

March 16, 2021

Mendham Township Planning Board
2 West Main Street
Brookside, New Jersey 07926

**Re: Pinnacle Ventures LLC
Preliminary and Final Major Subdivision, Hillandale
Block 100, Lots 17.03
Saint Johns Drive, Mendham Township**

Dear Mr. Giordano and Members of the Board:

Princeton Hydro, LLC has completed our technical review of the plans and supporting materials submitted for the proposed multi-family residential development at 22 Saint Johns Drive (Block 100, Lot 17.03). Our review focused on the assessment of the proposed project's potential impacts on the surface water, groundwater, and habitat resources of the Township. In particular, our review analyzed the mitigative measures proposed for the development with respect to stormwater quality management, stormwater quantity management, groundwater recharge, slope disturbance, soil erosion control and protection of sensitive environmental features. Our review and comments are based on the consistency of the proposed development with the Township's Land Use Ordinances and applicable State regulations pertaining to wetlands, stormwater, and threatened and endangered species.

Materials Reviewed

The comments presented in this letter, which summarize our preliminary findings and comments, are based on Princeton Hydro's review of the following documents:

- Preliminary and final major site development plan sets for Hillandale, prepared by Gladstone Design, Inc (39 sheets) dated 12 February 2021.
- Updated Boundary Survey prepared by Apgar Associates, (1 sheet), dated 15 October 2014 and last revised 27 June 2018.
- Environmental Impact Study prepared by EcoSciences dated 12 February 2021.
- Stormwater Management Report prepared by Gladstone Design, Inc. dated 12 February 2021.
- Completeness Review letter from French & Parrello Associates dated 22 February 2021.
- Operations and Maintenance Manual for Stormwater Management Facilities prepared by Gladstone Design, Inc dated 12 February 2021.
- Freshwater Wetlands Letter of Interpretation Presence/Absence Determination - Extension prepared by NJ Dept of Environmental Protection dated 15 October 2020.

- Soil Erosion and Sediment Control Certification Application letter prepared by Gladstone Design, Inc dated 12 February 2021

Project Overview

This is an application for a multifamily residential redevelopment of an approximately 18.14 acre site on Block 100 Lot 17.03, in the REB (reuse of existing buildings) zoning district, overlay zone with the R-10 zone. The property includes a main building, school, gymnasium, carriage houses, various outbuildings, and tennis courts. The property is characterized by maintained lawn, upland forest, and shrubland. The property is bordered to the west, north and east by the Mosle Preserve (Township of Mendham open space), to the west and east by woodlands and residential properties, and to the south by residential properties and Mosle Road. The property is within the North Branch of the Raritan River watershed and the Raritan River Drainage Basin.

The Applicant proposes to demolish all the existing structures and construct forty-four (44) luxury townhomes with attached garages and additional on grade parking. Other related site improvements include lighting, landscaping stormwater management facilities, and all utilities. Stormwater from paved surfaces and the roofs will be collected by a series of inlets and catch basins and will be conveyed to a proposed stormwater management system. The stormwater management system includes three underground infiltration/detention basins, two underground detention basins, and three bioretention basins located around the development.

The following comments pertain to the review of the Environmental Impact Statement and Stormwater Management Design. The provided materials were reviewed based on the New Jersey stormwater regulations (N.J.A.C. 7:8 and N.J.A.C. 7:15) and the New Jersey Best Management Practices Manual.

1.0 Environmental Impact Study

- 1.1 The application submitted to the Planning Board includes an Environmental Impact Study (EIS), prepared by Gladstone Design, Inc. dated 12 February 2021. The EIS is basically complete and was prepared in keeping with the guidance provided in the Township's Land Development Ordinances, §17-3.1.
- 1.2 The EIS briefly describes the topography and slope of the site but it does not show various slope characteristics on any of the included maps or as tables. This shall be included in the EIS as required by §17-3.1a(5).
- 1.3 The area's soils are thoroughly characterized in the EIS in Table 1 as well as the soils map in Figure 4. However, soil logs were not included in the EIS to help further illustrate the soil throughout the site. The Applicant shall include the soil logs in the EIS as required in §17-3.1a(4).

