

APPENDIX C

Stormwater BMP inspection and maintenance

Nordic Aquafarms Stormwater Post Construction Stormwater Inspection and Maintenance Plan

Note: This plan addresses Post Construction Inspection and Maintenance only. Inspection and Maintenance during construction can be found in Section 14 with the Sedimentation and Erosion Control Plan

List of Appendices:

Appendix A: Inspection and Maintenance Ability to Serve

Appendix B: Post Construction Stormwater BMP Inspection and Maintenance Log

Introduction:

This Post Construction Stormwater Inspection and Maintenance Plan outlines the anticipated inspection and maintenance procedures for the stormwater management devices proposed for the project. These procedures should be followed to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment. These procedures are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail, refer to the most recent edition of the “Maine Stormwater Best Practices Manual (BMPs)” as published by the Maine Department of Environmental Protection (MEDEP)

Inspection and Maintenance Contract:

After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures shall be maintained in good operating condition. A person with knowledge of stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided under a five-year binding inspection and maintenance contract that must be renewed prior to contract expiration. A legal agreement shall be established with responsibility for inspection and maintenance and should list specific maintenance responsibilities (including timetables) as well as provide for funding for the long-term inspection

Nordic Aqua Farms

and maintenance. Appendix A contains an ability to perform these services by Northeast Stormwater Services. As the project moves forward it is anticipated a contract for these services will be provided.

Stormwater Management Devices:

During the first year of operation, filtration BMPs shall be inspected twice annually and following major storm events. Thereafter, the filter should be inspected every six months to ensure that it is draining within 48 hours following a 1-inch storm. Additionally, a storm that fills the system to overflow should be monitored to confirm in drains in no less than 36 hours and within 60 hours.

A. SUBSURFACE SAND FILTERS:

Inspect semi-annually in the spring and fall and following major storm events.

Maintenance criteria for the subsurface sand filter are as follows:

- Pre-treatment Device: Cleaning of the pretreatment device should be performed as identified by the entity holding the maintenance contractual agreement.
- Drainage: The filter should be draining within 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or may need to be modified if already present.
- Sediment Removal: The pretreatment structure must be cleaned when necessary.

B. MANMADE PERVIOUS SURFACES:

Inspect bi-monthly during the first six months following construction, then inspect annually. Inspections should be made after significant storm events to check for surface ponding that could indicate failure due to clogging. Non-routine maintenance may require reconstruction of the surface treatment, and possibly the filter and reservoir layers, to relieve major clogging.

Maintenance criteria for manmade pervious surfaces are as follows:

- Debris and sediment buildup shall be removed from the paver system using a vac truck as needed and shall be disposed properly.
- Remove sediment when the surface infiltration rates of more than 75% of the surface area fall below 10% of the post-installation verified surface infiltration rate.

- Remove sediment when surface ponding remains for more than 24 hours after the storm event in an area larger than 10 square feet.
- Restrain vehicles with muddy wheels from accessing pervious pavement areas.
- Limit salt use for deicing and do not use sand.
- Remove leaves and organic debris in the fall.
- Sweep, vacuum and/or pressure wash pavement twice annually at a minimum.

C. GRASSED UNDERDRAINED SOIL FILTERS:

Inspect semi-annually in the spring and fall and following major storm events.

Maintenance criteria for the grassed underdrained soil filter are as follows:

- Any bare areas or erosion rills shall be repaired with new media filter or sandy loam then seeded and mulched.
- Drainage: The filter should drain within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the undrain outlet or may need to be modified if already present.
- Sediment Removal: Debris and sediment buildup shall be removed from the grassed underdrain soil filter forebay and basin as needed. The removed sediments should be disposed in an appropriate manner.
- Mowing: If mowing is desired only hand-held string trimmers or push-mowers are allowed on the filter (no tractors) and the grass bed should be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches.
- Fertilization: Fertilization of the filter area should be avoided unless absolutely necessary to establish vegetation.
- Harvesting and Weeding: Harvesting and pruning of excessive growth should be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch only as necessary.
- Grass Cover: Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be tilled to reestablish the soil's filtration capacity.
- Should water pond on the surface of the filter bed for longer than 72 hours, the top several inches of the filter shall be replaced with fresh material. The removed material shall be disposed properly.

