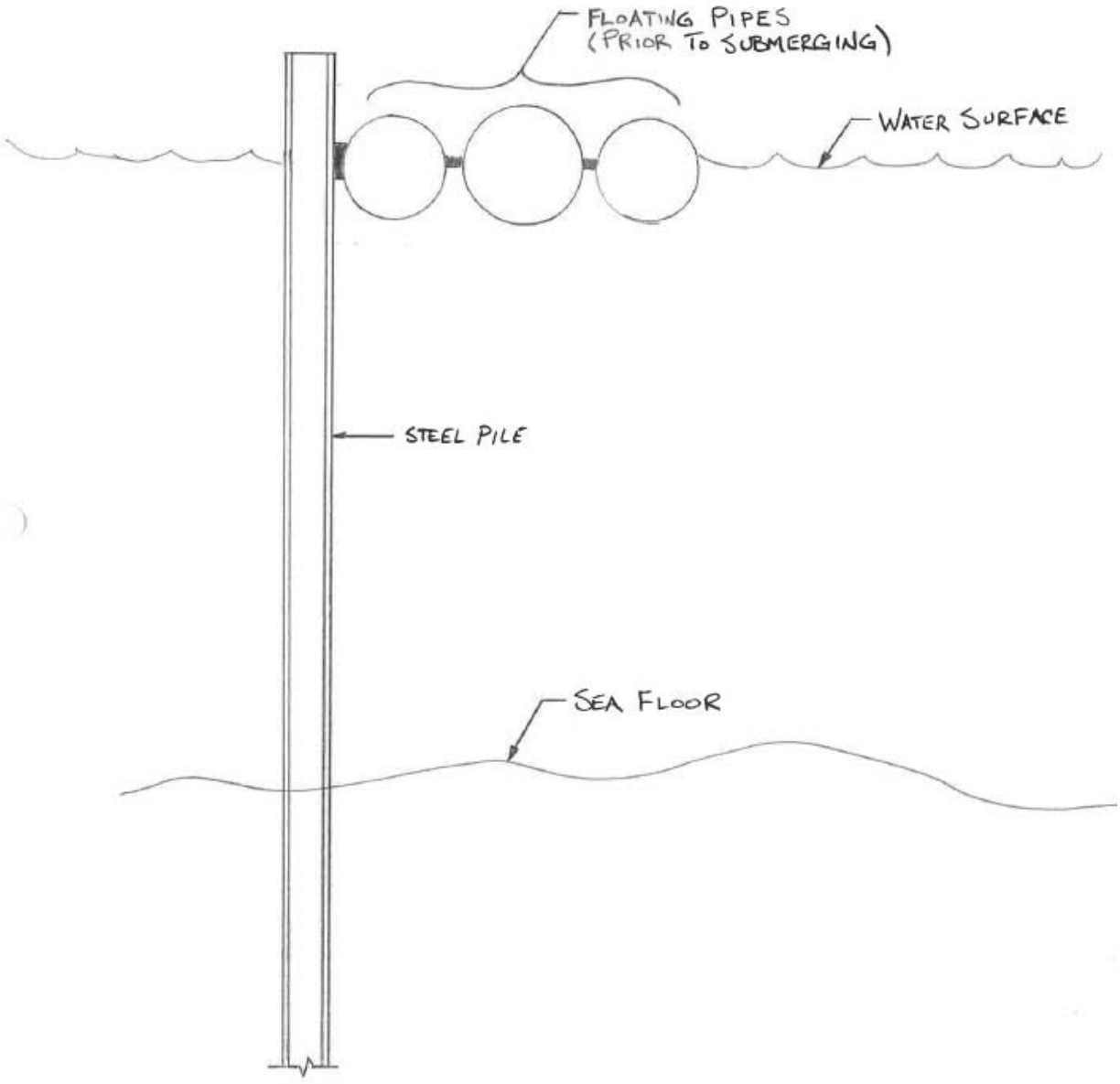
“Dredgepack” surveying alignment system, a software specifically designed for this type of construction. Temporary H-pilings will also be used for tethering the floating pipes that await installation and the floating siltation boom which will surround the excavation. These piles will be driven as necessary to facilitate the alignment of the pipeline. It is anticipated that individual piles will be driven at approximately 150-200 feet on center throughout the subtidal zone. This will result in approximately 30 to 40 total piles. Construction will be staged to facilitate 1500-2000 foot segments of pipeline at once. As the pipeline advances, previously installed piles will be pulled, jumped ahead, and re-driven in the next segment. A floating turbidity/siltation curtain will be placed appropriately to contain siltation from underwater excavation activity. The curtain will be of appropriate length to protect the work area and will be anchored against tidal flow. Preassembled pipes with the concrete ballast blocks will be floated in next to the barges and readied for installation when the trench is prepared. Excavators on barges will dig the trench and side cast the material in the same manner as stated above to approximately Station 26+00 at which time crane and clamshell will complete the remaining 1000 feet of trench. All the excavation barges will be equipped with mooring spuds to hold position in the currents, winds and tide flows. The HDPE pipes will be joined and sunk to the trench bottom by means of controlled flooding of the air filled floating pipes. The leading end will always “tail” up to the surface for future adjoining of subsequent lengths in the dry. Once the pipes are positioned in the trench, divers will verify proper alignment and installation criteria before backfilling. Backfill operations will be similar to the excavation operations. Excavators and/or cranes with clamshells will retrieve the side cast spoils and will backfill the material into the trench to cover the pipes. Divers will verify and provide video documentation that the backfill is adequate but not above the original seafloor profile. The seafloor will be restored to its approximate original elevation to avoid a visible berm or hump above the pipeline. Excess spoils will be loaded onto a barge by excavator or clam bucket. Once on the barge, the spoils will naturally drain water off the edges. Silt fabric will be utilized around the perimeter of the barge to contain and capture the fines while dewatering. The barges will then be transported to a pier or bulkhead where the spoils will be loaded onto sealed dump trucks by loader or excavator. If the spoils are too saturated to be handled, sawdust will be mixed in prior to loading onto the dump trucks. The dump trucks will then deliver the spoils to an approved upland disposal site.

