

Ms. Jacki Byerley, Planner
Andover Planning Board
Town Office
36 Bartlett Street
Andover, MA 01810

June 5, 2019

Ref. T0681

Re: Response Letter— Peer Review
The Dascomb Road Project
146 Dascomb Road
Andover, Massachusetts

Dear Ms. Byerley and Board Members:

TEC, Inc. has received the peer review letter prepared by The Horsley Witten Group, Inc. (HW), dated April 11, 2019. We have reviewed the letter, and provide the following responses to the initial comments:

TEC's responses are shown in bold

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*
 - a) The project includes the relocation of a stream on the north property boundary adjacent to Dascomb Road. The stream relocation is currently under construction and under the purview of the Andover Conservation Commission. There is also a large stormwater basin located along the southern property boundary. The proposed stormwater management design includes three subsurface infiltration systems and overflows into the existing drainage network towards the existing detention basin. As designed no new untreated stormwater discharges or causes erosion into wetlands or waters of the Commonwealth.

TEC: No response required.

- b) The Applicant includes a discharge point (DP3) to a swale adjacent to Interstate 93. The discharge point is not within 100-feet of a wetland however it appears that a riprap apron would be useful to reduce erosion from this proposed flared end section (FES-1). HW recommends that the Applicant include a riprap apron at the end of FES-1 or confirm that riprap exists in this location.

TEC: A riprap apron has been added at the outlet of FES-1.

The Applicant appears to comply with Standard 1.

TEC: No response required.

2. Standard 2 requires that post-development runoff does not exceed pre-development runoff off-site.

a) According to the MSH Vol. 2, Ch. 2, p. 104 at least 2 test pits per subsurface structure should be conducted at the actual location of the infiltration structure. While the Applicant has provided 9 test pits for 3 infiltration structures, only 4 of them are in the approximate location of the proposed infiltration structures. HW recommends conducting additional test pits to verify the ground water elevation beneath the systems.

TEC: TEC performed three additional test pits within the footprint of the infiltration structures to confirm the existing soil conditions and groundwater table. Please refer to Appendix E of the Drainage Report.

b) The Applicant has provided calculations which show that the total post-development runoff does not exceed pre-development runoff to the existing stormwater basin and the existing drainage swale. HW recommends that the Applicant confirm that the existing stormwater basin and drainage swale are functioning as designed.

TEC: TEC performed a site inspection of the existing stormwater basin and swale located on the Restaurant Depot property. The existing stormwater system appears to be functioning as designed, please refer to Appendix F of the Drainage Report for TEC's field report.

c) The Applicant has utilized a direct entry of 5 and 6 minutes for time of concentrations (T_c) flow paths. Both values are acceptable however it is typical engineering practice to use either 5 or 6 minutes consistently throughout the modeling analysis. As utilized the design appears to be slightly conservative.

TEC: A Time of concentration (T_c) of 5 minutes for direct entry has been made consistent throughout the modeling analysis.

d) HW agrees that the hydrologic soil group (HSG) for the entire parcel is documented as HSG A. Under proposed conditions the Applicant has utilized HSG B for a small area with subcatchment area PR3. This assumption may be considered conservative.

TEC: TEC has updated PR3 to be HSG A to keep a consistent soil type in the modeling.

- e) Section IX.C.5. in the Andover Stormwater Regulations requires Applicants to utilize the approved curve number (CN) values listed in Table 1 of the Regulations. The open space CN values for lawns assumes a "poor" condition for grass cover since the post-construction amount of grass cover cannot be predicted or guaranteed. The Applicant has utilized a surface condition of "good" in subcatchments PR-1, PR-5, PR-3, and PR-6. HW recommends that the Applicant revise the surface conditions to poor and revise the HydroCAD model or provide justification for the use of "good".

TEC: Curve numbers (CN) have been updated to match the approved CN values in Table 1 of the Regulations. The grass cover in subcatchments PR-1, PR-3, PR-5, and PR-6 have been revised to reflect a "poor" surface condition.

3. Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.

- a) The Applicant has stated that all infiltrating best management practices (BMPs) have been designed to provide four feet minimum separation from estimated seasonal high ground water (ESHGW). The provided test pit data indicates a separation of less than four feet for Infiltration basins #1 and #3. HW recommends that the Applicant document the separation to ground water for each infiltration practice

TEC: A table comprised of the ESHGW for each infiltration basin has been included on Sheet C-6 (Grading and Drainage Plan).

- b) In accordance with the MSH Vol. 3, Ch. 1, p. 28 a mounding analysis is required when the vertical separation from the bottom of an exfiltration system to seasonal high groundwater is less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm. HW recommends that the Applicant confirm the depth to ESHGW and provide a mounding analysis if applicable.

TEC: The proposed infiltration basins have been designed with a minimum of two (2) feet of vertical separation from groundwater and none of the basins will attenuate the peak discharge from the 10-year storm.

Because the 10-year storm will not be fully attenuated, a mounding analysis is not applicable.

- c) The Applicant has indicated that the three proposed infiltration systems provide the required recharge volume noting that the volumes listed were obtained from the HydroCAD analysis. HW agrees that the infiltration systems provide sufficient volume however we were not able to confirm the values provided on page 9 of the Stormwater Narrative. HW recommends that the Applicant provide additional documentation confirming the values listed.

TEC: HydroCAD storage tables for each infiltration basin has been added to the Stormwater Report, please refer to Appendix A.

- d) The Applicant has provided calculations indicating that the proposed Infiltration structures will drain within 72 hours. The calculations appear reasonable however HW was not able to confirm the Volume of Storage Below Outlets or the Footprint Area of the systems. HW recommends that the Applicant provide additional documentation to confirm the values utilized in the calculations.