- 1.4 The Applicant has noted that a search of the site from the NJDEP Natural Heritage Program has been requested; results are still pending. On-site analysis has been conducted to provide a complete inventory of avian terrestrial and aquatic flora and fauna species as outlined in §17-3.1a(11). The Applicant shall provide a complete Natural Heritage Program query results in compliance with this ordinance.
- 1.5 The EIS states that visual observations were made of likely big brown bats emerging from the main building on the site. However the results of the survey were not presented. It is requested that these results be included.
- 1.6 There are 199 trees proposed for removal but the EIS indicates that the landscape plan, which will include a mix of trees, shrubs, and ground covers, will mitigate the loss of vegetation. However, the Summary Chart in Chapter IV, Section O indicates no mitigation measures for vegetation; clarification on this discrepancy is requested. It is also requested that mitigation plans as noted in Chapter IV, Section G 'Vegetation' should be explained in more detail to better understand the full impact to the vegetation of the area (number of trees proposed to be used for replacement, consideration of native species, etc.)especially due since the removal includes 17 heritage trees (trees of 24" + DBH).
- 1.7 The application must receive Soil Erosion and Sediment Control certification from the Morris County Soil Conservation District. The Applicant shall seek certification and supply the certification to the Planning Board and experts upon receipt.
- 1.8 There is no clear information on the proposed septic system beyond existing and proposed flow rates. There are facilities shown on the site plans that indicate sewage treatment but it is not clear how wastewater will be managed. It is requested that the Applicant clarify details about the proposed system and associated loading relative to the previous system and load, though we ultimately defer to the Board's Engineer on this matter.

2.0 Runoff Quantity Standards

In accordance with N.J.A.C. 7:8-5.4 the development must meet the minimum design and performance standards to control erosion, maintain groundwater recharge, and control stormwater runoff quantity (peak flow rate control) impacts of the development. Per N.J.A.C. 7:8-5.4(b)3, in order to control stormwater runoff quantity impacts, the design engineer shall complete one of the following:

- i. Demonstrate through hydrologic and hydraulic analysis that for stormwater leaving the site, post-construction runoff hydrographs for the 2, 10, and 100-yr storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events;

- ii. Demonstrate through hydrologic and hydraulic analysis that there is no increase, as compared to the pre-construction conditions, in the peak runoff rates of stormwater leaving the site for the 2, 10, and 100-yr storm events and that the increased volume or change in timing of stormwater runoff will not increase flood damage at or downstream of the site;
- iii. Design stormwater management measures so that the post-construction peak runoff rates for the 2, 10, and 100-yr storm events are 50, 75, and 80 percent of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.

The Applicant's Engineer demonstrates that the project meets the third criteria noted above, which is supported in Appendix B-2 of the Stormwater Report. Peak flow reductions for each design storm have been met for the disturbed areas within each drainage area.

3.0 Water Quality Standards

In accordance to N.J.A.C. 7:8-5.5, the stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in the stormwater runoff generated from the water quality design storm by 80 percent of the anticipated load from the developed site, expressed as an annual average. Stormwater management measures shall only be required for water quality control if an additional one-quarter acre of impervious surface is being proposed on a development site. The Applicant's Engineer indicates that the proposed development will result in an increase in impervious coverage of 0.65 acre, and therefore the development is required to meet the water quality regulations. The Applicant has met the intent of this rule by providing three bioretention basins and five underground detention/infiltration basins, which provide a minimum of 80% TSS removal, and in excess of that percentage when installed in series.

4.0 Groundwater Recharge Standards

Per N.J.A.C. 7:8-5.4(b)3, in order to control stormwater runoff quantity impacts, the design engineer shall complete one of the following:

- I. Demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100% of the average annual pre-construction groundwater recharge volume for the site; or
- II. demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-construction to post-construction for the two-year storm is infiltrated.

