

Horsley Witten Group

Sustainable Environmental Solutions

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October 13, 2022

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

Re: 3rd Stormwater Peer Review
Hidden Pines Lane - Four Lot Subdivision
22 William 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 third peer review of the stormwater management for the proposed residential development located at 22 William Street, Andover, Massachusetts. Steven & Elizabeth Leed (Applicant) have submitted an application for a proposed four-lot subdivision known as Hidden Pines Lane. The 2.33-acre parcel contains an existing house, two garages, a tennis court, and a pool with a pool house. The Applicant is proposing to construct a 315-foot-long roadway and three new houses, maintaining the existing house. To capture, treat, and manage the stormwater runoff from the proposed roadway, the Applicant is proposing to install a closed drainage system and two subsurface infiltration chamber systems, hydraulically connected, on the south side of the cul-de-sac. The plan set indicates two bordering vegetated wetland (BVW) resource areas to the west and south of the project site.

The following additional documents, plans, and correspondence were received by HW in response to our September 15, 2022 second peer review:

- Letter to Andover Planning Board, in response to the Horsley Witten Group second peer review for 22 William Street, prepared by Andover Consultants, Inc., dated September 29, 2022 (5 pages);
- Stormwater Management Report, William Wood Way, Andover, Massachusetts, prepared by Andover Consultants, Inc., dated February 1, 2022, revised September 29, 2022 (112 pages); and
- Definitive Subdivision Plan, William Wood Way, Andover, Massachusetts, prepared by Andover Consultants, Inc., dated February 1, 2022, revised through September 29, 2022 which includes:
 - Cover Sheet 1 of 8
 - Definitive Subdivision Plan 2 of 8
 - Existing Conditions & Demo Plan 3 of 8
 - Layout & Grading Plan 4 of 8
 - Utility Plan 5 of 8
 - Plan & Profile 6 of 8
 - Site Details 7 of 8
 - Erosion & Sediment Control Plan 8 of 8

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 Regulations amended May 11, 2021 (Stormwater Regulations).

In accordance with Section VI. B. of the Andover Stormwater Regulations the Stormwater Management Permit and Narrative provided by the 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.

The comments below correlate with the September 15, 2022 second peer review. Follow up comments are provided in bold underlined font where applicable.

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 Applicant has proposed to utilize the existing outlet in the retaining wall located along the south property boundary. The existing 15-inch corrugated metal pipe (CMP) most likely feeds the wetland flagged to the south of the property. The existing and the proposed 15-inch outlet pipe discharge to the southern BVW with no rip rap apron. HW recommends that the Applicant determine whether erosion within this wetland is likely with the proposed stormwater design. HW notes that the stormwater to this existing stormwater conveyance will be treated prior to discharging.



The Applicant has illustrated that the outlet flow velocity from the 15-inch CMP is 2.3 feet per second during the 10-year storm, which is not considered erosive according to MSH Volume 3 Chapter 1 Page 3 Table 2.3.1. HW is satisfied that the 15-inch pipe will not cause erosion in the receiving wetland.

- b. The proposed grading and stormwater management do not include any pipe discharges towards the wetlands off the west property boundary. Under existing and proposed conditions there is an area of vegetation that flows towards the west. This area has been reduced from pre-development conditions by approximately 10,000 square feet (sf). No further action required.

HW has no further comment. The Applicant complies with Standard 1.

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

- a. The Applicant has included two drainage areas (EX1 & EX2) under existing conditions. It appears that the watershed boundary between the two areas should extend to a high point noted with a 78-foot contour and a 30-inch tree. HW recommends that the Applicant redraw the border between EX1 and EX2 to pass through this high point or clarify the delineated area. HW also notes that the existing house at 24 William Street is completely within the catchment area noted as EX2. HW suggests that the Applicant clarify how this was determined.

The Applicant has provided the updated existing watershed map. HW has no further comment.