CIANBRO

ENGINEERING BACKUP SHEET

Project NORDIC AQUAFARMS - BELFAST Date _____ Sheet _____ _____

Subject SEAWATER ACCESS - GUIDE PILES Job No. _____ Initials _____



CONCEPTUAL GUIDE PILE DETAIL
NOT TO SCALE

Conceptual Guide Pile

8. **Exposed upon Seafloor (Station 36+00 to 42+00 to 69+00):**
    a. Summary: In this final zone the three seawater access system pipes will be positioned directly on seafloor. The discharge pipe will veer off and terminate at approximately Station 42+00 while the two intake pipes will extend further to station 69+00. All work will be performed from floating spud barges, push boats and smaller watercraft. The impact corridor width in this zone will be equal to the width of the final pipeline configuration, including concrete ballast blocks and/or pipeline armament.

    b. Construction:
    The pipes once again will be preassembled in the concrete ballast blocks, floated to the site and tethered to temporary pilings and anchors as necessary. Floating silt booms will not be necessary in this zone. Divers will survey the piping route to identify obstacles or depressions that may affect the pipes from properly setting on the sea bottom. Those obstacles and depressions will be corrected and/ or removed and the pipes floated into place and submerged in a controlled "sink" by filling the pipes with water. Divers will again verify and video the final condition.

9. **Intake Structures and Discharge Diffusers**:
    a. Summary: The discharge pipe terminates with a diffuser and the intake pipes each have a support structure and screen, as depicted on the plans.

    b. Construction: Spud barges will be positioned on location and divers will survey the existing bottom so obstacles can be removed and the seafloor can be prepared to accept the final portions of piping. The discharge diffusers will be mated to the discharge pipe and will be sunk with the last leg of pipe. The intake structures will be crane-set and divers will likely install a final insert pipe to join the pipe ends to the intake structure piping. Divers will survey and video the final configuration of these end points.

