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March 10, 2022

Memo

To: Chris Kok, PP, Wayne Township Planner

From: Christopher P. Statile, P.E., Design Consultant

Regarding: Block 3103, Lots 16 & 19
Avalonbay Communities, Inc. Site Plan Application Drainage Review

As requested, we made a drainage review of the Avalonbay Communities, Inc. plans for the above site and offer the following comments:

1. The Barbour development site north of Barbour Pond Drive is increasing in Impervious Coverage from 2.76 acres to 7.6 acres. The southerly site is retaining about 2.8 acres of impervious surfaces.

   Provisions for groundwater recharged must be presented. Annual groundwater recharge for land development under both the pre- and post-developed (or existing and proposed) site conditions should be estimated using the Annual Recharge worksheet in the NJGRS. Designated Urban Redevelopment sites are exempted.

2. The "Stormwater Collection System Calculations" summary in the drainage report is missing information on a portion of the proposed storm drainage (we had notified the designer but not received additional information). Absent the missing data, we cannot make a full assessment of the drainage plans.

3. The above *partial* summary indicates that 11 out of 15 inlets proposed have runoff areas exceeding 5,000SF in contravention to Section 134-72.4 "Drainage" in the Land Development ordinances. Additional drains can be provided to meet compliance or a design waiver is required.

4. Routing for the roof drains (parking deck and townhouses) are not shown, so it cannot be determined if this runoff is being controlled.

   The drainage from the roof of the parking deck has to be treated and detained similar to the other impervious areas of the proposed site.

If the floors of the parking deck are to be power washed or cleaned annually with solvents or detergents, these have to be collected and treated as sanitary sewerage, not as stormwater. Or, if the Township does not permit the collection of this runoff into the sanitary sewer system, the applicant/owner will have to make provisions for collection and proper disposal of same.

5. The proposed storm drains are HDPE plastic pipe versus reinforce concrete pipe per Section 134-72.4 "Drainage." A design waiver is required.

6. The pipe between Inlets 37 to 38 to 37 slopes less than 0.5% per Section 134-72.4 "Drainage." A. Either the pipe has to be increased in slope, or a design waiver is required.

7. Runoff from a portion of the north- most parking area is not be treated before discharge. This can be amended via a re-routing of stormwater to Inlet #22 which runs to the detention basin #1.

8. The designer uses the 1975 Passaic County Soils Map to identify the underlying soils designating the area as "Pits, Sand and Gravel" (PHG) with a poor Hydrological Soil Group Designation of "D" rather than using actual soils data from test pits. Group "D" would presume that ongoing soil mining activities are occurring on the site which they are obviously not. The sites were long ago restored and mature trees are found. Soil Maps are to be used only as a starting point/guide in design as their accuracy is very limited and incomplete. The information presented on the USGS 1955 Quad Map (revised 1981) indicates the project area ground surface as being disturbed presumably due to soil mining or development activities, although we have no historic information on this.

Pits, Sand and Gravel

Pits, sand and gravel (Pt), are open excavations from which the soil and an underlying mixture of sand and gravel have been removed. The sides are steep in pits that have been recently excavated. The bottoms of some pits have been cut in steps, but most bottoms are sloping. In places bottoms are below the depth of the water table.

A hazard of ground-water pollution exists in areas that are used for disposal of liquid or solid wastes. Abandoned pits become eyesores if grading, erosion control, and revegetating are not part of the restoration process. The low available water capacity limits the growth of plants. The pits have potential for recreational, industrial, or commercial uses. Not assigned to a capability unit or woodland group.

Therefore actual soils data is required via field test pits taken to at least 5 ft. below the bottom of the sand filters, given the magnitude of development and its reliance on the filters/detention systems. Provisions for groundwater recharge must be provided.

9. The existing storm drain outlet pipe in Barbour Pond is clogged and restricting flow based on our inspection. The riprap channel protection should be repaired due to scour.

10. The depth of detained water in the four sand filter basins varies from 1.5 ft. to 3.2 ft. for the 2-year, "Water Quality Storm" in contravention to the requirements of the BMP Manual. The basins must be enlarged to reduce this depth to 1 ft. for proper functionality.

11. The lowest orifice openings in the outlet control structures were set 0.5 ft. above the basin bottoms. The outlets should be lowered to the elevation of the basin bottom to avoid the potential for detention latency which could become a health hazard.

12. The "soil planting bed" must be increased in thickness to 24 inches from 12 inches per the BMP Manual. This enhances surface vegetative growth as shown on the Landscape Plan.

    The BMP Manual requires that the entering runoff to the water quality basins be evenly distributed. Currently they are shown as point discharges subjecting the soil bottom to scour based on outlet velocities listed in the Drainage Report. The designs must be changed.

13. The filter fabric surrounding the Soil Bed should be reduced in height to the sand layer to allow vegetation to comingle into the basins. The fabric creates a barrier.

14. The Outlet Control Structure footings in each basin should be increased from 6" thick to 12" thick for sustainability. The trash rack must be removable for cleaning, and be locked to prevent illicit entry.

15. Runoff to Inlets #37&38 must be checked to include all off-tract overland flow from the adjacent property.

On receipt of additional information, we will complete our review. None of the comments will have a material effect on the project. Feel free to contact us with any questions.

c: Daniel Dougherty, PE, Dynamic Engineering
CPS/mr
Wayne