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October 8, 2021

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

Re: Second Stormwater Peer Review
140 Haverhill Street
Andover, MA

Dear Ms. Byerley and Board Members:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Andover Planning Board with this letter report summarizing our second review of the stormwater management for the proposed development at 140 Haverhill Street in Andover, Massachusetts.

The plans were prepared for Medico 140, LLC (Applicant) by Ranger Engineering Group. The Applicant intends to utilize the existing stormwater infrastructure, install a hydrodynamic separator, and two subsurface detention basins. We understand that the Planning Board is seeking assistance in evaluating the stormwater management design for compliance with Andover's Stormwater Management and Erosion Control Bylaw and Regulations and the MassDEP Stormwater Standards. The proposed work is within the buffer zone of a wetland resource area and therefore the project will be under the jurisdiction of the Andover Conservation Commission.

HW received the following additional documents and plans in response to our initial peer review letter:

- Response letter to initial peer review comments, prepared by Ranger Engineering Group, dated September 30, 2021 (19 pages).
- Stormwater Pollution Prevention Plan, prepared by Ranger Engineering Group, dated September 30, 2021 (72 pages).
- Stormwater Management Report for 140 Haverhill Street, Andover, Massachusetts, prepared by Ranger Engineering Group, Inc., dated June 21, 2021, revised September 30, 2021 (151 pages).
- Tarp Field Test Performance Monitoring of a Jellyfish Filter FJ4-2-1, prepared by University of Florida Engineering School of Sustainable Infrastructure and Environment, dated November 1, 2011 (84 pages).

- Proposed Site Plan Documents for 140 Haverhill Street, Andover, Massachusetts, prepared by Ranger Engineering Group, Inc., dated July 9, 2021, revised September 29, 2021, which includes:

o Cover Sheet	Sheet CS0001
o Notes and Legend	Sheet CS0002
o Existing Conditions Plan	Sheet CS0201
o Form A Plan	Sheet CS0202
o Demolition Plan	Sheet CS0501
o Construction Phasing Plan	Sheet CS0501
o Layout and Materials Plan	Sheet CS1001
o Grading and Drainage Plan	Sheet CS1501
o Utility Plan	Sheet CS1701
o Fire Truck Turning Plan	Sheet CS2701
o Sewer and Drainage Profiles	Sheet CS3501
o Site Details	Sheet CS6001
o Utility Details	Sheet CS6002
o Drainage Details	Sheet CS6003
o Drainage Details	Sheet CS6004
o Erosion and Sediment Control Plan	Sheet CS8001
o Erosion and Sediment Control Details	Sheet CS8501
o Landscape Plan	Sheet L1

Stormwater Review

HW has reviewed the documents listed above and has the following additional comments concerning the stormwater management design in accordance with the Massachusetts Stormwater Handbook (MSH) dated February 2008, and the Town of Andover Stormwater Management and Erosion Control Bylaw and Regulations amended May 11, 2021 (Stormwater Bylaw).

In accordance with Section VI. B. of the Andover Stormwater Bylaw the Stormwater Management Permit and Narrative provided by an Applicant shall contain sufficient information to verify compliance with the local Stormwater Bylaw and the MassDEP Stormwater Management Handbook. Below are comments relating to the standards as presented in the MSH. Where the more stringent requirements of the Andover Stormwater Regulations are applicable those comments are included.

The proposed site improvements are considered redevelopment and therefore are required to comply with MassDEP Stormwater Management Standards 2, 3, and 4 only to the maximum extent practicable and the pretreatment requirements of Standards 4, 5, and 6 only to the maximum extent practicable. 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.

The following comments correlate with our August 26, 2021 initial peer review letter; follow up comments are provided in bold font.

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 proposed development will modify the existing stormwater drainage network to include subsurface detention chambers and structures to improve water quality (deep sump catch basin and hydrodynamic separator). The existing outfalls will not be altered, nor are any new outfalls proposed. HW recommends that the Applicant confirm that the existing outfalls are not causing erosion in the wetland resource areas.