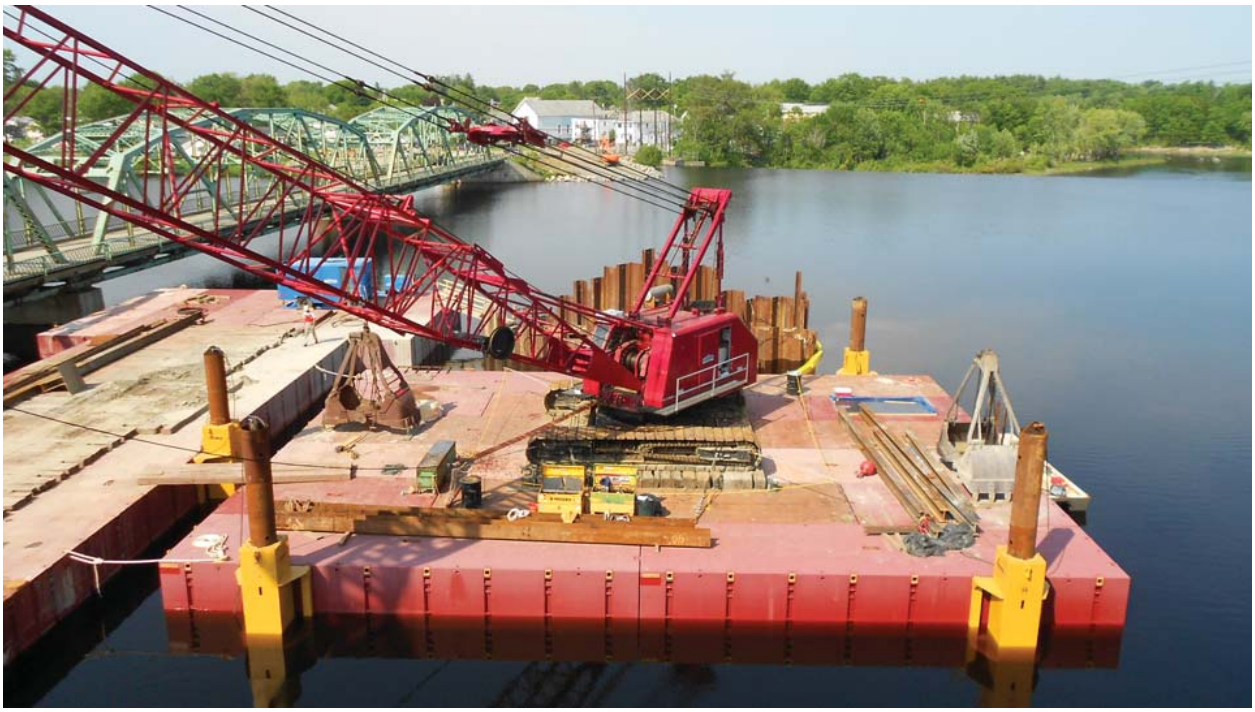
10. **Attachments**:
    a. Route 1 Bypass: A plan view map depicts the approximate size and location of the temporary bypass to accommodate traffic during installation of piping beneath Route 1.

    b. Progress Plans: Plans by Woodard and Curran "Issued for Permit - Draft" drawings dated 05-02-19 are based on engineering to suit the intake and discharge needs specific to this project. This plan set includes the piping route with stationing, dimensions, details and sections of the pipe configuration zones as well as erosion and sediment controls with dewatering considerations. The pipe diameters shown are preliminary, but will not increase in size. These drawings will be used in coordination with plans detailing the Water Treatment Building which will house the pump station to which these pipes will connect.

c. Schedule: The attached simple timeline depicts the anticipated sequence and timeframes for each leg of the seawater access system. The waterborne activities are planned to be within the winter season as typically permitted.

Example of a narrow sheet pile structure with struts to suit this type of work.

Example of a shoreline coffer cell and excavator on the mudflats.


Example of a spud barge with crane, clamshell suited for this work.