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February 7, 2024

Mr. Charles Tirone, Chairperson
Town of Arlington
Conservation Commission
730 Massachusetts Avenue
Arlington, MA 02476

RE: Thorndike Place

Dear Chairperson Tirone and Conservation Commissioners:

I am writing this letter as a follow-up to the last Conservation Commission hearing on February 1, 2024 at the request of my clients, the Arlington Land Trust. We are very concerned about the current stormwater design associated with the project and the continuing lack of critical hydrologic data that is required, but not provided by the Applicant. We believe that it is critical that this data be collected during the next three months (March, April, and May) which represent seasonal high groundwater conditions.

As was stated at the last hearing the Applicant proposes to rely upon mottling (redox) markings at Test Pit 5 which is located approximately 150 feet outside of the proposed infiltration system 1 and to ignore/discount the mottling (redox) features noted at Test Pit 7 (that is located within the footprint of the proposed infiltration system #1) – see figure 1.

The MADEP Stormwater Handbook provides clear procedures about test pits and how to document estimated seasonal high groundwater (ESHGW) conditions. The Conservation Commission should assert these principles and have the applicant fully comply. I will summarize these two requirements below and am providing the full text of the MADEP document with highlighted sections as a reference attached to this letter. I am also providing a third comment/question requesting clarification/explanation from the applicant regarding their groundwater mounding analysis.

1. The MADEP Stormwater Handbook requires that test pits be provided at the actual location of each proposed infiltration system. Specifically, the Handbook states, *“Conduct tests at the point where recharge is proposed. The tests are a field evaluation conducted in the actual location and soil layer where stormwater infiltration is proposed...”*¹. The applicant’s suggestion

¹ MADEP Stormwater Handbook, Volume 3, Chapter 1, *Documenting Compliance with the Massachusetts Stormwater Management Standards*, page 10.

to use the data from Test Pit 5 (150 feet outside of the infiltration location) is not compliant and inconsistent with the MADEP Stormwater Handbook.

2. Additional information for the estimated seasonal high groundwater levels (ESHGW) needs to be provided at the proposed infiltration locations. Estimated seasonal high groundwater (ESHGW) levels are required for the design of the proposed stormwater infiltration systems. The MADEP Stormwater Standards require at least two feet of vertical separation between the bottom of the infiltration facilities and the ESHGW elevation.

The Applicant has not provided clear evidence for ESHGW levels at the proposed infiltration system locations. Additionally, and as stated in my previous comment letter, some of the ESHGW levels that have been provided by the Applicant are inconsistent with wetland elevations and each other.

The MADEP Stormwater Handbook, Volume 3 provides procedures about how to determine ESHGW elevations. It states, *“Seasonal high groundwater represents the highest groundwater elevation. Depth to seasonal high groundwater may be identified based on redox features in the soil (see Fletcher and Venneman listed in References). When redox features are not available, installation of temporary push point wells or piezometers should be considered. Ideally, such wells should be monitored in the spring when groundwater is highest and results compared to nearby groundwater wells monitored by the USGS to estimate whether regional groundwater is below normal, normal, or above normal (see: <http://ma.water.usgs.gov>)”*.²

The Applicant is suggesting that the redox features noted at Test Pit 7 are not reliable, therefore the MADEP Stormwater Handbook indicates that they should install wells (peizometers) and measure water levels and compare these levels to USGS index wells.

Recommendation: Require the applicant to install monitoring wells at the infiltration locations and measure groundwater levels throughtout the March, April, and May period. Compare the recorded water levels with USGS index wells.

3. The Applicant’s groundwater mounding analysis relies upon a modeled infiltration duration of 0.46 days (1.1 hours) to simulate the impacts of a 24-hour design storm. The Stormwater Report does not provide an explanation for this apparent discrepancy. The MADEP Stormwater Handbook requires that the groundwater mounding analysis be conducted for the 24-hour design storms (10, 25, and 100-year events). These storms by definition have a duration of 24 hours. The submitted groundwater mounding analysis was conductd for a duration of 1.1 hours (see figure 2). This suggests to me that the groundwater modeling therefore significantly underestimates the groundwater mounding associated with the proposed project.

² MADEP, Stormwater Handbook, Volume 3: Documenting Compliance with the Massachusetts Stormwater Management Standards, page 12.

Recommendation: Request the applicant to provide a written explanation of their groundwater modeling and specifically why they selected a 0.46 day (1.1 hour) duration.

Thank you for the opportunity to submit these additional comments and recommendations. We strongly urge the Conservation Commission to require the applicant to fully comply with the MADEP Stormwater Handbook. Please contact me directly with any questions that you might have.