- b. The Applicant has divided the project site into three (3) proposed sub-catchments (DEV1, DEV2, DEV3). As noted above the catchment divide around the existing house at 24 William Street should be clarified.

The Applicant has conducted additional topographical survey of the 24 William Street property and divided the existing house accordingly. HW has no further comment.

- c. The peak discharge rate at the southern property boundary increases by 0.2 cubic feet per second (cfs) during the 2-year 24-hour storm event. Per the Andover Stormwater Regulations, the post-development peak discharge rate shall be equal to or less than the pre-development peak discharge rate. HW understands that the increased flow is attributed to DEV3 which consists primarily of vegetation that sheet flows towards the southern property boundary. HW recommends that the Applicant consider measures to eliminate the minimal increased flow.

The Applicant has revised the HydroCAD model and Stormwater Report to reflect a decrease in peak rates to the southern property boundary. The proposed design allows for a minimal discharge onto William Street from the northern end of the driveway. During a 25-year storm event the flow is proposed to be 0.1 cfs. HW recommends that the DPW confirm that this minimal flow will not negatively impact the municipal drainage system in William Street.

October 13, 2022: The Applicant has noted that the Town Engineer has not raised any concerns about the minimal discharge onto William Street. The Planning Board may choose to confirm that the Town Engineer has no objections.

- d. The Applicant has used a curve number (CN) of 39 with a description of >75% grass cover area for EX1 and EX2. During the site visit conducted on May 25, 2022, HW observed several large pine trees throughout the property. HW recommends that the Applicant revise the existing curve number value considering the site partially wooded.



The Applicant has noted that the existing wooded areas have been modeled as >75% Grass cover, Good, HSG A because they are underlain by maintained grass and the overstore is primarily evergreens. It is HW's opinion that the existing site has a large area that should be modeled as woods-grass combination with a CN value of 32 based on TR-55.

October 13, 2022: The Applicant has adjusted the Predevelopment HydroCAD model as suggested. HW has no further comment.

- e. The Applicant has utilized a woods/grass combination within DEV1 and DEV3, HW recommends that the Applicant clarify the extent of the wooded area under proposed conditions.

The Applicant has stated that the developed areas modeled as woods-grass combination are the areas proposed to be re-naturalized with pollinator seeding. HW notes that the hatched areas indicated by the Applicant to be a woods grass combination include two large subsurface chamber systems and a Drainage and Sewer Easement that should not be covered with trees. HW views these areas as proposed pasture, grassland which would be modeled with a CN value of 39 per TR-55. Per Section IX.E.4. of the Town of Andover Stormwater Regulations, post-construction runoff curve numbers should be modeled as "poor" and therefore it is HW's opinion that a value of 68 should be utilized for this open space/grassland.

October 13, 2022: The Applicant has noted that the proposed pollinator area will resemble a non-mowed meadow. HW concurs with the proposed surface. However, HW reminds the Applicant that per Section IX.E.4. of the Town of Andover Stormwater Regulations, post-construction runoff curve numbers should be modeled as "poor" and therefore a value of 68 should be utilized for this open space/grassland. The Applicant may choose to request a waiver from the Stormwater Regulations from the Planning Board or adjust the HydroCAD model as stated previously.

- f. The Applicant has used a time of concentration (Tc) value of 4.5 minutes for DEV1. Standard engineering practice is to use a minimum Tc value of 6 minutes. The 4.5 value may be considered conservative.

The Applicant has changed the Tc value to 6 minutes as suggested. HW has no

further comment.

- g. HW recommends that the Applicant confirm that the underground stormwater chamber systems can be installed as proposed. HW recommends that the Applicant consider placing the chambers on 6 inches of crushed stone.

The Applicant believes that the underground stormwater chamber systems can be installed as proposed. HW recommends that a condition be included in any approval issued requiring inspection of the bottom of the system prior to installation of the chambers.