      HW 10/08/21: The Applicant has revised the outlet configuration at the edge of the resource area. Under existing conditions there is an 18-inch reinforced concrete pipe (RCP) that discharges near wetland flag WF11B at elevation 82.15. There is a second 18-inch RCP that discharges near flag WF12B at elevation 81.40. The Applicant has revised the design to remove both of these pipes and install a new 18-inch pipe at elevation 82.15. The reconfiguration will create a wetland impact and will require an Order of Conditions from the Andover Conservation Commission. The Commission may require that the Applicant provide wetland mitigation to compensate for the area that will be filled with proposed flared end and riprap apron.

      HW recommends that the Applicant provide the velocity calculations for the proposed 18-inch RCP pipe as well as the sizing calculations for the riprap apron. HW further recommends that the Applicant justify the removal of both RCP pipes.

   b. HW 10/08/21: The Applicant has proposed adding riprap to the existing 18-inch RCP that is outletting from the wetland resource area between WF18B and WF19B. This riprap is considered fill in a wetland and requires approval from the Conservation Commission. If erosion is not evident at this outlet the riprap apron may not be necessary.

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

   a. The Applicant has provided Pre- and Post-Development Drainage Plans in the Stormwater Management Report (SMR). While HW follows the written descriptions of the proposed subcatchment areas, the plans do not appear to graphically show the different subcatchment areas. HW recommends that the Applicant revise the Drainage Plans for clarity.

      HW 10/08/21: The Applicant has revised the Post-Development Drainage Plans to show the roof areas separately. HW has no further comment.

   b. Section VIII of the SMR states that the 10-year precipitation depth is 5.10 inches. However, the NOAA Precipitation Frequency Table and the HydroCAD model indicate that the depth for this location is 5.00 inches. HW recommends that the Applicant clarify the precipitation depth associated with the 10-year storm event.

      HW 10/08/21: The Applicant has adjusted the HydroCAD calculations to utilize the

5.10 in depth. HW has no further comment.

c. The Applicant has provided a HydroCAD analysis to demonstrate that post-development runoff rates and volumes do not exceed those of pre-development conditions. HW has the following comments regarding the HydroCAD analysis:

   i. It appears that the existing and proposed land coverage areas were not calculated directly from the plans. HW recommends that the Applicant confirm that the land areas are accurate.

      HW 10/08/21: The Applicant has stated that the areas were taken from the plans and are accurate. HW has no further comment.

   ii. The HydroCAD model includes 13,000 sf and 3,600 sf for proposed roof area. However, based on the plans, Building 1 has an impervious area of 13,000 sf (39,000 GSF/3 floors) and Building 2 has an impervious area of 4,590 sf (9,180 GSF/2 floors). HW recommends that the Applicant revise the calculation accordingly.

      HW 10/08/21: The Applicant has stated that the Building 2 GSF includes basement and therefore the 3,600 sf impervious area is correct. HW has no further comment.

   iii. The Applicant has indicated time of concentration as 6 minutes (direct entry) for all existing and proposed subcatchments. HW agrees with this assumption.

      HW 10/08/21: No comment needed.

   iv. On the plans and in the HydroCAD model, Pond 5P shows a top of chamber elevation of 83.83. It appears that the surface elevation above this chamber system ranges from approximately 90-94 feet, resulting in cover ranging from 6.17-10.17 feet. Per the StormTech requirements, the maximum cover on a SC-310 chamber is 8 feet. HW recommends that the Applicant revisit the elevations of this chamber system to meet cover requirements.

      HW 10/08/21: The Applicant has raised the chamber system design so that it meets the cover requirement. HW has no further comment.

