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MassDOT Certified

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June 13, 2022

Joan Makin, Chair
Martha's Vineyard Commission
The Stone Building
PO Box 1447
Oak Bluffs, Massachusetts 02557

RE: Stormwater Peer Review (DRI-81-M3)
69 Beach Road
Tisbury, Massachusetts

Dear Chair Makin and Commissioners:

Green Seal Environmental, LLC (GSE) is pleased to provide the Martha's Vineyard (MV) Commission the following peer review of stormwater related application materials as part of DRI-81-M3. The Applicant, Vineyard Wind, intends to construct a new 11,108 sf operation and maintenance facility (the "Project") to support its offshore wind turbine endeavor.

GSE's utilized the following Project documents in our review of the stormwater design:

- Existing Conditions Site Plan, dated February 11, 2022 and revised through May 16, 2022, prepared by Sourati Engineering Group, LLC.
- Existing Impervious Areas Sketch Plan, dated February 11, 2022 and revised through May 16, 2022, prepared by Sourati Engineering Group, LLC.
- Proposed Site Plan, dated February 11, 2022 and revised through May 16, 2022, prepared by Sourati Engineering Group, LLC.
- Proposed Impervious Areas Sketch Plan, dated February 11, 2022 and revised through May 16, 2022, prepared by Sourati Engineering Group, LLC.
- Proposed Drainage Plan, dated June March 29, 2022, prepared by Field Engineering Co, Inc.
- Stormwater Management System Report dated March 3, 2022, and updated May 16, 2022 prepared by Field Engineering Co, Inc.
- Letter on Groundwater Elevations dated March 11, 2022 by Sourati Engineering Group, LLC.
- Base Flood Elevation letter dated March 24, 2022 by FOTH Infrastructure & Environment, LLC.
- Elevations Sketch, not dated by Vineyard Wind

BACKGROUND

The Applicant is proposing to redevelop a portion of an approximately 1.8-acre parcel known as 61 Beach Road in Tisbury. The 1.8-acre parcel has been subdivided creating lots 9B 18 61 and the subject lot, 9B 18.1. Lot 9B 18.1 contains approximately 28,104 sf and has been assigned an address of 69 Beach Road.

The Applicant intends on construction a pile-mounted raised structure on the subject parcel. The Project will consist of removing existing pavements and structures and construction of a new maintenance and operation building with a 11,108-sf footprint. The Project includes a parking area under the building and municipal utility connections. The work will generally raise the grade approximately 3-feet. The building will have a driveway and loading dock on the east side and will required a retaining wall as the elevation will increase by around 6-feet in this area.

The parcel falls in a Federal Emergency Management Agency (FEMA) flood velocity zone (VE) as shown on National Flood Insurance Program (NFIP) panel 250007C0103J and has a defined flood elevation of 12.00 (NAVD88). The project is approximately 380-ft from Lagoon Pond and 250-ft Vineyard Haven Harbor.

The Project will reduce the amount of impervious area from 85% to 48%. New Impervious area will be roof area. MassDEP Stormwater Policy classifies this work as a redevelopment project.

The Applicant proposes to infiltrate the roof runoff in a subsurface infiltration structure consisting of a number of Cultec Contactors 100 HD units. The infiltration system is proposed under the gravel driveway.

COMMENTS

GSE reviewed the project in terms of MV Commission Policy, MassDEP Stormwater Standards as well as Town of Tisbury regulations and offers the following comments:

I. MV COMMISSION WATER QUALITY MANAGEMENT POLICY

GSE has assessed the application materials in regards to the Commission’s Policy v.18 dated 3/19/18 and offers the following:

1.0 Policy Description and Objectives-

Section 1.4. Goals and Approach states “The goal is achieved by calculating a Project’s nitrogen load and providing guidance towards ensuring the Project will not exceed load limits...”

The Project is located near Lagoon Pond and although the reduction of impervious area proposed by the Applicant reduces stormwater impacts in general and intuitively should reduce nitrogen loads, the reviewer cannot comment without the calculations being provided. On some sites the replacement of paving with other surfaces (landscaping generally) can increase nitrogen loading.

Section 1.6. Strategies indicated using landscaping techniques to maximize natural nitrogen absorption and fertilizer practices that minimize the use of nitrogen.
The Applicant has provided a robust planting plan. We believe replacing impervious surfaces with vegetation as shown complies with this strategy See above comment on calculations.

2. Coastal Ponds: Existing Conditions, Data and Standards-
Informational only

3. Water Quality Management Nitrogen-

Project is proposed to be connected to a municipal sewer and this standard does not apply.

4. Nitrogen Calculations and Mitigation Design-
Calculations not provided.

5. Performance Standards: Fresh Surface Waters and Groundwater
Not applicable.

6. General Requirements and Documentation-

Section 6.2. Stormwater Best Management Practices:

- Stormwater must be dispersed into natural vegetation and/or infiltration systems....

From the design submitted, stormwater is being dispersed into infiltration systems consistent with this requirement.

