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May 2, 2022

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

Re: Stormwater Peer Review
Sellers Farm Estates – Modified Definitive Subdivision
171 Rear Highland Road, 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 initial peer review of the stormwater management for the proposed residential development located at 171 Rear Highland Road, Andover, Massachusetts. LRC Builders LLC (Applicant) have submitted an application for a 3-lot subdivision. The 3.46-acre parcel is currently undeveloped and includes a bordering vegetated wetland (BVW) in the center of the parcel that is approximately 6,900 sf. There is also a large BVW along the southern portion of the parcel. The two wetlands appear to be connected by an old stone culvert. The Applicant is proposing to construct a 382-foot-long roadway and three new houses. To capture, treat, and manage the stormwater runoff from the proposed roadway and houses the Applicant is proposing to install a closed drainage system and three surface infiltration basins. The proposed cul-de-sac, all three houses and all three driveways appear to be within the 100-foot buffer zone to one of the BVWs. A culvert is proposed under the driveway to Lot 2. The proposed development is within the jurisdiction of the Andover Conservation Commission.

The following documents and plans were received by HW:

- Email regarding stormwater review of Sellers Farm Estates, prepared by abutter's engineer Ken Knowles, P.E. from Eaglebrook Engineering & Survey, dated April 25, 2022 (2 pages).
- Earth Movement Special Permit Application and Letter for Sellers Farm Road, prepared by Ranger Engineering Group, Inc., dated March 14, 2022 (7 pages);
- Notice of Intent Application, Sellers Farm Road, Andover, Massachusetts, prepared by Ranger Engineering Group, Inc., prepared for LRC Builders, LLC, dated March 8, 2022 (28 pages);
- Application for Approval of Modified Definitive Subdivision Plan, prepared by Ranger Engineering Group, Inc., dated March 8, 2022 (5 pages);
- Stormwater Management Report, Sellers Farm Road, prepared by Ranger Engineering Group, Inc., prepared for LRC Builders, LLC, dated March 4, 2022 (251 pages);

- Modified Definitive Subdivision Plan for Sellers Farm Estates, Andover, MA, prepared by Ranger Engineering Group, Inc., prepared for LRC Builders, LLC, dated March 3, 2022, which includes:

o Cover Sheet	1 of 14
o Notes and Legend	2 of 14
o Lot Plan	3 of 14
o Existing Conditions Plan	4 of 14
o Layout and Materials Plan	5 of 14
o Grading and Drainage Plan	6 of 14
o Utility Plan and Profile	7 of 14
o Highland Road Profile	8 of 14
o Site Details	9 of 14
o Utility Details	10 of 14
o Drainage & Water Details	11 of 14
o Drainage Details	12 of 14
o Erosion and Sediment Control Plan	13 of 14
o Erosion & Sediment Control Notes & Details	14 of 14

Stormwater Review

HW has reviewed the documents listed above and has the following 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 (MSH). 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.

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 has two design points.

        1) Design Point 1 (DP1) is Highland Road. Under existing conditions, the stormwater from a portion of the site between #167 and #171 Highland Road (EX1) flows north towards Highland Road. Under proposed conditions the drainage within the proposed roadway is collected in catch basins and piped south towards the BVW. A portion of the site (P2) which has been reduced under proposed conditions continues to flow towards Highland Road. HW concurs with the Applicant's assessment of DP1, no further action needed.

2) DP2 is the A-series wetland located along the southern property boundary. Most of the parcel slopes towards the south. It appears that there may be additional offsite areas that also flow through the project site to the southern wetland. HW recommends that the Applicant review the boundaries of EX2 specifically along the northern property boundary and the western property boundary and justify the limits of the catchment area. The proposed catchment area may need to be adjusted to match the limits of the existing watershed.

3) HW further recommends that the Applicant delineate the catchment area that flows towards the central B-series wetland. HW recommends that the Applicant include a third design point to evaluate the stormwater flowing into the B-series wetland under existing and proposed conditions.

b. The Applicant has proposed three infiltration basins. Two of the basins discharge to the A-series wetland with 12-inch reinforced concrete pipes (RCP). The Flared End Section detail is provided on Sheet 11 (CS6021). The detail indicates that the stone apron should be 36” wide by 36” long. HW recommends that the Applicant provide riprap apron sizing calculations to verify that the stormwater discharge will not cause erosion within the wetland.

c. Infiltration Pond 2 is located on Lot 1. The basin exfiltrates and has an overflow weir located approximately 35 feet from the B-series wetland. HW recommends that the Applicant document that the discharge rate will not cause erosion in the central BVW.

d. HW recommends that the Applicant confirm that the proposed culvert located under the driveway to Lot 2 will not cause erosion to the BVW. The layout shown on Sheet 6 (CS1501) appears to place the culvert within the wetlands causing an impact that will require approval from the Conservation Commission. Furthermore, the invert and outlet for the two 12-inch culverts are not consistent between the HydroCAD model and the plan view.

