

August 26, 2019

Norfolk Zoning Board of Appeals
Mr. Christopher Wider, Chairman
1 Liberty Lane
Norfolk, MA 02056

**Re: 40B – Civil Engineering Peer Review
Lakeland Hills
Seekonk Street
Norfolk, Massachusetts**

Dear Chairman Wider:

The following letter summarizes comments generated during the course of our review of applicant submittal materials and related project materials for the above-referenced project (Project). The following is a list of specific documents reviewed:

- *“Lakeland Hills” A Comprehensive Permit Plan* by Andrews Survey and Engineering, Inc. (ASE) Revision 1 dated July 25, 2019 hereinafter referred to as “Project Plans”.
- *“Stormwater Management Report for Lakeland Hills”* by ASE dated July 29, 2019 hereinafter referred to as “Stormwater Report”.
- *“Best Management Practices Locus”* by ASA dated July 29, 2019.
- *“Pre- and Post-Development Watershed Maps”* by ASE dated July 29, 2019.
- *Memo from Norfolk Fire Chief Cole Bushnell* dated May 21, 2019 listing Fire Department Project comments.
- *Various Email Correspondence from Town Departments*

Comments

In general, the materials submitted were well organized and easily readable and included much of the information needed to support the ZBA’s review. However, no information has been provided indicating how the “shared leach field” locations have been sized or how their locations were determined. The wastewater treatment and disposal system may fundamentally impact the proposed density and we recommend the applicant provide additional documentation demonstrating a reasonable level of certainty that the site can support the proposed density from a wastewater disposal and stormwater management perspective before addressing what we consider finer design comments. Additional information should include, at a minimum:

- Summary of Design Flows
- Test Pit data indicating underlying soil conditions
- Conceptual layout and description of treatment plant components and required tankage
- Conceptual layout and detail of Subsurface Soil Absorption System(s) (SAS) and sizing calculations

We recommend addressing the wastewater strategy in more detail first since the proposed density and site wetlands leave very little room to address potentially unmet needs of the wastewater disposal system. Any Additional space or relocation required to meet wastewater demands will likely require modification of unit count and/or roadway layout.

In addition, there appear to be some fundamental inconsistencies in how the proposed stormwater management system considers the pre-development condition versus the proposed condition. In particular

the design assumes a restrictive underlying soil condition when evaluating pre-development condition but applies a far more permeable condition under proposed conditions. The net effect is that the pre-development runoff rates are over-estimated and post development rates under-estimated. We recommend the applicant address these issues prior to conducting any future analysis or plan modifications.

Project Plans

1. Test pit information is provided on the Existing Conditions Plan but does not include the date of performance or the name of the individual inspector and his/her related qualifications. Future plans should include such information. Test pits were advanced to a reasonable depth to document surficial soils but were not advanced to refusal as needed to document the transmissivity beneath the proposed soil absorption system. Any future investigation should be advanced to refusal if needed to support groundwater mounding calculations.
2. In some cases, test pit results indicate mottles were not observed despite being at depths several feet lower than adjacent wetlands. This suggests that the absence of soil mottles may not provide a reliable representation of estimated seasonal high groundwater. We recommend monitoring wells be installed in at least those locations where groundwater is likely to affect design.
3. It appears that a tiny bit of the work at the entrance from Seekonk Street may extend onto adjacent private property. This likely can be addressed easily in future submittals.
4. We recommend the proposed retaining wall near the Seekonk Street entrance be relocated to fall outside the proposed right of way if possible.
5. The Project should provide at least 20' between proposed buildings and the limit of the right-of-way at all driveways to ensure parked vehicles do not extend into public way.
6. We understand the anticipated "traffic calming" benefits of the traffic island but suggest the ZBA discuss potential options that may provide a less complicated traffic pattern and create less impervious surface.
7. We recommend the crosswalk at Unit 94 be moved to consolidate with crossing at Unit 93.
8. The plans do not indicate center line pavement markings. Will roadway centerlines be striped?
9. Please consider adding centerline stationing to the layout and materials plan on future submittals.
10. Show conceptual locations of treatment plant components and tankage as well as required accommodations for access and maintenance. Our concern is that these items may not have been adequately considered and accommodating actual requirements will impact unit or roadway layout.
11. Proposed roadway locations are appropriately configured to minimize impacts at wetland crossings. Areas of wetland likely impacted by roadway construction are depicted accurately and appear to be comfortably below the 5,000 s.f. local permitting threshold.
12. The Project proposes connection to an existing water main in Seekonk Street. We request the applicant provide documentation to assist the ZBA in finding that adequate supply is available and that the new demands of the Project can be safely accommodated. At a minimum the information should include a recent fire flow test of the main in Seekonk Street, a projected peak demand from the development and an assessment of available supply and pressure as well as a description of proposed connection methods and valve locations.
13. The proposed layout of drainage infrastructure near the Site entrance is confusing. Please review and simplify if possible.
14. Infiltration Basin 1 does not include an emergency overflow. If capacity is exceeded the basin will spill directly to Seekonk Street.
15. Please explain how Infiltration Basin 2 will not be short circuited by its outlet to Infiltration Basin 1.
16. The drainage design appears to include adequate consideration of off-site flows. Please confirm that proposed basin design includes consideration of off-site flows or otherwise is intended to redirect offsite flows around proposed basin.

