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January 23, 2023

New Jersey Department of Environmental Protection
Division of Land Use Regulation
P.O. Box 420, Code 501-02A
Trenton, New Jersey 08625
Attn: Section Chief for the County of Morris

Re: Flood Hazard Area/Freshwater Wetlands Permit Application
V-Fee Mendham Apartments LLC
84-90 Main Street
Block 801, Lot 20
Mendham Borough, Morris County
DEP File No. 1418-20.0001.1
Our Project No: 22MB212

To Whom it May Concern:

The above application has been submitted to the Department for a Flood Hazard Area Verification, Flood Hazard Area Permit and Freshwater Wetlands permits. The application has also been submitted to the Borough's Land Use Board. While a full review of the application has not been completed by this office, I wanted to share some initial comments relative to the proposed stormwater management design to ensure consistency between your review and ours. The following is a list of comments related to the stormwater design:

1. Full scale drainage area maps need to be provided. Drainage boundaries need to be clearly shown, including the drainage area boundaries tributary to each of the pervious pavement systems.
2. The site has been analyzed with an overall analysis point. The terminus of the existing easterly drainage system(s) needs to be identified on the plans in order to quantify runoff at these locations, and to confirm whether there are separate discharge points that leave the property, or whether the existing storm sewer system is interconnected into one system. The survey depicts two 12" RCP (one opposite the walking path behind the shed, and one further into the wetlands). No information on where the existing inlets located on the easterly side of the property drain to have been provided.
3. An existing inlet and discharge pipe are missing from the westerly side of the existing parking lot. The missing inlet is located just north of an identified utility pole, and

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discharges in proximity to wetland points WB-1 and WB-2, into the existing channel. There needs to be a separate analysis point for this existing runoff, that includes runoff from part of the existing parking lot and associated storm sewer system, that discharges along the westerly property line towards the rear corner of the property separate from any runoff that discharges towards the easterly property line. This is needed in order to confirm existing drainage patterns are being maintained in the post developed condition. If there are any changes being proposed to the existing stormwater drainage system, any change in water quality treatment for runoff from these areas would need to be accounted for in the analysis.

4. The existing storm sewer system located along the westerly corner/side of the tennis club building appears to discharge towards the north westerly corner of the property via an outfall to the existing stream. The engineer/surveyor should confirm this and update the existing plans accordingly. The amount of existing runoff that drains to the westerly property line and the easterly property line needs to be quantified.
5. The applicant shall confirm whether there exist any stormwater management systems that mitigate existing runoff (drywells, underground basins, water quality devices etc.). Any such measures need to be accounted for in the existing conditions analysis.
6. The stormwater management rules specify “In computing pre-construction stormwater runoff, the design engineer shall account for all significant land features and structures, such as ponds, wetlands, depressions, hedgerows, or culverts, that may reduce pre-construction stormwater runoff rates and volumes.” Based on the topography and spot grades provided in the northwesterly corner of the property, it appears the area would act to reduce runoff leaving the site. The invert of the 12” RCP pipe that discharges to this area is lower than the downstream spot grades that have been provided. Additional spot grades along the property line should be provided and the area accounted for in the analysis.
7. The analysis is predicated on the post developed runoff hydrograph meeting the existing runoff hydrograph at every point in time. The analysis does not take into consideration any routing of the proposed pervious pavement areas that could shift the hydrographs. Inflow and bypass areas should be analyzed separately, with inflow areas routed through the pervious pavement systems. While the pervious pavement areas address water quality, they will potentially impact the discharge hydrography by shifting the time of concentration. This needs to be accounted for in the effort to “match the hydrograph.”
8. The Tc calculations indicate no change in Tc between existing and proposed conditions. Tc flow paths for existing and post developed areas need to be provided. Impervious and

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pervious areas should have separate Tc calculations. Runoff areas draining to the pervious paver systems should have separate Tc's from areas that bypass the pervious pavement areas.

