

Date December 14, 2021
To Weston Zoning Board of Appeals
From Thomas C. Houston, PE, AICP
Project Proposed Residential Development, 518 and 540 South Avenue
Weston, MA, Middlesex County
Subject Overview of Revised Submission dated November 22, 2021

Professional Services Corporation, PC (PSC) is evaluating the revised submission of the Proposed Residential Development dated November 22, 2021 and is preparing our final peer review memorandum.

The revised November 22nd site plans show an updated layout for the buildings and site improvements including the stormwater facilities and utilities. Previous site plans showed stormwater infiltration facilities more widely dispersed through the site. The revised November 22nd plans show three subsurface structures (stormwater infiltration facilities) in a centralized location just east of the residential structures in proximity to the soil absorption system of wet wastewater treatment plant. Centralizing the location of the subsurface structures takes advantage of the more permeable on-site soils and minimizes potential impacts of infiltration facilities located near the boundary of adjacent residences. However, centralizing the location of the subsurface facilities does not as nearly replicate the predeveloped infiltration which occurs over the entire site.

The revised November 22nd submittal is based on an expanded subsurface exploration program conducted by Sanborn Head personnel and a Massachusetts Soil Evaluator. Per standard practice, the name and number of the Massachusetts should be added to the test pit logs. Test pits excavated specifically for the subsurface structures include Test Pits 502, 503, and 504 for Recharge Area 1, Test Pits 201, 502, 506, and 414 for Recharge Area 2, and Test Pits 507 and 508 for Recharge Area 3. Hydraulic conductivity can be established by soil texture using published Rawls Rates or hydraulic conductivity can be measured directly using the protocols of the Massachusetts Stormwater Handbook, Volume 3, Chapter 1, Standard 3 – Stormwater Recharge section on *Dynamic Field* methods to estimate saturated hydraulic conductivity. In this instance Sanborn Head measured hydraulic conductivity using a Guelph Permeameter at test pit locations SH-TP-201, SH-TP-205, SH-TP-207, SH-TP-401 through SH-TP-412, and SH-TP-414 through SH-TP-416. Measured hydraulic conductivity rates are highly



Memorandum
December 14, 2021
Page 2

variable. In accordance with the Stormwater Handbook, the design infiltration rate was set at 50% of the least permeable test at each location. Design infiltration rates are shown in Table 1 of the “Updated Stormwater Infiltration Data Report – Hanover Weston – 518 &540 South Ave, Weston, Massachusetts,” revised November 22, 2021.

Relevant test pits were not excavated during high groundwater season so Estimated Seasonal High Groundwater (ESHGW) was estimated using redoximorphic features. The design separation to ESHGW and functionality of subsurface structures during groundwater mounding was achieved by placing fill in combination with the installation of extensive high retaining walls along the perimeter of much of the site. The Zoning Board of Appeals will have to determine the acceptability of these retaining walls from an aesthetic and zoning aspect, especially considering the walls as structures not compliant with yard setbacks. The proposed walls are large masonry block walls. To contain groundwater and prevent flow through the retaining wall face, 20 mill poly barrier with sand wicks are proposed.

The Sanborn Head “Groundwater Model Report, – Hanover Weston – 518 &540 South Ave, Weston, Massachusetts,” revised November 22, 2021 models the interaction between the stormwater infiltrating subsurface structures and the Soil Absorption System (SAS) of the wastewater treatment plant. However, the groundwater mounding analysis does not consider the barrier effects of the retaining walls which surround much of the site including the retaining walls in proximity to the three stormwater subsurface structures and the wastewater SAS. In order to prevent breakout through the face of the retaining walls a poly barrier/sand wick system is installed at the rear of the retaining walls. This poly barrier/sand wick system will stop the horizontal spread of the groundwater mound increasing its height.

Further we find that the mounding analysis shows a 2 ft. high groundwater mound extending across the entirety of the abutting properties at 534 and 546 South Avenue which if accurate is not acceptable (Figure 11 – Model Calculated Mound Height Primary Leach Field).

The emergency access drive includes a bioswale installed along the center of the 20 ft. wide paved surface. In order to use the emergency access drive, vehicles have to straddle the bioswale. The bioswale is 1 foot deep with soft soil/filter layer at the bottom. An emergency vehicle that fails to straddle the bioswale and has a wheel enter the bioswale is likely to become disabled.

The November 22nd submittal does not evaluate compliance with Weston’s Stormwater and Erosion Control By-Law, with applicable drainage / stormwater provisions of Weston’s Site Plan and Land Subdivision Rules and Regulations. Town stormwater requirements are applicable unless waived.



Memorandum
December 14, 2021
Page 3

The submittal does not evaluate compliance with the Weston Stormwater Management Rules and Regulations and our final peer review memorandum will note elements of non-compliance.

The submittal does not evaluate compliance with the Design Standards stated in Section 6.0 of the Towns SECR regulations and our final peer review memorandum will note elements of non-compliance.

The submittal does not include an evaluation of compliance with Weston Planning Board Rules and Regulations, particularly Article Iv. Design Standards, Section 4.19 Drainage; Article V. Construction Standards, Section 5.09 Drains and Catch Basins.