D. GREEN ROOFS:

Inspection and Maintenance of the vegetated roof system shall be in accordance with the manufacturer's recommended practices to provide the performance required by the design. The system should be inspected semi-annually and following major storm events.

Vegetation should be replaced if found to be unhealthy, dying and with soil showing through.

E. R-TANK STORMWATER DETENTION:

Inspection and Maintenance of the R-Tank shall be in accordance with the manufacturer's recommended practices to provide the performance required by the design. The R-Tank system includes inspection ports and maintenance ports, each of which has a cover at the surface. A visual inspection of all ports should be used to determine the depth of sediments deposited in the R-Tank system. The system should be back-flushed once the sediment accumulation has reached the manufacturer's limits. Once removed, sediment-laden water must be disposed of properly.

Re-Certification:

Long-term inspection and maintenance by a DEP approved stormwater maintenance inspector shall be regularly provided under a five-year binding inspection and maintenance contract that must be renewed prior to contract expiration. Submit a certification of the following to the MEDEP within three months of the expiration of each five-year interval from the date of issuance of the permit. The form is provided in Appendix B.

- Identification and repair of erosion problems. Certification that all areas of the development have been inspected for erosion, and appropriate steps have been taken to permanently stabilize these areas.
- Identification and repair of stormwater control system. Certification that all aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the failing systems.
- Maintenance. Certification that the erosion control and stormwater maintenance plan for the site is being implemented as written, and a maintenance log has been created and is being maintained.

APPENDIX A

Inspection and Maintenance Ability to Serve

Ransom Consulting, Inc.
Project 171.05027

March 6, 2019



Mr John Hessler
Project Engineer
Nordic Aquafarms

Project: Nordic Aquafarms Development, Belfast Maine
Subject: Long Term SWM System Inspection and Maintenance Services – Capacity to Serve

Mr Hessler,

Northeast Stormwater Services (NESS) is pleased to provide this “capacity to serve” letter to perform biannual inspections, associated reporting, and required maintenance for the stormwater management system proposed at the multiphase Nordic Aquafarms project in Belfast, Maine. NESS serves several commercial landowners in Maine with professional inspection of stormwater systems. The NESS team is well versed in all stormwater management “best management practices” from wetponds and bioretention to proprietary treatment devices and subsurface stormwater detention systems and looks forward to serving you at this site. NESS staff are approved SWM BMP inspectors by MeDEP.

Site Overview and Understanding

In accordance with the Maine Department of Environmental Protection (MEDEP) permit requirements, every 5 years, the property owner is required to submit certification that the stormwater management system has been inspected and maintained per the approved Operations and Maintenance Manual submitted as part of the permit application. A draft contract is typically required as part of the permit application for proposed projects.

This letter is being provided to confirm NESS has capacity to provide Nordic Aquafarms with this service on this project. As the detailed design develops for the proposed stormwater BMPs a formal contract with the associated fees will be prepared to meet this ongoing compliance requirement.

It is the understanding of NESS, based on concept level plans that the proposed stormwater management system will comprise of the following types of BMPS:

- A series of subsurface sand filters with modular storage above (either Arch Chambers or Modular Box storage)
- A series of “biocells”/bioretention areas
- A series of underdrained soil filters
- A series of manmade permeable surface BMPs consisting of modular, removeable, replacement permeable paver blocks with sand filters beneath.
- A Green roof
- Stabilized stormdrain surface discharge points and spreaders.
- Various catch basins, manholes, and outlet control structures
- Storm Drain piping network
- Other miscellaneous stormwater management features.

Inspection Recommendations

In order to meet the certification requirements, NESS recommends biannual inspections of all components of the stormwater system. Usually early spring (May) and late fall (Oct) are ideal times to inspect the site.