TEC: The HydroCAD storage tables in Appendix A of the Stormwater Report provide a volume of storage at incremental elevations in the infiltration basin. TEC has highlighted the elevation of the lowest outlet and the total storage below that elevation.

- e) HW recommends that the Applicant provide an additional calculation based on the MSH Vol. 3, Ch. 1, p. 27 to verify that at least 65% of the site is being directed to an infiltration system.

TEC: Calculations verifying the percentage of the site that is being directed to the infiltration system have been included in the "regulatory compliance" section of the Drainage Report.

4. Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.

- a) The Applicant has sized the Water Quality Units (Stormceptors), per the Town of Andover Stormwater Regulations. For documentation purposes, HW recommends that the Applicant also include the calculations required by MassDEP as described in the Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practice, issued by MassDEP Wetlands Program in 2013.

TEC: Calculations that satisfy the MassDEP guidance can be found in Appendix B of the Drainage Report.

- b) The Applicant has included details for Water Quality Units STC-900, STC-1200 and STC-2400 on Sheet C-20, however the sediment volume calculations on page 11 of the Stormwater Narrative specify Water Quality Unit types STC-450, STC-900, STC-1200, STC-3600. HW recommends that the Applicant include the correct details on the Construction Detail sheet C-20 and label each Water Quality Unit with the applicable size on sheets C-6 and C-7.

TEC: The correct Stormceptor details have been included on Sheet C-20. The Water Quality Units on sheets C-6 and C-7 have been labeled with the corresponding size.

- c) The Applicant has provided Water Quality Volume calculations on page 11 of the Stormwater Narrative, HW agrees with the impervious area flowing to P1, P2, and P3 however the Overall Site Water Quality Volume calculation should include the pavement within subcatchments PR-6, PR-7, and PR-8. HW recommends that the Applicant revise the overall calculation and confirm that the site complies with Standard 4. As applicable the Applicant may need to provide the De Minimis calculations described in the MSH Vol.3, Ch. 1, p. 35.

TEC: The overall calculation has been provided in Regulatory Compliance section of the Stormwater Report. De Minimis calculations are also included to show that the project results in an overall improvement in water quality.

5. Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).
- a) The proposed project is considered a project with a LUHPPL. The Applicant has provided appropriate stormwater practices in compliance with Standard 5. The water quality comments noted above for Standard 4 are applicable to Standard 5 as well.

TEC: No response required.

6. Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.
- a) Standard 6 is not applicable to this site.

TEC: No response required.

7. Standard 7 is related to projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.
- a) The proposed project could have been considered a mix of new and redevelopment however the Applicant has chosen to design the project as a new development therefore Standard 7 is not applicable to this site. HW agrees with this decision.

TEC: No response required.

8. Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.
- a) The Applicant has provided an erosion and sediment control plan. Erosion control measures to prevent sediment from entering the intermittent stream are only included on the stream restoration plans. HW recommends including those erosion controls also on the erosion control plan.

TEC: The Erosion and Sediment Control Plan have been updated to include the erosion control measures displayed on the Stream Restoration Plan.

9. Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan to be provided.
The Applicant has provided a Long-Term O&M Plan. HW offers the following comments:
- a) MSH Vol. 1, Ch. 1, p. 9 requires that the following provisions be added to the O&M Plan:
- The party or parties responsible for operation and maintenance, including how future property owners will be notified of the presence of the stormwater management system and the requirement for proper operations and maintenance;

- A plan that is drawn to scale and shows the location of all stormwater BMP's in each treatment train along with the discharge point; and
- An estimated operations and maintenance budget.

TEC: These provisions have been added to the Operations and Maintenance Plan.

- b) MSH Vol. 2, Ch. 2, p. 23 specifies that the Catch Basins need to be cleaned four times a year. HW recommends adding this provision into the maintenance schedule for the Catch Basins.

TEC: This provision has been added to the maintenance schedule for the Catch Basins.

- c) MSH Vol. 2, Ch. 2, p.104 specifies that the Subsurface Structures Inlets need to be inspected at least twice a year; any debris that might clog the system should be removed and mosquito controls should be included in the Operations and Maintenance Plan. HW recommends adding these provisions into the maintenance schedule for the subsurface infiltration basins.

TEC: This Provision has been added to the Operations and Maintenance plan.

10. Standard 10 requires an Illicit Discharge Compliance Statement to be provided.

- a) Standard 10 requires proponents of projects within Wetlands jurisdiction to demonstrate compliance with this standard by submitting an Illicit Discharge Compliance Statement. HW recommends that an Illicit Discharge Compliance Statement signed by the owner be submitted to the Planning Board prior to any land disturbance.

TEC: An Illicit Discharge Compliance Statement has been sent to the owner to be signed and will be submitted to the Planning Board.

11. Additional Comments

- a) The Applicant has not provided a site plan showing existing conditions at the project site. HW recommends adding this information to the site plans.

TEC: An existing conditions plan can be found within "Reference Plans Index."

- b) The Applicant has not provided any closed drainage system design calculations. HW recommends adding these to the Drainage Report for review.

TEC: TEC has included a hydraulic capacity analysis for the closed drainage system, included in Appendix B of the Stormwater Report.

Please do not hesitate to contact me directly if you have any questions concerning our responses at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
"The *Engineering Corporation*"



Peter F. Ellison
Senior Civil Engineer

Attachments

- A- Drainage Report, the Dascomb Road Project, 146 Dascomb Road, Andover, Massachusetts (Assessors Map 203, Lot 2A-1), revised June 5, 2019
- B- Site Plans, The Dascomb Road Project, Andover, Massachusetts (Assessors Map 203, Lot 2A-1), dated October 31, 2018, revised June 5, 2019