October 13, 2022: The Applicant has included a note on Sheet 7 of 8 for the Contractor to notify the design engineer for an inspection. The Planning Board may choose to require an inspection by a representative from the Town or require a signed certification from a Professional Engineering stating that the subsurface was inspected and found to be acceptable.

- h. HW recommends that the Applicant include a detail illustrating the installation of the 4-foot diameter manholes to be installed beneath the chambers, including a means to inspect the manholes from above the chambers.

The Applicant has included a detail of the chamber manholes on Sheet 5 of 8. However, it is not obvious how the manholes will be inspected if needed. HW recommends that the Applicant clarify the access point.

October 13, 2022: The Applicant has included access points raised to finish grade as shown on Sheet 5 of 8. HW has no further comment.

- i. HW recommends that the Applicant provide a detail for the proposed drainage swale. Furthermore, documentation will be necessary to alert the new homeowners that the swale must be maintained and cannot be altered in the future.

The Applicant has provided a detail for the proposed drainage swale on Sheet 4 of 8. HW recommends that the Applicant address Comment 9b below to appropriately alert the new homeowners that the swale must be maintained and cannot be altered in the future.

October 13, 2022: The Applicant has noted that the swale will be within a drainage easement and the Homeowners Association will be responsible for the maintenance. The Planning Board may choose to require receipt of the easement language as well as the Homeowner's Association documentation.

- j. As required per Section IX.E.6 of the Andover Stormwater Regulations the Applicant has utilized the current precipitation data provided in NOAA Atlas 14. No further action required.

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. Test Pit 2 (TP-2) data indicates fill to 6 feet below the surface. HW recommends that the Applicant conduct an additional test pit within the footprint of the proposed chamber system to demonstrate adequate separation to the estimated seasonal high groundwater

(ESHGW) per MSH Volume 2 Chapter 2 Page 88 as well as the depth to natural material.

The Applicant has stated that soil testing locations were limited because the property is highly developed. TP-2 contained fill because of an old water line. Since the Web Soil Survey indicates that the entire lot and abutting properties is within a Hinckley loamy sand deposit in an area where the topography is relatively flat, the Applicant does not believe that additional soil testing is needed. The Planning Board may choose to require additional soil testing during the installation of the chambers with confirmation by a professional engineer that the bottom of the system is a minimum of 2 feet above ESHGW.

October 13, 2022: The Applicant has no objection to a condition requiring additional soil testing.

- b. HW recommends that the Applicant note that all fill below the chambers will be removed and replaced with clean material with an infiltration rate of at least 2.41 inches per hour.

The Applicant has included Note 8 to the Stormwater Chamber Detail on Sheet 7 of 8 stating that “Fill material under system shall be removed to native soil and replaced with clean sand and gravel with an infiltration rate greater than 2.41 iph.” HW has no further comment.

- c. It appears that the Applicant has provided adequate recharge by using the subsurface infiltration systems to capture runoff from the post-developed area, specifically DEV2.

HW has no further comment.

- 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 proposed catch basins, a Stormceptor (STC 900), and subsurface infiltration structures to provide TSS removal. HW recommends that the Applicant provide documentation for the TSS removal rate used for the STC 900.

The Applicant has listed the resources it used to determine the water quality flow rate and the TSS removal rate. HW recommends that the New Jersey TARP document is provided to the Planning Board to be included in the file.

October 13, 2022: The Applicant provided the requested document. HW has no further comment.

- b. HW recommends that the Applicant provide supporting calculations for the 60% total phosphorus removal per the Andover Stormwater Regulations.

The Applicant has provided the source used to determine the TP removal rate for the subsurface infiltration structure. HW recommends that the applicable table from the Stormwater BMP Performance Analysis is provided to the Planning Board to be included in the file.

October 13, 2022: The Applicant has included the applicable table in the Stormwater Report as suggested. HW has no further comment.