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 test pits were not performed due to site layout. However, based on both aerial imagery and the plans, it appears that there is sufficient space in the lawn to complete preliminary test pits to confirm the estimated seasonal high ground water elevation (ESHGW) within or near the footprint of the detention systems. In addition, Section VI.B.1.f.2 of the Andover Stormwater Regulations requires an accurate determination of groundwater. HW recommends that the Applicant perform the required test pits.

      HW 10/08/21: The Applicant conducted test pits and added test pit logs to the plans. It appears that Test Pit 1 was labeled as TP2 on the Existing Conditions Plan. HW recommends updating the label to avoid confusion.

b. The Applicant has designed the underground chambers as a detention system, so no groundwater recharge is provided. As the project is considered redevelopment, this is reasonable. However, the Applicant has not conducted test pits to confirm the ESHGW beneath the detention systems. HW recommends that test pits are conducted beneath the systems and if it is determined that the detention systems are located within the water table impermeable liners are added around the subsurface systems. The concern is that groundwater will enter the system and the available storage modeled will be reduced.

   HW 10/08/21: The top of the subsurface chamber system 3P is set at elevation 87.5 and groundwater in the area based on TP2 and TP3 is approximately 87.2. The Applicant has added an impermeable liner to prevent groundwater from entering the chamber system. HW recommends that the Applicant also confirm that buoyance will not be an issue for this system.

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 stated that the project achieves 81% TSS removal via deep sump catch basins and a hydrodynamic separator located just before the stormwater system discharges into the wetland. HW has the following comments on this calculation:

      i. The Applicant has not provided a detail or manufacturer information for the hydrodynamic separator. HW recommends that the Applicant provide a detail, manufacturer information, and manufacturing calculations to take credit for the TSS removal.

         HW 10/08/21: The Applicant has proposed two Contech Jellyfish filters directly upstream of the two discharge points into the wetland, JF4 is downstream of CB 5 and JF8 is downstream of DMH 5. Based on the standard details provided on Contech's website, the Jellyfish filters are designed to be used offline. The JF4 has a peak treatment capacity of 0.45 cfs and the JF8 has a peak treatment capacity of 1.96 cfs. The runoff that will pass through these two filters during the larger storms is much higher (15 cfs during a 2-year storm and up to 42 cfs during a 100-year storm). HW recommends that the Applicant confirm that these filters will function as intended and flooding will not occur during the larger storm events.

      ii. It appears that all new catch basins (CB) will have deep sumps. It is not clear which existing catch basins will be replaced with deep sump catch basins. HW recommends that any existing catch basin that is not a deep sump be replaced and that the plans are clarified and the TSS calculations are updated if applicable.

         HW 10/08/21: The Applicant has updated the plans to indicate which CBs will be replaced with deep sump catch basins. HW has no further comment.

      iii. CB 5 and the subsequent DMH do not include a hydrodynamic separator before discharge to the wetland. This is not required under Standard 7 (redevelopment), but HW recommends updating the TSS calculations to include a separate

calculation for this area. If feasible HW encourages the Applicant to provide water quality measures at all discharge points and provide justification to the Planning Board if it is not possible.

HW 10/08/21: The Applicant has added another Jellyfish filter to the DMH after CB5. See comment 4.a.i above.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

   a. The Applicant has noted that the proposed project is not considered a LUHPPL. The traffic assessment memo prepared by Bayside Engineering notes that daily trips would be reduced from 896 trips per day (existing) to 112 trips per day (proposed). Therefore Standard 5 is not applicable.

      HW 10/08/21: No further comment.

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. The site does not discharge to a critical area, therefore Standard 6 is not applicable.

      HW 10/08/21: No further comment.

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 is considered a redevelopment, therefore Standard 7 is applicable. Once the Applicant has addressed the other stormwater comments in this letter and raised by the Town it appears that the Applicant complies with Standard 7 and is improving existing conditions

      HW 10/08/21: No further comment.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

   a. The Applicant has provided a Soil Erosion & Sediment Control Plan as well as a long-term pollution prevention plan. The Applicant has noted that a Stormwater Pollution Prevention Plan (SWPPP) is also included, but HW was unable to locate and review the SWPPP. The Planning Board may choose to require receipt of the SWPPP as a condition of approval.