Section 6.3. Landscaping Practices:

- Landscaped areas limited to maximum 10% or 4000 sf of the property area
From Appendix D Plan C.4, the previous area is: 14,599 sf / 28,274 sf or 51%. The Commission may wish to discuss if this should apply to a redevelopment project.
- Only slow release, water-insoluble nitrogen source fertilizers may be used.
The Long-Term Pollution Prevention Plan in Appendix B should be revised to mandate only slow release, water-insoluble fertilizer.
- Impervious Areas limited to a maximum 25% of the site area.
The impervious area ratio from Appendix D plan C.4 is 13,675 sf / 28,274 sf or 48%. The Commission may wish to discuss if this should apply to a redevelopment project.
- Landscaped areas must use native or low maintenance, drought tolerant species that are non-invasive to minimize the applications of nitrogen, pesticides, and water to landscapes.

Clethra anifolia 'Summer sweet' prefer wet environments and may not be appropriate.

Carpinus betulus 'Fastigiata' (European Hornbeam) grow to over 40' and 20' wide and prefers moderately wet soil environments and may not be appropriate.

The Applicant may wish to visit <http://plantfinder.pollyhillarboretum.org/> for information on plant species to determine if they meet Policy

objectives.

7. Definitions: -

Informational only

Appendix 1 – Watersheds Map – Informational Only

Appendix 2 – Monetary Mitigation Calculation – Not Proposed

Appendix 3 – Nitrogen Output by Wastewater Treatment System Type – Informational Only

Appendix 4 – Total Nitrogen Calculation for Residential and Non-Residential DRI Projects – Informational Only

Appendix 5 – Observational Pond Data – Informational Only

Appendix 6 – Standard Agronomic Fertilization Rates – Informational Only

Appendix 7 – Links to MEP Reports – Informational Only

II. MASSACHUSETTS WETLAND PROTECTION ACT – STORMWATER POLICY STANDARDS

GSE has reviewed the provided application materials to determine compliance with the MassDEP’s Stormwater Policy’s standards:

1. Standard 1: No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The project, as shown on the referenced plans does not discharge into a wetland and therefore meets this standard.

2. Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The project reduces the amount of impervious area and infiltrates all the roof run-off and therefore will reduce the amount and volume of run-off. Therefore it meets this standard.

3. Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The proposed design allows for recharge via a proposed subsurface infiltration system. The design adheres to the State's requirements for infiltration volumes and drawdown time.

Infiltration calculations employed the Policy's Static method using a Rawl's rates using 8.31 in/hr for sands. The reviewer could not locate any soil logs and it is unclear how the Applicant determined the soil stratum. According to NRCS, the soils are listed as Urban, (Map Unit 602). This Map Unit is assigned to areas with more than 85% impervious cover and makes no determination of the underlying soil matrix. Anticipating that information supporting the stated Rawl's rate is provided, the design meets this standard.

4. Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:
 - a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;
 - b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and
 - c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Most of the project's impervious surfaces are related to the roof. The Standards consider roof run-off to have little to no TSS and is typically infiltrated directly. Run-off from the remaining gravel and grass surface is considered de-minimis. The project meets this standard.

5. Standard 5: For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook.

This Project does not qualify as a LUHPPL and this standard is not applicable.

6. Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical

area, require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas, as provided in the Massachusetts Stormwater Handbook.

This Standard is not applicable to this project as there does not appear to be any public water supply or other critical area in the vicinity of the project based upon review of MassGIS data.

7. Standard 7: A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The proposed project does qualify as a redevelopment. It complies with all standards and improves existing conditions.

8. Standard 8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

According to the documents submitted, there are appropriate construction period erosion and sedimentation controls in the form of wattles and siltation fencing to meet requirements of Standard 8. The project therefore meets this standard.

9. Standard 9: A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

An Operations and Maintenance (O&M) Plan and Long-term Pollution Prevention Plan (LTPPP) has been included with the application in accordance with Standard 9.

10. Standard 10: All illicit discharges to the stormwater management system are prohibited

The Applicant provided an illicit connection statement with the application in accordance with Standard 10.

III. TISBURY WETLAND REGULATIONS

Section 2.1 of the Regulations prohibits the application of inorganic fertilizers, pesticides,

fungicides or other quick release chemicals is prohibited within land subject to coastal storm flowage and within 100 feet of the 100 year flood.

The long-term O&M plan should be revised to prohibit inorganic fertilizers as required by Section 2.1 of the regulations.

IV. TISBRY ZONING

The Project is situated in the Town's Waterfront/Commercial District with floodplain and Special Sanitary Overlay Districts.

The project appears to be permissible by right under Section 6.04.07 or 08 as support of marine construction and/or a marine terminal. Please note the reviewer's comments are only a layman's interpretation and not a legal opinion. Final uses decisions and zoning interpretations shall be made by Tisbury's Zoning Enforcement Officer.

The Special Sanitary Overlay District appears to refer to on-site sewage disposal systems. The Project will be connected to an Approved Sewer District.

IV. TISBURY BOARD OF HEALTH REGULATIONS

The Project is situated in the Board of Health's Lagoon Pond Watershed Nitrogen Overlay District.

