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Jakub Tatka, MD
Orthopedic Surgery
Hip and Knee Reconstruction and Preservation
White Plain Hospital

July 9, 2025

RE: Valles-Moelis Property
1011 Greacen Point Road
Village of Mamaroneck, NY 10543

Mr. Tatka,

Please find attached Tectonic Engineering's, civil engineering review and comments for the private residence to be constructed at 1011 Greacen Point Road in the Village of Mamaroneck, New York. Based upon the documents provided, Tectonic Engineering reviewed ALP Engineering's plans issued 6/23/2025 and the associated Stormwater Pollution Prevention Plan (SWPPP) revised 6/24/2025. The original plans and calculations were based on the 2015 New York State Stormwater Management Design Manual (NYSSMDM), therefore that version was utilized as the basis for this review.

Stormwater System Design and Configuration:

1. Stormwater Management Practice #1 (SMP #1), located along and parallel to the southerly lot line, is approximately 30 ft north of the adjacent residence. This system consists of a detention facility comprised of 3 rows of 36" pipe as well as a downstream catchment consisting of 2 rows of 4 underground interlocking stormwater infiltration chambers. SMP #1 receives runoff from the detention facility thru a 4" pipe. Runoff in excess of the design capacity of SMP #1 is discharged thru the grate of Outlet Control Structure 1A at elevation 14.15 ft. This means all runoff captured in SMP #1 below elevation 14.15 is forced to infiltrate into the surrounding natural soils which have an infiltration rate of 21.5 to 24.0 in/hr (see Percolation Test Data Sheet by ALP Engineering – 5/16/24 for test hole #P-1). The soil profile from this same test data indicates the existence of a 12" thick layer of highly compacted sands and boulders from 3.5 to 4.5 ft below grade.

Project Contact Info

1279 Route 300 | Newburgh, NY 12550
845.567.6656 Tel | 845.567.8703 Fax

tectonicengineering.com
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The runoff stored in SMP #1 during and after a storm event would create a hydraulic pressure head on any subsurface water held in the adjacent soils from both current and previous storm events. This pressure head would typically force water in the adjacent soils to move downward to the groundwater table; however, in this case the layer of heavily compacted sand and boulders would force subsurface water to move in a more outward and horizontal direction following the path of least resistance until it could find an area of hydraulic relief. The basement of the adjacent residence located roughly 30 ft from SMP #1 with a basement floor elevation of +/-7.2 ft, would be subject to a 7.0 ft subsurface pressure differential (14.15 ft – 7.20 ft) caused by the stored runoff in SMP #1. This pressure differential on the soils adjacent to the basement wall may in turn cause more extreme and frequent flooding in the basement and for a longer duration as SMP #1 discharges the stored stormwater into the soil.

Applicant should provide an analysis on the expected subsurface movement of water that shows no impact to the adjacent residence or relocate SMP #1 away from and/or below the adjacent basement to ensure there is no subsurface impact.

2. Surface grading of the side slopes adjacent to the south property line indicates a 1:1 embankment. A 1:1 embankment is a steep slope, a 45-degree hill. A slope this steep needs to be permanently stabilized to prevent future soil erosion. Typically, a 1:1 embankment requires a permanent, hardened stabilization method such as GEOWEB geocells. Alternatively, the pavement in this area could be reduced or moved such that the resulting slope at the southerly property line has a greater run and is no steeper than 3:1.

Water Quality:

1. The SWPPP, page 5, proposes installing two hydrodynamic separators prior to the stormwater detention system for pretreatment purposes. Hydrodynamic separators are not on the standard Stormwater Management Practices (SMPs) list and as such would be considered an alternative SMP. In reference to alternative practices, Section 3.3.2 of the NYSSMDM states, “In order to be in compliance with the technical standards, projects must meet both required performance and sizing criteria.” The department’s performance criteria for SMPs meeting water quality standards must be capable of 80% TSS (total suspended solids) removal and 40% TP (total phosphorus) removal. The attached documentation from the State of New Jersey, Bureau of Nonpoint Pollution Control for the Cascade Separator stormwater treatment system proposed in the SWPPP is only capable of 50% TSS removal, not meeting the department’s performance criteria.

2. The SWPPP, page 5, references section 9.4 of the NYSSMDM regarding the hydrodynamic separators. Chapter 9: Redevelopment Activity only applies to redevelopment projects and the allowance referenced in Section 9.4.1 for alternative practices is only relevant to redevelopment projects, which this is not. The proposed hydrodynamic separators are not listed as a standard pre-treatment method for underground infiltration systems. As is suggested on page 5 of the SWPPP, it is possible these could be utilized; as a pre-treatment settling chamber if they capture the pre-treatment volume and also meet sizing requirement as calculated by the method listed in Section 6.4.3.