The following comments relate to the project's compliance to the Groundwater Recharge Standards:

- 4.1 The Applicant's engineer states that they will use Method 2 to satisfy the requirements posed in N.J.A.C. 7:8-5.4 2.i.. This method requires the engineer to demonstrate through hydrologic and hydraulic analysis that the increase of stormwater runoff volume from pre-development to post-development conditions for the two-year storm is infiltrated. The report indicates that the increase in runoff volume for the post-developed condition will be 0.164 ac.-ft., meaning that this additional runoff volume must be infiltrated per the rules. The stormwater management report shows the proposed infiltration volume of 0.166 ac.-ft. However, it is unclear how the proposed infiltration volume was calculated. The routings for this calculation are shown in Appendix C-2 of the stormwater report, however the total volume shown to be infiltrated from does not appear to match the infiltration volume of 0.166 ac.-ft. The Engineer should clarify how the proposed infiltration volume of 0.166 ac.-ft. was calculated.
- 4.2 The plan set submitted by the applicant does not show the locations of the soil logs or permeability tests. Please include labels and figures on the plan set where the tests were conducted.
- 4.3 The infiltration rates at each infiltration practice is unclear. The infiltration rates for UG #1, UG#2, and UG #4 do not appear to match any permeability test results shown in Appendix H of the report. The applicant states that the infiltration rates are "conservative", but more information is required about the method of calculation for the infiltration rates to determine that the rate was calculated accurately. The applicant's engineer shall provide additional information to clarify infiltration rate calculation.
- 4.4 As per NJ Stormwater BMP Manual Chapter 12, Section 2, soil profile pits and borings are required in the areas of infiltration. Bioretention Practices 1-2 do not have any soil profile pits shown within the area of infiltration. Also, SL-7 is located between bioretention basin 3 and underground detention/infiltration bed #3 which is not in the areas of infiltration. Additionally, underground basins 3-5 do not contain soil profile pits within their infiltration area. The Engineer shall provide the required soils information within each BMP.
- 4.5 A groundwater mounding analysis shall be provided for the infiltration BMPs, in accordance with the NJDEP BMP Manual.

5.0 Non-Structural Stormwater Management Strategies

In accordance with N.J.A.C. 7:8-5.3, the project should, to the maximum extent practicable, meet the standards in N.J.A.C. 7:8-5.4 and 5.5 by incorporating nonstructural stormwater management strategies. Based on the documents received to date, it appears as though the applicant has considered utilizing non-structural management

strategies. The applicant has submitted a low impact development checklist within the stormwater report.

- 5.1 The Low Impact Development Checklist in Appendix G should be revised to reference Mendham Township and the Morris County Soil Conservation District.
- 5.2 The Engineer should confirm that all other entries are related to this project.

6.0 General Stormwater Comments

- 6.1 Appendix D of the stormwater management report shows the stormwater collection system calculations. The drainage computation sheets show the flow rates and velocities of the piping system for the 25 and 100 year storm. The tables have the same design velocities in all pipes for both storm events. The Engineer shall confirm the design velocities and update the spreadsheet for consistency.
- 6.2 Trash racks are required on the intake of the bioretention Basin outlet structures. The Typical bioretention Basin Outlet Structure Detail shows that a 2.5" orifice and 6" opening are at the intake part of the outlet control structure without any trash rack added. A trash rack should be provided on the outside of the structure to prevent the structure openings from clogging.
- 6.3 A trash rack is provided on the inside of the underground detention/infiltration basin outfall structures. The specified manhole casting has an access opening of 24". We recommend specifying a casting of at least 30" in diameter to provide a safer access point for routine cleaning and maintenance of the trash rack and pipes.
- 6.4 The Engineer shall provide cross sections of each stormwater BMP structure with the water elevation for each design storm and separation to the seasonal high-water table. Separation to the seasonal high-water table must be measured from the bottom of the proposed stone beds in both the biofiltration basins and detention/infiltration basins. If the seasonal high water table or groundwater table was not encountered, a note shall be provided on the section view.
- 6.5 Proposed 'E' Inlet #3-2 appears to have an incorrect invert out. The invert leaving the inlet and entering the basin through Headwall #3-1 is below the basin bottom elevation. Please revise.
- 6.6 The detail for the retaining wall shows tiebacks. Please confirm that the pipe running from U.G. OS #3 to 'E' Inlet #3-2, as well as said 'E' Inlet, will not