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

- a. A residential site is not considered a LUHPPL, therefore Standard 5 is not applicable.

HW has 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 is not within a critical area, therefore Standard 6 is not applicable.

HW has no further comment.

7. *Standard 7 is related to projects considered Redevelopment.*

- a. While parts of this property have been previously developed, this proposed project will increase impervious area and is not considered redevelopment. Therefore, Standard 7 does not apply.

HW has 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 included "Recommended Construction Period Pollution Prevention and Control" in the Stormwater Report and details for various erosion control measures on Sheet 7 of the plan set. It appears that the erosion control measures shown in the plans are proposed hay bales on Sheets 4, 5, & 6 placed along the west and south property boundaries. HW recommends that the Applicant provide an additional sheet for the Erosion and Sediment Control Plan in the plan set to clearly delineate all proposed erosion control practices.

The Applicant has provided an Erosion and Sediment Control Plan on Sheet 8 of the plan set. HW has no further comment.

- b. Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit (CGP) issued by EPA and prepare a Stormwater Pollution Prevention Plan (SWPPP). HW recommends that a copy of the SWPPP be provided to the Town a minimum of 14 days prior to land disturbance.

The Applicant is amenable to a condition requiring a copy of the SWPPP to be provided to the Town at least 14 days prior to land disturbance.

- c. HW recommends that the Applicant clarify how the wetland to the west of the tennis courts will be protected. HW recommends that the Applicant provide a more robust erosion control barrier along the western property boundary.

The Applicant has proposed a staked haybale and silt fence erosion control barrier along the western property boundary. HW has no further comment.

- d. HW recommends that the Applicant include temporary inlet protection for existing and proposed catch basins within the project site as well as within 100 feet of the construction entrance.

The Applicant has added haybale barriers around the proposed catch basins,

along with a detail, on Sheet 8. HW recommends that the Applicant also provide inlet protection for the catch basins on William Street that are within 100 feet of the construction entrance.

October 13, 2022: The Applicant has added a callout on Sheet 8 requiring silt sacks in the catch basins on William Street. HW has no further comment.

- e. The Applicant has provided a stabilized construction entrance detail with a minimum length of 30 feet which is acceptable for a small residential development. HW recommends that the Applicant clarify where the construction entrance will be installed.

The Applicant has depicted the proposed location of the construction entrance on Sheet 8. HW has no further comment.

- f. HW recommends that the Applicant clarify where the staked haybales demarcated on the plans will be supplemented with siltation fence.

The Applicant has noted on Sheet 8 where stake haybales will be supplemented with silt fence. HW has no further comment.

- g. The Applicant includes a detail for a temporary sediment trap. HW recommends that the Applicant show where on the site this practice may be placed.

The Applicant has provided the detail in case the site contractor decides to employ the practice. The location of this practice will be left up to the contractor. HW has no objection.

- h. HW recommends that the Applicant include proposed stockpile locations with appropriate erosion controls on the site plan.

The Applicant has added proposed stockpile locations with a haybale barrier on Sheet 8. 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 Long-Term O&M Plan in the Stormwater Report as required. HW recommends that the document become a standalone document to be provided to and signed by the property owners prior to occupancy.

The Applicant has provided the Long-Term O&M Plan as a standalone document to be provided to and signed by the property owners prior to occupancy. HW has no further comment.

- b. HW recommends that the Applicant include maintenance tasks for the grassed swale.

The Applicant has added the grassed swale to the Inspection and Maintenance Report Form. HW has no further comment.

- c. HW recommends that the Applicant include a schedule for implementing routine and non-routine maintenance tasks to be undertaken after construction is complete.

The Applicant has included a maintenance scheduled as suggested. HW has no further comment.

- d. HW recommends that the Applicant provide a simple plan that is drawn to scale and shows the location of all stormwater practices requiring inspections.

The Applicant has provided a simple sketch illustrating the location of all stormwater practices requiring inspections. HW has no further comment.