This regulation is geared towards on-site septic systems. Application materials indicate the Project will be connected to an Approved Sewer District and this regulation does not apply (Section 5.4).

V. FEMA Velocity Zone construction Implications

GSE reviewed the proposed construction relative to FEMA's Free-of-Obstruction Requirements detailed in NFIP Technical Bulletin 5 dated March 2020 and offer the following:

The technical bulletin states:

"The NFIP requires the area beneath elevated structures in Zone V to remain free of any obstructions that would prevent the free flow of coastal floodwater and waves during a base flood event. An area beneath a structure elevated on an open foundation is considered to be free of obstructions if flood flow and waves can pass through the area without significant flow diversion, wave reflection, or wave runup."

and continues,

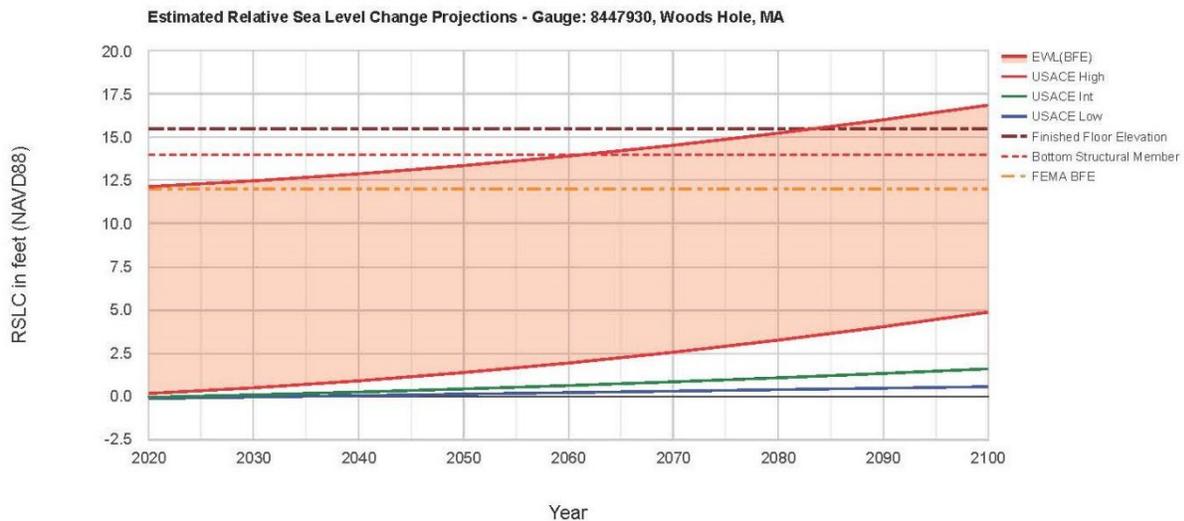
"It is not always clear whether a particular building element or a site development practice would create a significant obstruction that would prevent the free passage of floodwater and waves. "Significant" is used because any construction element or site development practice below the flood level would cause a localized disruption of flow

and waves during the base flood. Determining whether the disruption would be significant is not always easy because in most cases, there are no analytical or readily usable numerical tools to answer the question with certainty.”

GSE recognizes the Commission concerns with potential wave deflection from the proposed retaining wall along the southeast side of the parcel and the effects it may have on the structures in Tisbury Market Place. As described above determining the significance is not an exact science. It is our opinion that the retaining wall would not represent a significant obstruction as the proposed project is landward of Tisbury Market Place and most wave action would be intercepted by the Tisbury Market Place structures prior to encountering the wall.

As stated above, the defined base flood elevation (BFE) for this location is 12.00 (NAVD88). The Applicant is proposing the lowest floor structural member at elevation 14.00 (BFE + 2-ft) in compliance with current Mass State Building Code Regulations.

Utilizing Army Corps of Engineering on-line sea rise models, we evaluated the Project from a coastal resiliency point-of-view at the target years 2050 and 2070. The graph below indicates that a year the BFE will reach the bottom structural member in year 2054 and the finished floor in year 2078. Climate change models predict sea rise and subsequent base flood elevation rise may impact the proposed building structure in or about year 2054. The Army Corps model does not account for periodical storm surge which may intensify potential flood damage sooner than the 2054 date.



Summary of Comments/Recommendations

GSE is in general agreement with the design approach. It appears the stormwater system satisfies Stormwater Policy as well as local regulations with exception of lot coverage issues. The reviewed Drainage Report is silent on the Commission's Water Quality Management Policy. This topic may have been discussed with the Commission during the Land Use Planning Commission process and our comments may be redundant.

The Applicant has proposed the building floor 2-ft above of the existing BFE which is compliant with existing building code requirements.

Please do not hesitate to contact the undersigned at 508-888-6034 if you have any questions or require additional information.

Sincerely,

GREEN SEAL ENVIRONMENTAL, LLC

A handwritten signature in black ink, appearing to read 'SAC', written in a cursive style.

Stuart Clark, P.E.
VP of Engineering Services