Sincerely,

Scott W. Horsley
Water Resources Consultant

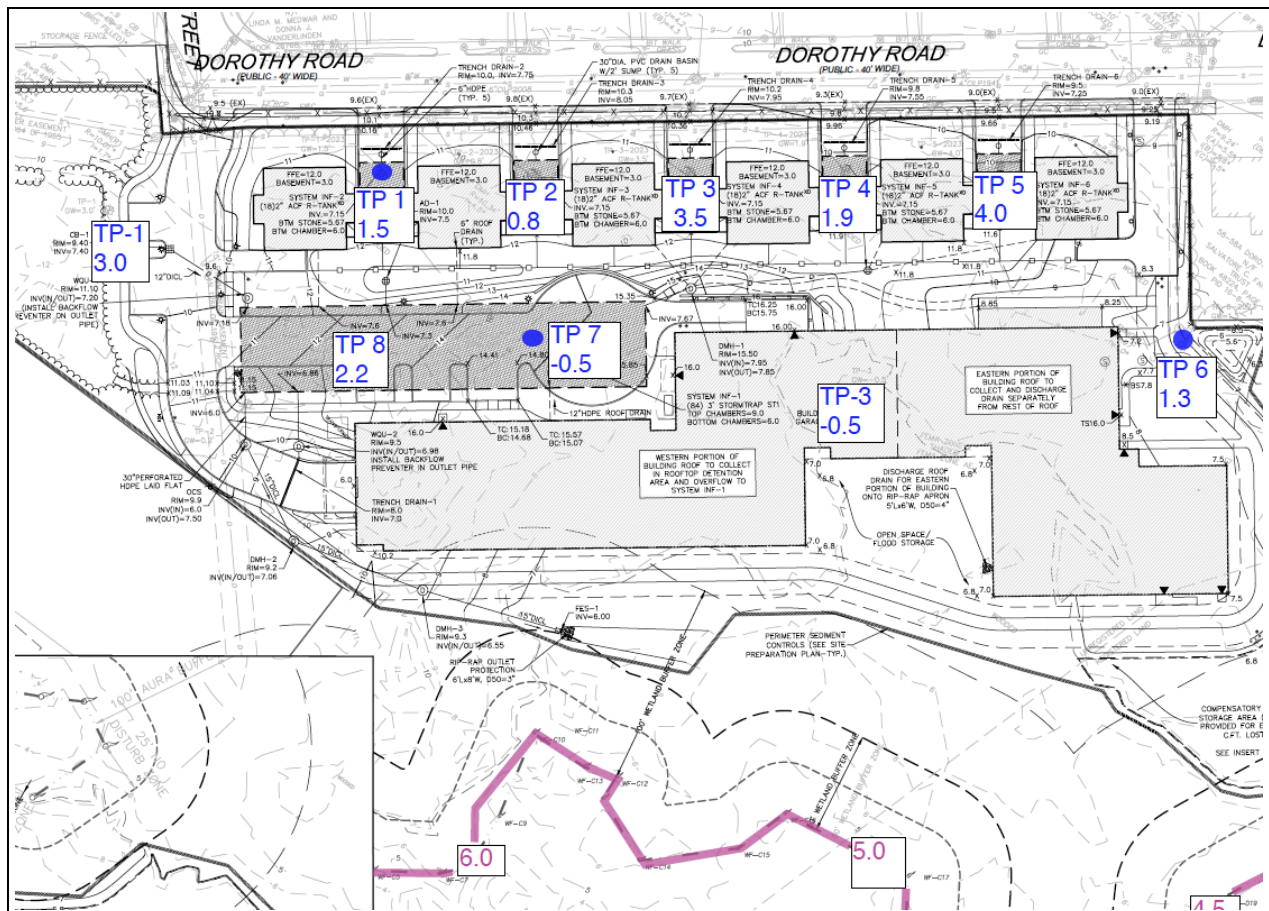


Figure 1 – Site Plan Hydrology (Groundwater Levels -Blue, Wetlands Elevations - Green)

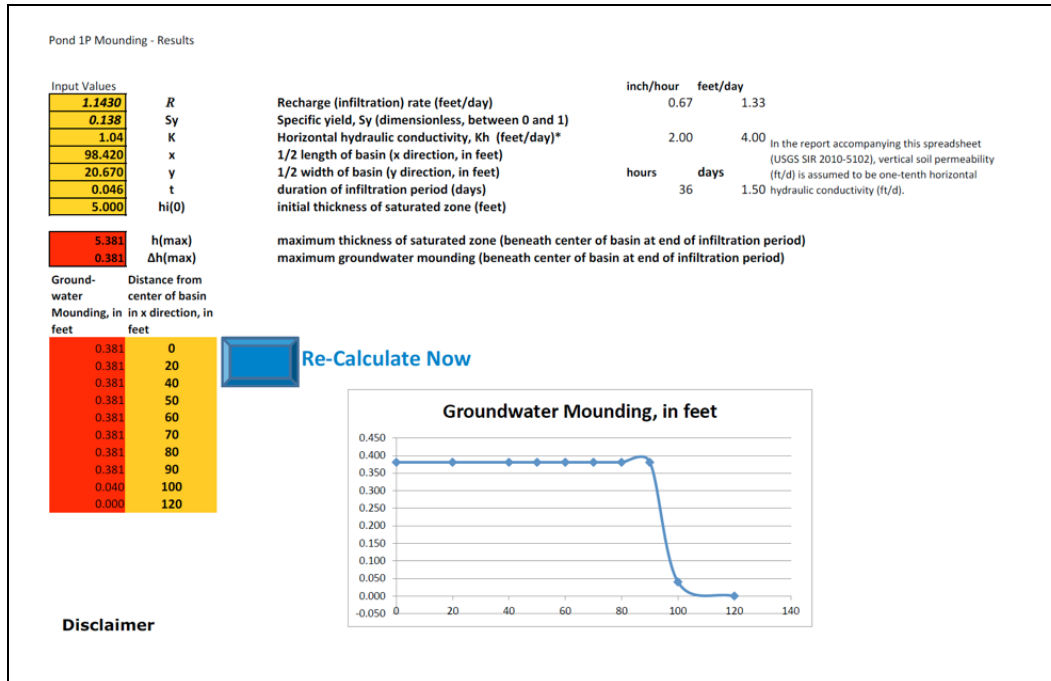


Figure 2 – Hantush Model Results (Duration 0.46 Days - BSC, Stormwater Report, Revised September 2023)