interfere with the tiebacks. If so, the detail should be revised to accommodate the pipe and structure.

- 6.7** The level spreader from bioretention basin #3 is connected to a storm manhole with a rim elevation below the invert of the header pipe. The level spreader for Underground Detention/Infiltration Basin #2 is connected to a storm manhole with a rim elevation about six inches above the top of the header. The Engineer should clarify the intent of this design and revise the plans and details accordingly.
- 6.8** The slopes of the pipes to the level spreader headers are steep, with velocities over 10 feet per second. The Engineer should discuss if this velocity was considered in the design of the spreader.
- 6.9** The underground detention/infiltration basin outfall structure detail on Sheet 27 shows an aluminum orifice plate with a 6" opening attached to the wall of the structure, over the lowest orifice. The orifice diameter for Structure #1 is 10", which is larger than the hole in the plate. The detail also shows a 12" opening at the orifice plate. The detail should be updated to reflect the design as shown on the utility plans.
- 6.10** The retaining wall elevations along bioretention basin #3 appear to be incorrect. The top of wall elevations are much lower than the contour elevations around the townhouses. The plans shall be revised accordingly.

7.0 Operation and Maintenance

The Applicant has provided an O&M manual including procedures for the proposed stormwater BMPs. An Operations and Maintenance manual prepared in accordance with N.J.A.C. 7:8-5.8 and the New Jersey Stormwater Best Management Practices Manual shall be submitted for review. The following comments are provided with respect to the operation and maintenance requirements:

- 7.1** We recommend that the Manual and Location Map make specific reference to the BMP designation number as reflected in the Site Plans and Stormwater Management Report.
- 7.2.** We recommend providing location data (latitude/longitude) for each BMP.

8.0 Erosion and Sediment Control

The application includes a soil erosion and sediment control plan. The plan includes locations and details for a stabilized construction entrance, tree protection, silt fence,

limit of clearing and the limit of disturbance. Since the project includes more than 5,000 square feet of disturbance, the Applicant will be required to apply to the Morris County Soil Conservation District for certification. The following comment is provided with respect to the soil erosion and sediment control considerations of the project:

- 8.1** The Engineer should discuss the design of the level spreaders as discharges for the underground detention/infiltration basins. An off-site stability analysis should be provided for each discharge point. We note that per the New Jersey Standards for Soil Erosion and Sediment Control, Section 21 Page 4, level spreaders are not an acceptable design. If the Morris County Soil Conservation District has approved the design, please provide a copy of the certification.
- 8.2** We recommend providing a concrete washout area, and including a detail in the plan set.
- 8.3** Snow fence is shown around the perimeter of the bottom of bioretention basins #2 and #3. We recommend providing the snow fence around the perimeter of the bottom of bioretention basin #1.

This concludes Princeton Hydro's preliminary review of the materials submitted to the Land Use Board for the proposed preliminary and final major subdivision, Hillandale, at Block 100, Lot 17.03. We reserve the right to provide further comment should it become necessary. If the Board has any questions concerning our report, please feel free to contact us.

Sincerely,



Jack Szczepanski, PhD
Senior Ecologist
Princeton Hydro, LLC



Mark Herrmann, PE, CFM
Senior Project Manager
Princeton Hydro, LLC

cc: file