



Date: March 9, 2018

To: Wayland Conservation Commission

From: Ruth McCawley Geoffroy, AICP
Dir. of Environmental Permitting and Planning

Subject: 24 School Street – Mounding Calculations/Stormwater Review

DOCUMENTS REVIEWED

- *Slug Test and Groundwater Mounding Analysis Report, 24 School Street, Wayland MA:* prepared by Creative Land and Water Engineering, LLC.; dated February 28, 2018 revised through March 1, 2018.
- *Hydrologic Analysis Proposed Site Redevelopment, 24 School Street, Wayland MA;* prepared by MetroWest Engineering, Inc.; dated September, 2017.
- *Stormwater Report Proposed Site Redevelopment, 24 School Street, Wayland MA;* prepared by MetroWest Engineering, Inc.; dated September, 2017.

PROJECT UPDATE

Nover-Armstrong Associates, Inc. (Nover-Armstrong) was asked to review materials pertaining to the stormwater management system for the proposed project at 24 School Street, submitted with the Notice of Intent. It appears however that the Hydrologic Analysis submitted in September 2017 are the only drainage calculations that have been submitted to the Town and they are based on site design that has subsequently changed. In addition, the Conservation Commission recently received a Groundwater Mounding Analysis Report. Nover-Armstrong was asked to review it to determine whether adequate information was provided to allow substantive review and comments to be made. The following comments are preliminary and are based on cursory review of both the stormwater and mounding calculations as they relate to each other.

COMMENTS

- The following information is necessary to fully review the mounding calculations:
 - Revised drainage calculations and site / stormwater management system design;
 - Superimpose property lines, MWs and SAS/infiltration structure over mounding report soils map;
 - Soil boring logs; and
 - Groundwater mounding results of combined SAS and stormwater infiltration system mounds.
- Groundwater elevations are seasonally higher in March/April than in January. ESHGW should be measured throughout March/April as monitoring wells are currently in place.

- The 100-year stormwater mound elevation is reported to be 7.48 feet above seasonal high groundwater (elevation 166.32). The mounding calculations identified that the stormwater infiltration system must be raised by two feet. No design is available to gauge the impact of this mound and what a redesigned drainage system will consist of.
- The mounding calcs state that “the maximum height is only reference and does not need to be considered as it will be temporarily stored in the infiltration chambers.” Revised drainage calculations must show that all of the volume claimed to be infiltrated during the 100-year storm is able to be stored within the infiltrators to confirm that the claims made in the mounding calcs will occur.
- Mounding calcs show a recharge volume of 5,318 cu. ft. for the revised 100-year event. The September 2017 drainage calcs show the stormwater infiltration system with a greater recharge volume of 5,756 cu. ft. required for the same event. Without a drainage design and calculations, the mounding calcs cannot be confirmed.
- There seems to be conflicting saturated thicknesses (depth/thickness of aquifer) reported throughout the mounding calculations. For example, the hydraulic conductivity calculation sheet for MW-3, which is within the infiltration structure, shows the depth of aquifer at 8.0 ft.; Table 3 shows the aquifer thickness between EHGW and bottom of aquifer for MW-3 to be 16.14 ft.; and, the revised 100-year mound calculation initial saturated thickness for the infiltration structure is 15.9 ft. These different measurements, for what appears to be the same dimension, should be corrected or explained.
- Other parameters in the calculations should be explained including the stark difference in hydraulic conductivity for MW-1 and MW-2 under the SAS at 25.97 ft./day vs. MW-3, within the infiltration structure, which is almost 4 times less at 6.51 ft./day. Saturated thickness is integral to hydraulic conductivity (how fast ground water travels through the saturated soil) thus reducing the height of the groundwater mound. Depth of aquifer for MW- 1 is 13.2 ft. on the hydraulic conductivity calculation sheet as compared to MW-3 at 8.0 ft., both relatively close. Additionally, these two wells appear to be within the same Narragansett silt loam soil group.
- The September 2017 drainage calculations identify that although both soil types identified on the site are hydrologic soil group (HSG) A; it is then reported that the soils will be considered HSG B because it is “more conservative.” This assumption should be more fully evaluated as it may overestimate the pre-existing runoff rate and volume, requiring less mitigation in the post-development condition.
- The infiltration system should empty in 72 hours, even in the 100 year event, as it must be available for subsequent storm events.
- It is our opinion that ZBA issuance of a Comprehensive Permit for this project is premature, at this time, as the record plans do not address current design considerations and there will likely be significant design changes.