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 Town prior to the discharge of any stormwater to post-construction best management practices.

The Applicant is amenable to providing a signed Illicit Discharge Compliance Statement to the Town prior to the discharge of any stormwater to post-construction best management practices. HW has no further comment.

11. *Additional Comments.*

- a. HW recommends that the Applicant clarify which walls along the property line are to remain. Specifically, the extent of the wall adjacent to the pool house.

The Applicant has clarified that the walls at the southern end of the property, adjacent to the pool house, will remain in place. HW has no further comment.

- b. HW recommends that the Applicant revisit the connect of the proposed contour for elevation 74 near the eastern property line.

The Applicant has included an additional contour line for elevation 74 connecting to the proposed dwelling on Lot 2. HW has no further comment.

12. *Concerns raised by abutters in 11-page document:*

- a. Location of wetlands: Ann Marton from LEC and Janet Bernardo from HW conducted a joint site visit on May 25, 2022. Ann Marton has provided a memorandum dated June 21, 2022 discussing her findings of the wetland delineation.

HW has no further comment.

- b. Water line easement:

- a) The existing property at 24 William Street includes a 20-foot-wide utility easement that the Applicant is using to loop the proposed water line. There are several large pine trees within this easement that may be impacted by the six-foot-deep trench needed to install a water line. HW recommends that the Applicant revisit the proposed location of the water service and discuss alternative locations with the Andover Water Department or document what will happen to these trees.

The Applicant has revised the location of the looped water main to be within the proposed Right of Way. The water main is no longer proposed along the western property boundary therefore the existing trees will remain if approved by the Andover Water Department.

October 13, 2022: The Water Department rejected the relocated water line. Therefore, the water line will be installed within the utility easement along the property line within the property of 24 William Street. The existing trees within this easement will needed to be removed to install the line. The Applicant has not included any proposed vegetated cover within the cleared easement within 24 William Street. The vegetated cover should be confirmed

and added to the site plans.

- b) Existing trees and vegetation: As noted above, HW recommends that the Applicant revisit the curve number and description of the surface conditions under pre-development and post-development conditions.

The Applicant has noted that the existing wooded areas have been modeled as >75% Grass cover, Good, HSG A because they are underlain by maintained grass and the overstore is primarily evergreens. It is HW's opinion that the existing site has a large area that should be modeled as woods-grass combination with a CN value of 32 based on TR-55. Furthermore, HW does not agree that under post development conditions the naturalized area can be modeled as woods-grass combination.

October 13, 2022: The Applicant has revised the HydroCAD model as noted previously under comments 2.d. and 2.e. HW has no further comment.

- c) HW believes that the proposed water line within the utility easement is proposed to loop the water line that is proposed within the roadway. Waterlines are frequently looped as a requirement of the water department to provide adequate water pressure throughout the main. HW recommends that the Applicant review the need for the water line within the easement with the water department.

The Applicant has provided an alternative water line loop location, which is pending approval by the Water Department. HW has no further comment.

- c. Watershed flowing towards the west:

- a) The Applicant has proposed installation of an erosion control barrier along the western property boundary. HW recommends that a more robust barrier be installed, such as a siltation fence and a strawbale combination. The Applicant has proposed a vegetated swale in the vicinity of the existing tennis court. This swale will capture and direct the stormwater runoff from Lot 3 and Lot 4 towards catch basin CB-5 and the subsurface infiltration chamber system. In accordance with the Massachusetts Stormwater Standards the Applicant is required to document that post-development runoff does not exceed pre-development runoff off-site. HW has reviewed the Applicant's stormwater report and provided comments above under Standard 2.

The Applicant has proposed a staked haybale and silt fence erosion control barrier along the western property boundary. HW has no further comment.

- b) Nature Belt: The LEC memorandum dated June 21, 2022 includes recommendations regarding the proposed vegetation to be planted within the area to be naturalized.

