

March 19, 2024

Bourne Planning Board
Bourne Town Hall
24 Perry Avenue
Buzzards Bay, MA 02532

Attn: Ms. Jennifer Copeland, Town Planner
Ms. Julia Gillis, Assistant Town Planner
jgillis@townofbourne.com
508-759-0600 ext. 1357

**RE: Stormwater Management Peer Review
Multi-Unit Residential Development
Lot 61, Wildwood Lane
Bourne, Massachusetts**

Dear Ms. Copeland and Board Members:

As requested, Merrill Engineers and Land Surveyors has completed our reviewed of the Lot 61 Site Development Plans and Stormwater Drainage Report calculations for consistency with the Bourne Stormwater Bylaw and the Massachusetts DEP Stormwater Management Standards. We have also reviewed the proposed site plan against good engineering practice. This report is based on our review of the submitted documents listed below and a site visit on March 7, 2024.

- **Proposed Site Plans, 61 Wildwood Lane, Bourne, MA, dated June 13, 2022 with revised date July 26, 2022, prepared by Existing Grade, Inc. (Plans 1-12)**
- **Stormwater Drainage Report for Wildwood Lane – Lot 61, Bourne, MA, dated January 3, 2024, prepared by Existing Grade, Inc.**
- **OPT Peer Review Comments, dated January 11, 2024, prepared by Civil & Environmental Consultants, Inc.**
- **Supporting documents:**
 - 11/9/22 Existing Grade Inc. Drainage Report
 - 9/13/23 Existing Grade Inc. Infiltration Basin Report
 - 10/20/23 OPT Peer Review of Wildwood Drainage Report
 - 12/8/23 OPT Peer Review of Wildwood Drainage Report

We offer the following comments on the site development's stormwater management design.

Stormwater Management Design Calculations indicate that the overall stormwater management system will attenuate the post development stormwater flows to a level not exceeding the existing conditions.

We offer the following comments regarding the drainage design and analysis:

- Soil testing on the site indicates consistent sand and gravel material within the Lot. No indications of groundwater were observed.
- The existing conditions within the Drainage model should be evaluated as pre-development conditions which would be a wooded lot. The model currently has a majority of the site as newly graded with a CN value of 77. This is much higher than a wooded condition with a CN value of 30.
- There is an existing depression that straddles the northern property line. This depression should be considered in the drainage study to ensure that the proposed filling of the depression on site will not impact the remaining off-site depression.
- The infiltration systems are not consistent between what is represented on the site plans and what is modeled in the drainage study. The number of chambers and sizing is much smaller on the plans than what has been modeled in the study.
- Please provide additional details for the stormwater facilities such as rim and invert elevations, pipe size, length and material. Label catch basins, drain manholes, leaching pits, roof dry well chambers etc. It would be helpful to provide the proposed grading on the Utility Plan to better understand how the drainage system will collect site stormwater runoff.
- The grading at the catch basin (assumed double grate) at the driveway entrance at Ocean Pines should be reconsidered. The drainage study assumes that all upgradient stormwater runoff will be collected by the catch basin although the driveway has a 4 to 5% slope towards Ocean Pines. This would indicate that there will be significant stormwater bypass. We recommend considering creating a low point at the entrance to encourage stormwater runoff to be collected by the catch basin and/or consider a trench drain across the width of the driveway.
- It was observed during the site visit that the driveway area at buildings (5) currently under construction appears to drain into Wildwood Lane and not as proposed on the Site Plans. This area should be directed to a catch basin in front of Building 1 as proposed.
- Please provide additional spot grades and or clarification on intended drainage patterns to ensure that site is graded as designed. There is a swale proposed behind Building 18 that should have a high point indicated per the proposed watershed delineation plan, additional grades at the SAS field #2/3, as well as a high point east of Building 5(C-D) to split the lawn grading to either side of the building.
- Per the MA DEP Stormwater Standards, infiltration systems require a minimum 50 ft setback from soil absorption systems (leaching fields), 10 ft setback or greater from buildings and 10 ft setback to property lines. Several infiltration systems do not meet the required setbacks.
- Per the MA DEP Stormwater Standards, infiltration systems located within an area with a rapid infiltration rate, greater than 2.4 inches/hour are required to have at least 44% TSS prior to the infiltration structure. The leaching pit systems that collect the driveway stormwater runoff should be provided with additional pretreatment.
- Inspection ports should be provided for all the infiltration systems. Construction details should also be provided.

- The project has disturbed over 1 acre of land and requires a NPDES Construction General Permit (CGP). Please confirm that a Stormwater Pollution Prevention Plan (SWPPP) has been prepared and provide a copy of the project's CGP. The Checklist for Stormwater Report indicates that the SWPPP will be submitted prior to land disturbance.

It is general practice to design sites to comply with Massachusetts DEP Stormwater Management Regulations. The following section describes the 10 Standards for compliance with Stormwater Management Regulations and the status of the submittal relative to each standard.

Standard 1 – Untreated Stormwater

The infiltration systems (leaching pits) have been designed to handle up to the 100-year storm event. The plans should be updated to match the drainage study. The roof infiltration chambers will overflow. Clarification as to whether these systems are intended to surcharge and overflow at the roof leader downspouts or whether they will have overflow outlets. This standard partially met.

Standard 2 – Post Development Peak Discharge Rates

As shown in the Drainage Report submitted by the design engineer this Standard appears to be met. We have requested some adjustment in the calculations that may alter the peak rates. This standard has not been met.

Standard 3 – Recharge to Groundwater

As shown in the Drainage Report submitted, this standard could be met.

Standard 4 – 80% Total Suspended Solids (TSS) Removal

TSS calculations have been submitted demonstrating that a TSS removal rate of 80% is proposed. The DEP Stormwater Management Regulations requires a removal rate of 44% prior to infiltration structures within soils with rapid infiltration rates. This standard has not been met.

Standard 5 – Higher Potential Pollutant Loads

This project is not considered a source of higher pollutant loads. This standard is not applicable.

Standard 6 – Protection of Critical Areas

The project is not located within a critical area. This standard is not applicable.

Standard 7 – Redevelopment Projects

This project is not considered a redevelopment project. This standard is not applicable.

Standard 8 – Erosion/Sediment Control

No soil erosion and sediment controls are shown on the plans. Erosion controls were observed on site during the site visit. This standard is partially met.

The project will require to file for a Construction General Permit (CGP) with the US EPA and implement a Stormwater Pollution Prevention Plan (SWPPP). We recommend a copy of the CGP and SWPPP be provided to the Town as soon as possible including an Erosion Control Plan illustrating the controls installed on site.

Standard 9 – Operation and Maintenance Plan

An Operation and Maintenance Plan has been provided as required. This standard is partially met.

Please update the O&M Plan as necessary with any additional stormwater BMP controls.

Standard 10 – Illicit Discharges

An “Illicit Discharge Compliance Statement” meeting the requirements specified in the Stormwater Management Regulations has not been submitted. This standard is not met.

We would be happy to discuss these comments with the design engineer and or the applicant at their earliest convenience. Should you have any questions or need additional information, please do not hesitate to contact this office.

Very truly yours,

MERRILL ENGINEERS AND LAND SURVEYORS



Deborah W. Keller, P.E.
Director of Engineering

cc:

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