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

a. The Applicant has provided a HydroCAD model to verify that post-development conditions do not exceed pre-development conditions to DP1 (Highland Road) or DP2 (the BVW on the south side of the parcel). The pre-development HydroCAD model describes DP1 as pond SP2 (Sum Pond Street) and DP2 as pond SP1 (new Pond). The post-development HydroCAD model describes DP1 as pond SP2 (Sum Pond Street) and DP2 as pond SP1 (Sum Pond Woods). The labeling and descriptions are confusing and HW recommends that the Applicant consider clarifying the HydroCAD model.

b. The Applicant has indicated gravel road and fallow soil in the Post Development HydroCAD. HW was not able to locate the gravel road or the fallow soil in the proposed plans. HW recommends that the Applicant verify where in the plans the gravel road and fallow soil are proposed.

c. The Applicant has indicated a surface condition of “poor” for the Woods in the Post Development HydroCAD model. HW recommends that the Applicant justify the use of “poor” Woods. Furthermore, HW recommends that the Applicant confirm that the curve numbers used in the HydroCAD model are consistent with Table 1 in Section IX.E. of the

Andover Stormwater Bylaw.

d. HW recommends that the Applicant confirm it has calculated the times of concentration (Tc) for the existing (EX2) and the proposed (P6) catchment areas that flow through the B-series wetland accurately.

e. Infiltration Pond 3 is located on Lot 2. The HydroCAD model indicates that the 12-inch primary outlet is set at elevation 263.00, the detail on Sheet 12 (CS602s) notes that the 12-inch invert is at 262.00. The detail further indicates that the 12-inch outlet is set at 259.00. The plan view on Sheet 6 (CS1501) calls out the flared end section (FES 2) at 261.50. HW recommends that the Applicant confirm that the plan view, detail, and HydroCAD model are consistent.

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

a. In Section X. of the Stormwater Management Report, the Applicant has listed the recharge volumes provided by each of the infiltration basins. HW recommends that the Applicant provide the HydroCAD stage storage print out for each basin to confirm the volume provided below the outlets.

b. The two closest test pits for Basin 2 are TP4 and TP9. Neither test pit falls within the footprint of the basin. The estimated seasonal high groundwater (ESHGW) at TP 9 indicates groundwater at approximately elevation 263 which is higher than the bottom of the basin, the required 2 feet of separation has not been satisfied. HW recommends that the Applicant conduct additional soil testing to demonstrate adequate separation to the ESHGW per MSH Volume 2 Chapter 2 Page 88. HW further recommends that the Applicant verify if a mounding analysis is required and provide if applicable.

c. Similarly, HW recommends that the Applicant conduct additional test pits within the footprint of Basin 3 to demonstrate adequate separation to the ESHGW per MSH Volume 2 Chapter 2 Page 88. HW further recommends that the Applicant verify if a mounding analysis is required and provide if applicable.

d. It appears that Basin 1 has greater than 2 feet of separation to ESHGW but less than 4 feet. HW recommends that the Applicant provide a mounding analysis per the MSH Volume 3, Chapter 1, Page 28.

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 chosen to size the infiltration basins to provide water quality treatment as well as recharge volume. HW recommends that the Applicant provide the HydroCAD stage storage print out for each basin to confirm the water quality volume provided below the outlets.

b. The Applicant has proposed catch basins, sediment forebays and infiltration basins to provide adequate TSS removal. No further action required.

c. Basin 2 appears to capture runoff from a driveway curb scupper which leads to the forebay (Sheet 12 of 14). HW recommends that the Applicant confirm that the curb scupper is properly sized and that flow will not cause erosion between the driveway and

the basin.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*
   a. The site is not considered a LUHPPL, therefore Standard 5 is not applicable.
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 is not within a critical area, therefore Standard 6 is not applicable.
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 new development. Therefore, Standard 7 does not apply.
8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*
   a. The Applicant has included an Erosion and Sediment Control Plan, Sheet 13 (CS8001). The legend lists check dams. HW recommends that the Applicant include a check dam detail.
   b. HW recommends that the Applicant include proposed stockpile locations with appropriate erosion controls on the Erosion & Sediment Control Plan.
   c. HW recommends that the Applicant add fencing around the infiltration basins to prevent heavy vehicles from compacting the soil.
   d. The Applicant provided a Fiber Log Detail on Sheet 14 (CS8501). HW recommends that the Applicant show where this practice is being used and clarify that the practice shall not use straw or hay.
   e. HW recommends that the Applicant clarify the number of large trees (greater than 12” diameter) that will be removed as part of the proposed layout. Per Section IX.H.14. of the Andover Stormwater Regulations, tree removal shall be minimized.
   f. HW further recommends that the Applicant verify it has reviewed and complies with Section IX.H. of the Andover Stormwater Regulations.
   g. The proposed project requires land disturbance of greater than 1 acre. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) per the EPA NPDES Construction General Permit will be required. HW recommends that the Applicant provide a copy of the SWPPP to the Town a minimum of 14 days prior to land disturbance.

9. *Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan be provided.*
    a. The Applicant has provided a Long-Term Pollution Prevention Plan in the Stormwater Management Report as required. HW recommends that the document become a standalone document to be signed by the property owners prior to occupancy.
10. *Standard 10 requires an Illicit Discharge Compliance Statement to be provided.*
    a. HW recommends that a signed Illicit Discharge Compliance Statement be provided to the Conservation Commission prior to the discharge of any stormwater to post-construction best management practices (BMPs).
11. Additional comments per Andover Stormwater Bylaw.
    a. Per Section IX. A. HW recommends that the Applicant document the low impact development practices that were considered for this project.
    b. Per Section IX.D.2. HW recommends that the Applicant verify if the project site discharges to a water body or tributary subject to a Total Maximum Daily Load (TMDL).
    c. HW recommends that the Applicant clearly document the limit of work. It appears that the erosion control barrier is being placed on the property of #171 Highland Road. Furthermore, it appears that there are some trees and some proposed grading that is outside of the erosion control barrier. HW recommends that the Applicant revisit the erosion controls and adjust as applicable.

<u>Conclusions</u>

HW recommends that the Planning Board require the Applicant to provide a written response to address these 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.

Janet Carter Bernardo, P.E.
Associate Principal

Veronica Seward-Aponte, E.I.T.
Environmental Engineer