



January 14, 2022

Mr. John Field, PE
Land Use Coordinator
Zoning Board of Appeals
11 Townhouse Rd.
Weston, MA 02493-7320

**Subject: Wetland Impact Review, Hanover-Weston 40B
518 South Avenue**

Dear John and Board Members:

This report updates my analysis of potential wetland impacts that may result from the development of the Hanover-Weston 40B project. My comments are based on the revised plans (Plan) and documents submitted to the Zoning Board of Appeals in early December, 2021.

Since my last review (April 30, 2021), the applicant (Applicant) withdrew his June 2020 Notice of Intent (NOI) filing with the Conservation Commission (ConCom). Regardless, an appeal by abutters focusing on the stream type is pending in Middlesex Superior Court.

Documents referenced for this report include:

- Plans and accompanying documents filed by the Applicant with the Zoning Board dated November 22, 2021, and
- Abutter consultant memos dated December 16, 2021.

GENERAL COMMENTS

My analysis is based on regulations issued by MassDEP under the Wetlands Protection Act (WPA). The Town of Weston has no wetland bylaw.

Massachusetts 40B regulations do not waive the MassDEP WPA regulations. The ConCom (not the Zoning Board) retains permitting authority under the WPA regulations.

WETLAND-RELATED COMMENTS

Protected Resource Areas

The Hanover-Weston project site contains the following state-protected wetland resources:

- Bordering Vegetated Wetlands (BVW);
- A stream within the BVW (the stream is a tributary to Bogle Brook. Bogle Brook itself lies approximately a half mile (> 3,000 feet) to the south and on the other side of the Mass Turnpike. Bogle Brook runs into Nonesuch Pond, some two miles from the site);
- Bank, associated with the stream; and
- Land Under a Waterbody, also associated with the stream.

Buffer Zone

The project, as it applies to ConCom jurisdiction, is for work in the 100-foot buffer zone beside BVW. Note that under the regulations the buffer zone is *not* a no-build zone, but rather an area that triggers a filing with the ConCom when work is proposed therein. Further, any stormwater system outside of the 100-foot buffer that drains or terminates within that 100-foot buffer is under the ConCom's jurisdiction (which is the case for this project).

The Weston ConCom encourages applicants to avoid all work within 25-feet of a resource area; this is a *policy* only, and not a town bylaw or state regulation. Under the current Plan, work would occur in the 25-foot buffer to BVW, and extensive site alterations are proposed 25 to 100-feet from the BVW edge.

Stormwater Regulations

As noted, MassDEP Stormwater Regulations are also administered by the ConCom. The Hanover-Weston project is *not* exempt from these and must comply with state stormwater provisions.

FEMA Floodplain

The project is not within a FEMA-designated floodplain.

Endangered Species

Endangered species have not been identified on or near the site.

TECHNICAL COMMENTS

Stormwater

The stormwater design has changed significantly since the project was filed in mid-2020. The current Plan makes significant revisions to almost all design components. Revisions include extensive fill throughout much of the site (averaging three-feet), reduction in units to 180, extensive use of retaining walls, expansion of porous pavement, redesign of stormwater infiltration and relocation of the septic effluent leaching area.

Mounding

Mounding calculations are required to determine if groundwater elevations will rise, potentially impacting abutting properties and resource areas. At this date, the accuracy of the revised mounding calculations is questionable. For instance, the calculations do not account for the impact of retaining walls and building foundations.

Regardless, the Applicant's current submission indicates that groundwater levels will rise on abutting properties. Further, levels will unacceptably rise at the wetland boundary and within the wetlands. Groundwater elevations are projected to rise at the wetland boundary by two-feet or more.

Until the accuracy of the mounding calculations is resolved, precise impacts to resources cannot be quantified.

Alteration: Wetland, Stream and Associated Water Resources Impacts

The project wastewater treatment system would discharge over 33,000 gallons per day (gpd) of effluent. This quantity is at least 53 times greater than the volume generated by a typical single family home in Weston. Further, *combined* wastewater and stormwater discharge is 45,350 gpd.

Unlike stormwater discharges, wastewater represents *additional* volume on site; the underlying groundwater becomes the receptor of this new volume. Mounding calculations indicate higher groundwater elevations will occur in both upland and wetland areas on site.

The WPA and Title 5 prohibit alteration of protected resources. Regulations in 310 CMR 10.04 (the WPA), define *alter* as follows (*emphasis is mine*):

Alter means to change the condition of any Area Subject to Protection under M.G.L. c. 131, § 40. Examples of alterations include, but are not limited to, the following:

- (a) **the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;**
- (b) *the lowering of the water level or water table;*
- (c) *the destruction of vegetation;*
- (d) **the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of the receiving water.**

Based on the current Plan, pre-existing drainage patterns and flushing characteristics may be altered by increased wastewater volume [310 CMR 10.04 subsection (a)]. Further, mounding from both stormwater and effluent volume may alter wetlands by substantially raising groundwater at the wetland boundary and within the wetlands, which MassDEP does not allow. In addition, “physical, biological or chemical characteristics of receiving water” [subsection (d)] are likely to be changed by the introduction of wastewater.

Potential Wetland Impacts

An on-going issue with the project design has been whether changes to groundwater levels within the wetland may change the diversity and type of vegetation within the wetland, constituting an alteration. Mounding calculations indicate such an alteration is likely. Further, effluent discharge may change the chemical characteristics of groundwater. Stream water quality changes may affect amphibians, reptiles and other animals within the wetlands. Last, due to the added volume of effluent discharge, the stream itself is likely to flow for longer periods, constituting a further alteration.

ABUTTER CONSULTANT COMMENTS

On December 17, 2021, attorney Dennis Murphy, representing abutters to the project, submitted technical comments by (1) Scott Horsley, a hydrologist and (2) John Chessia, P.E. Both reviews are dated December 16, 2021. I have reviewed both memos and offer comments below.

Scott Horsley memo

Horsley focuses on project compliance with MassDEP stormwater regulations, concluding that Standard 3 is violated, given that base flow and groundwater discharge are substantially altered. He further notes that although peak flow is mitigated, the amount of stormwater *volume* will more than double due to increased impermeable areas on site.

Horsley observes that mounding will increase groundwater levels. His analysis indicates that groundwater elevations at the wetland edge will rise by 2.4 to 2.8 feet, and that this rise will result in groundwater breakout both *above* and *within* the wetlands, which he states is in violation of the WPA and the MassDEP Stormwater Handbook.

Horsley concludes that the stream is a headwater tributary to Bogle Brook, Nonesuch Pond and other downgradient resources. He notes that the proposed wastewater system may discharge effluent in violation of MassDEP and EPA drinking water standards.

My opinion is that the Horsley comments are substantive and persuasive. The Applicant should address the issues Horsley raises point-by-point.

John Chessia memo

Chessia's analysis largely focuses on issues that are outside of my expertise and review parameters. I defer comments to other Board reviewers.

SUMMARY

Based on the most recent Plan, project impacts to protected resources may occur due to the unusual volume of both stormwater and septic effluent discharges, and due to mounding impacts.

In my professional opinion, as currently designed, the project appears likely to alter wetland resources, and consequently, may not comply with WPA regulations.

Please contact me with questions.

Very truly yours,

A handwritten signature in black ink that reads "Patrick Z. Farner". The signature is written in a cursive, slightly slanted style.

Wetland Scientist, Hydrologist