      HW 10/08/21: The Applicant has provided a draft SWPPP as part of the submission package. The SWPPP is considered a living document that will be finalized by the contractor prior to land disturbance. HW has no further comment.

9. Standard 9 requires a Long-Term Operation and Maintenance (O&M) Plan be provided.

a. The Applicant has provided a Stormwater Operation and Maintenance (O&M) Plan, which includes instructions for maintenance of stormwater control measures, an O&M budget, and an O&M log. HW has the following comments in relation to the O&M Plan provided by the Applicant:

i. Per MSH Volume 2, Chapter 2, HW recommends that the O&M Plan be revised to require catch basin inspection and maintenance four times per year.

HW 10/08/21: The Applicant has revised the O&M plan to require quarterly catch basin maintenance. HW has no further comment.

ii. HW recommends that the Applicant include a simple sketch with the O&M Plan that clearly labels the various stormwater practices to be inspected.

HW 10/08/21: The Applicant has added a sketch plan locating the various stormwater practices. HW has no further comment.

iii. The Applicant refers to infiltration basins in the O&M Plan. As no infiltration basins are proposed, HW recommends clarifying as to whether this refers to the existing wetland areas, or something else.

HW 10/08/21: The Applicant has removed this reference. HW has no further comment.

iv. Per Andover Stormwater Regulations Section VI.C.1.b.5, HW recommends that the Applicant provide a copy of the O&M Plan signed by the owner of the site.

HW 10/08/21: The Applicant has provided an unsigned O&M plan. HW recommends that the Applicant provide a signed copy to the Planning Board prior to land disturbance.

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

a. The Applicant has stated that there are no known or suspected illicit discharges. HW recommends that the Applicant provide an Illicit Discharge Compliance Statement signed by the property owner prior to any land disturbance.

HW 10/08/21: The Applicant has provided an unsigned Illicit Discharge Compliance Statement. HW recommends that the Applicant provide a signed copy to the Planning Board prior to land disturbance.

11. Andover Stormwater Regulations Additional Comments

a. Section IX (Design Criteria)

i. C - Pretreatment: The Applicant must size all pretreatment practices (deep sump catch basins) to accommodate one-years' worth of sediment and debris using the calculation provided in Andover's regulations. HW recommends that the Applicant provide the required calculation.

HW 10/08/21: The Applicant has calculated the annual sediment load for each catch basin using Andover's formula of 83.3 ft3/yr/acre. All catch basins have less than 4 feet of sediment, except for CB 8, which has been

expanded to a 5-foot diameter to ensure all sediment will be captured. HW has no further comment.

ii. D – Pollutant Removal: As a redevelopment project, the design is required to remove 80% of TSS and 50% of Total Phosphorus (TP). The Applicant has not provided evidence of the hydrodynamic separator's removal rate, nor does it appear that the site achieves 80% TSS removal for all outfalls. See comments under Standard 4 for more. Furthermore, the Applicant has not calculated phosphorus removal rates. HW recommends demonstrating sufficient TP removal.

HW 10/08/21: The Applicant has included testing information for the JF4 Jellyfish filter, which ensures at least 80% TSS and at least 50% TP removal. HW recommends confirming that the JF8 Jellyfish filter also achieves the same results.

HW 10/08/21: HW further recommends that the Applicant inform the Owner of the maintenance requirements that are recommended by the vender for long term functionality.

Conclusions

HW recommends that the Planning Board require the Applicant to address the remaining outstanding comments as part of the permitting review process. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Town of Andover Codes and By-Laws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Bernardo at 857-263-8193 or at jbernardo@horsleywitten.com if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.

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