Note: NESS will provide the inspection, reporting and assist you with the completion of the recertification forms. When deficiencies are identified in the system, with the permission of Nordic Aquafarms, NESS and their subcontractors will conduct the maintenance work as recommended in the inspection reports.

Deliverables

Following each site inspection, NESS will prepare a detailed professional inspection report complete with maintenance recommendations and representative photos. All documents will be provided in electronic copy only (PDF format). Hard copies are available upon request.

These reports can be included with the 5yr recertification documentation.

Fee

The annual fee for the inspection and reporting service will be established once the permit level plans are prepared with details for each system. We understand this is a project that will be built over a number of years in several phases and can match our proposal to that build out. The cost associated with required maintenance activities identified during inspections will be negotiated between NESS and Nordic Aquafarms prior to commencement of work.

Closure

Thank you for the opportunity to provide this proposal for stormwater inspection and maintenance services. NESS looks forward to partnering with you on this.

Sincerely,



Robert J Woodman,
Senior Stormwater Engineer/Certified SWM Inspector
Northeast Stormwater Services

cc Rick Fotino, Northeast Stormwater Services

Signed and Approved:

Nordic Aquafarms

APPENDIX B

Stormwater BMP Inspection and Maintenance Log

STORMWATER INSPECTION AND MAINTENANCE LOG

Nordic Aquafarms, Belfast, ME

Inspector: _____

Date: _____

Maintenance Personnel: _____

SITE AREA	Inspection		Maintenance	
	Date	Comments	Date	Corrective Action

Sediment/Debris Disposal

Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal

FIVE-YEAR RECERTIFICATION FOR LONG-TERM MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

For Site Location & Stormwater Projects

This form complies with the condition that requires reporting every 5 years on the long-term maintenance of stormwater management structures of projects permitted under the Stormwater Management Law since 2005. Complete the following sections, include appropriate photos if available, and use additional paper if needed. A copy of the report if the inspection was performed by a professional experienced in BMP maintenance should be included. This form is available on the Maine DEP website at: <http://www.maine.gov/dep/ODQG/stormwater/stormwaterbmeps/>

Please type or print in black ink only			
Owner/Licensee or Homeowners Association Representative:		Inspector/operator or preparer of report:	
Company:		Company:	
Mailing Address:		Mailing Address:	
Daytime Phone #:		Daytime Phone #:	

LOCATION OF DEVELOPMENT	
Name of Project:	
Address and Town:	
DEP Permit Number:	

PROJECT SPECIFICS	
If the project is unfinished, please describe its current status and your plans for the future of the development. Filing this report to the Department of on-site long-term maintenance activities is still required.	
If the project is within a MPDES Regulated Town and a maintenance report has been prepared for this project, please attach the existing report.	
If the project is a subdivision with a Homeowner's association, identify the responsible party.	
Confirm that the required recording of deed restrictions for the protection of buffers or conservation land has been done and that the buffers are being maintained in accordance with the restrictions.	
Identify the contractor for the renewed 5-year maintenance contract for the inspection, cleaning and maintenance of manufactured proprietary structures.	
Is a maintenance log available for review?	

LONG-TERM MAINTENANCE (please comment on the following):

All areas of the development have been inspected for erosion, and appropriate steps have been taken to permanently stabilize these areas.

All stormwater control structures have been inspected for damage, wear, malfunction, and appropriate steps have been taken to repair or replace the failing systems

The erosion control and stormwater maintenance plan for the site is being implemented as written, and a maintenance log has been created and is being maintained.

CERTIFICATIONS/SIGNATURES

By signing below, the owner (or authorized agent) certifies that all stormwater management structures at the project described above are stable and operational as designed.

Signed: _____ Title _____ Date: _____

This completed form and all supporting documents summarized above shall be sent to the following address. An emailed report is appropriate and should be sent to kerem.gungor@maine.gov

Kerem Gungor,
Bureau of Land and Water Quality
17 State House Station
Augusta, ME 04333
Tel: (207) 446-3915