The Applicant has incorporated LEC's recommendations regarding extent and type of vegetation to be planted in the callouts on Sheet 4 of 8. HW has no further comment.

- d. Site Conditions: There is a concern that the existing site within 50 feet of the abutting property to the west has not been depicted properly. The Applicant is not increasing runoff to the west and the grades within 10 feet of the property line do not appear to be

altered. The existing tennis court that is proposed to be removed is located approximately 10 feet from the west property boundary. HW recommends that the Applicant describe the construction measures to remove the tennis court without altering the adjacent grades.

The Applicant has proposed to remove the tennis court from the east side of the court and then restore the area back to the existing grade of the tennis court surface prior to constructing the proposed swale in the same area. Moreover, a staked haybale and silt fence erosion control barrier has been proposed between the tennis court and the abutting property to the west. It does not appear that the removal of the tennis court will alter adjacent grades.

- e. Recent activities: HW notes that any tennis court surface would have been considered to have a curve number of 98 which is considered impermeable like a roadway or roof top. Under Standard 2 above, HW recommended that the Applicant adjust the curve numbers used for the existing surface condition listed as grass in the HydroCAD model.

HW has no further comment.

- f. Erosion and Stormwater Runoff: HW has provided comments above regarding the Applicant's stormwater design and suggested improvements to the erosion control measures to comply with the Andover Stormwater Regulations as well as the Massachusetts Stormwater Standards.

HW has no further comment.

- g. Existing structures within 50 feet:

- a) The abutter at 28 William Street would like to see its house located on the plan set. HW suggests that the house at 28 William be shown in a similar manner on the plan set as the houses on the east side of the project site.

The Applicant has added the houses on all abutting properties to the plan set. HW has no further comment.

- b) Trees within existing utility easement. During the site visit, HW observed several trees within the utility easement. If a water line is required by the Andover Water Department HW recommends that the Applicant document what will happen to these trees.

The Applicant has indicated that any trees within the limit of the proposed work will be saved, if possible, or removed as needed due to differences in proposed and existing grades or proximity to dwellings. As noted above it is HW's opinion that if the water line is relocated to the Right of Way the trees along the western property boundary will not be impacted by the proposed development.

October 13, 2022: As noted above the Water Department rejected the relocated water line. Therefore, the water line will be installed within the utility easement along the property line within the property of 24 William Street. Unfortunately, the existing trees within this easement will need to be removed to install the line.

- h. Buffer Zone and House Layout: In Massachusetts a building is allowed to be constructed within the buffer zone of a wetland resource area by obtaining an Order of Conditions from the local Conservation Commission. The Andover Conservation Commission prohibits buildings to be constructed within 50 feet of a bordering vegetated wetland.

HW has no further comment.

- i. Soil Erosion and Sedimentation Control Plan: HW has made recommendations under Standard 9 above regarding the proposed erosion controls.

HW has no further comment.

- j. Locus: HW has reviewed the areas utilized in the stormwater calculations. The total site area modeled is contained to the subject property. The area highlighted on the locus map does not appear to directly impact the HydroCAD model.

HW has no further comment.

- k. Utilizing easement as driveway: The plan indicates a 20-foot utility easement. It is HW's understanding that a utility easement cannot be used as a vehicle easement without prior approval by the Planning Board. Any changes from the proposed subdivision plans would require the Applicant to return to the Planning Board.

The Applicant has re-looped the water main to fall within the Right of Way of the proposed street. In addition, the Applicant has added a note on Sheet 5 of 8 to the existing easement along the westerly side of the property that it shall not be used to access Lots 3 and 4. HW has no further comment.

- l. Stormwater: HW has conducted a peer review of the stormwater management design as described above.

HW has no further comment.

Conclusions

HW recommends that the Planning Board review the need for the Applicant to adjust the curve number under proposed conditions as discussed in comment 2.e. 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