3. Percolation test data (SWPPP, page 17) conducted at the location of SMP #1 found the infiltration rate (f_c) to be between 21.50 and 24.00 in/hr. Section 6.3.3 states that "If the fc for the underlying soils is greater than 5.00 inches per hour, 100% of the WQv shall be pretreated prior to entry into an infiltration facility." Page 5 of the SWPPP erroneously indicates that a pretreatment volume of 25% of the WQv (Water Quality volume) is required. The soils in the location of SMP #1 exceed the f_c threshold of 5 in/hr. hence 100% pretreatment is required. It appears an adequate storage is provided, please verify methodology.

4. Percolation test data (SWPPP, page 17) conducted at the location of SMP #2 found the infiltration rate (f_c) to be between 12.50 and 13.00 in/hr. Section 6.3.3 states that "If the fc for the underlying soils is greater than 5.00 inches per hour, 100% of the WQv shall be pretreated prior to entry into an infiltration facility." Page 5 of the SWPPP erroneously indicates that a pretreatment volume of 25% of the WQv (Water Quality volume) is required. The soils in the location of SMP #2 exceed the f_c threshold of 5 in/hr. hence 100% pretreatment is required. It appears an adequate storage is provided, please verify methodology.

5. Section 6.3.2 requires, "All infiltration systems shall be designed to fully de-water the entire WQv within 48 hours after the storm event." De-watering within 48 hours is not demonstrated, calculations should be provided for both SMPs showing the water quality volume is recovered within 48 hours using Darcy's law for flow thru a porous material in a falling head analysis.

6. It appears in the calculations and tabulations that only 486 sf of rooftop is contributing to basin FDA-1 and 436 sf contributing to FDA-2. These values need to be rechecked as they

appear to be much less than the rooftop areas depicted in the plans. These values would impact the impervious coverage used to calculate required water quality volumes and runoff peak rates. The tables provided in the SWPPP on pages 3 & 4 of Appendix A Stormwater Management Report Hydrographs and Routings, seem to indicate that there is a total rooftop area of 486 sf (0.011 Ac); unless portions of the rooftop area have been incorporated into the values listed for the undefined impervious areas. If so, please clarify.

7. SMP #2 appears to be using a "separator row" for pre-treatment. Please clarify and provide calculations showing that the chamber is adequately sized for pretreatment of 100% of the water quality volume, and as a settling chamber based on the method listed in Section 6.4.3.

8. There is approximately 954 sf of impervious surface at the SW corner of the building that is not being captured and has been included in Basin FDA-3 as untreated runoff. If site conditions preclude capture of that specific area, it should be added as additional water quality treatment volume to one of the SMPs, such that runoff from 100% of the impervious areas is being treated. Table A-1 should be revised to include this area in the water quality calculations.

9. There is no mention or mechanism as to how this design meets the minimum RRV as required by Section 4.3. This needs to be addressed in the SWPPP.

Water Quantity:

1. This project discharges directly to Delancy Cove (a tidal water body) so it is unclear why the pre vs post hydrologic modeling was performed (SWPPP, Appendix A Stormwater Management Report Hydrographs and Routings, pages 4-12) in regards to the 1 yr, 10 yr and 100 yr storm events. The NYSSMDM specifically excludes:

    - CP Channel Protection Volume requirements (1 yr/24 hr) are waived under Section 4.4 for "site discharges directly to tidal waters"

    - QP Overbank Flood Control Volume requirements (10 yr/24 hr) are waived under Section 4.5 for "site discharges directly to tidal waters"

- Qr Extreme Flood Control Volume requirements (100 Yr/24 hr) are waived under Section 4.6 for "site discharges directly to tidal waters"

2. The model uses a time of concentration (Tc) of 6 min for both Pre and Post conditions, there should be a difference, based on a length reduction, gradient change as well as a change in vegetative surface cover.

   The Tc calculation under pre-developed conditions indicates only 35 lf of sheet flow; however, the basin map shows a uniform slope and surface cover well in excess of 100 lf. There is no topographic evidence of shallow concentrated flow occurring in the hydraulic path. As such, the model should be using the 100 lf max. of sheet flow, which will substantially increase the Tc and subsequently reduce the pre-developed peak flow rates.

3. The change in the values for roof cover discussed above may substantially change the weighted curve numbers and subsequently the results of the post-developed routing. The input data should be revised to reflect the rooftop coverage and contributing downspouts depicted in the architectural plans.

4. The routing model indicates that SMP #2 utilizes the CultTec 280HD chamber; however, details and callouts throughout the plans indicate that SMP #2 utilizes the 180HD chamber. This results in a change of the catchment's stage/storage profile. The model and/or plans should be revised to accurately account for the stage/storage values based on the actual chamber to be used.

5. Flood plain cut and fill compensation should not be needed for fill within a tidally influenced flood plain.

6. Plans should be updated to reflect changes to the SWPPP and/or drainage design.

Sincerely,

J. Mark Privette

J. Mark Privette, P.E.
Manager of Engineering
Tectonic Engineering Consultants, P.C.