9. The McCuen-Spiese sheet flow limitation and the velocity versus slope for shallow concentrated flow (NEH Chapter 15) needs to be utilized for post developed Tc calculations.
10. The amount of drainage area tributary to each pervious paving system needs to be quantified to ensure compliance with maximum drainage area limitations.
11. The plans need to clearly demarcate the portions of the existing parking lot that are proposed to be milled and overlain, reconstructed, and areas of new pavement.
12. Since more than 1 acre of land will be disturbed, the project is a "major development" and must therefore meet all standards of the Stormwater Management rules. An 80% TSS removal rate would apply to the new acre of pavement. For the existing 3 acres of pavement, if water quality is provided under existing conditions, the required TSS removal rate is the greater of the TSS removal rate of the existing stormwater treatment system, or 50% TSS. Runoff from rooftops does not need to be treated for TSS removal but should be deed restricted so that future development of the rooftop addresses the 80% TSS requirement
13. The water quality calculation indicates 0% TSS removal is required for existing vehicular surfaces. The amount of existing vehicle surfaces that are being redeveloped, or are having their existing water quality treatment modified, should be quantified since this would require the greater of meeting the existing treatment system or 50% TSS removal.
14. The impervious areas for the weighted water quality calculation (proposed) do not match the total used (1.06 acres + 4.32 acres totals 5.32 acres whereas the denominator in the calculation used 5.11 acres). It is not clear why the proposed and required water quality calculations would have different total areas.
15. Routings need to be provided to demonstrate the water quality design storm is contained in the pervious paving systems without any overflow.
16. Stage storage and discharge calculations should be provided for each pervious pavement system.
17. Drain time calculations need to be provided to ensure each pervious paving system drains within 72 hours.
18. The stormwater plan information for the catch basin identified as OS-1 is not correct. The basin appears to be a curb inlet that is not connected to the adjacent pervious pavement system.

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19. The plans should clearly demarcate where the existing impervious areas are being replaced with pervious areas. Notes should be provided for these areas indicating that the subsoil below the existing impervious areas will be scarified and topsoil being placed over the scarified soil areas.
20. The BMP Manual indicates the choker course in permeable pavement systems must consist of clean, washed AASHTO No. 57 broken stone. The permeable interlocking paver detail indicates dense graded aggregate is being proposed, which is not consistent with the BMP Manual. Also, the joint material (#8 or #9 aggregate) should specify that it is clean, washed.
21. The stormwater conveyance system (storm sewer analysis and roof drainage system) needs to be designed for the 100-year storm event to ensure design assumptions are achieved.
22. Inspection port details need to be provided on the plans. The location of the inspection ports needs to be provided at the upstream and downstream ends of the perforated underdrains within each of the pervious paving systems.
23. The separation distance from the bottom of each pervious pavement system to the seasonal high-water table needs to be provided. One foot minimum separation needs to be provided.
24. The plans indicate portions of the downstream stream conveyance systems will be removed. The means for controlling runoff during construction needs to be provided.
25. The construction requirements listed within the NJDEP BMP Manual on pages 8-9 within Chapter 9.6, Pervious Paving Systems, should be provided within the notes on the permeable interlocking paver detail.
26. Grade separated areas must be designated on the plans for stockpiling snow and ice separate from the pervious paving systems.
27. Attachment D – Major Development Stormwater Summary of the Tier A Municipal Stormwater General Permit needs to be completed by the Applicant.
28. The NJ Geoweb indicates an unnamed tributary to the North Branch Raritan River, classified as FW2-TPC1, is adjacent to the subject property. Category 1 waters have a 300-foot riparian buffer. Pursuant to the Flood Hazard Area Control Act Rules at N.J.A.C. 7:13-11.2(j)4, runoff from the water quality design storm that is discharged within a 300-foot riparian zone shall be treated in accordance with this section to reduce the post-construction load of total suspended solids by 95 percent of the anticipated load from the developed site, expressed as an annual average. The proposed outfall(s) from the stormwater conveyance system appears to be within the 300' riparian zone, which

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would require 95% TSS removal. The engineer should confirm with NJDEP whether the existing parking lot that that drains to proposed conveyance system that discharges within the riparian zone needs to meet the 95% TSS removal requirement.

Thank you for in advance for your consideration of these comments and let me know if you have any questions.

Very truly yours,



Paul W. Ferriero, PE, CME
Borough Engineer