17. A large amount of earthwork, including ledge removal, is proposed. Please provide a summary of required Cuts and Fills and a brief explanation of how bulk excavation will be executed.
18. As the Project advances we may request the grading and drainage plan utilize 1-foot contour intervals considering the proximity of units. For now, 2-foot contour intervals are reasonable particularly given the extent of grading required. The applicant should plan on providing 1-foot contour intervals on the Final Plans.
19. The two leaching fields are proposed in significant cut and fill sections. This will likely complicate design and reinforces why additional information is required to document the suitability of each location.
20. The proposed sewer routing indicates 19 units will be connected to the north leach field and 77 units will be connected to the south leach field. However, the south leach field is significantly smaller in footprint. Are portions of the site planning on utilizing a Title 5 system while other portions will be served by a treatment plant? The estimated combined flow from the project is well over 20,000 gallons per day suggesting a treatment plant is required.
21. The outlet from Infiltration Basin 6 discharges at a point source immediately upgradient of an abutting property which previously was exposed to overland flow only. The discharge will need to be modified to re-establish a distributed flow pattern that will not modify drainage on abutting properties.
22. Several infiltration basins are located within 50-feet of a wetland. Please explain how these basins comply with minimum 50-foot setback requirements of the Massachusetts Stormwater Handbook.
23. Infiltration Basin 5 has a bottom elevation of 192.00 while the adjacent wetland is at elevation 194.00. Please explain how this basin is expected to function and maintain separation from groundwater.
24. When breaking the elevation grid of the profile please make sure to indicate elevation ranges on both sides of the break and clearly demarcate the sections.
25. Please provide titles for stationing to distinguish common station references. Or consider providing non-recurring stationing by beginning at varying starting points (ie. Station 00+00, Station 30+00, Sta 60+00).
26. Easements will need to be defined for any areas on private property where operation and maintenance is required.
27. The Project should include provisions (ie. planting or fence) to prevent impacts of headlight glare on residential property opposite the proposed driveway.
28. Please provide a figure showing how Norfolk Fire Department emergency vehicles will access the site, and particularly Units 16 and 17. We recommend access be coordinated with the Norfolk Fire Chief.
29. Given the density of development we recommend roadway sections include an additional 1" of pavement thickness.

[Stormwater Report/Drainage Design](#)

We expect there may be changes to roadway and other impervious surfaces resulting from on-going review by the ZBA which will require modification of the drainage design. Our comments below are general and intended to define expectations for future submittals which will need to demonstrate compliance with the Massachusetts Stormwater Handbook and Performance Standards. Please be advised, post-development stormwater controls have been designed with little available room for adjustment. Any changes in underlying analysis will likely result in required changes to basin size and geometry.

30. The analysis shows an increase in peak runoff to Seekonk Street during the 2-year event. This does not comply with Standard 2. Please address in future submittals.
31. The runoff analysis appears to use far more restrictive NRCS soil mapping to estimate runoff volumes under pre-development conditions and uses far less restrictive test pit results for pond

- infiltration rates. Please ensure that the same soil condition assumptions are used under all pre- and post-development applications.
32. Pre-development Analysis Point 5 consolidates flow from SC5A and SC5B but those subcatchments discharge at different locations and never reach a point of confluence. Please address separately in future analysis.
 33. The analysis uses extremely high infiltration rates for ponds despite soil mapping and topographical conditions that suggest more restrictive conditions. Please provide additional information supporting the use of the Rawls Rates applied in the analysis. At a minimum this should include detailed test pit logs which include the date conducted, the name and license number of the Soil Evaluator conducting the testing and the name of any witness to the test.
 34. Please clarify how the Hydrologic Soil Groups considered under the Stormwater Recharge Requirements (Standard 3) can stipulate that “No A Soils were found on site” yet every basin uses a Rawls Rate corresponding to an A soil.
 35. Analysis submitted includes exfiltration over “Wetted Area”. Guidance in the Stormwater Handbook requires infiltration be calculated over “Surface Area”. Please address in future analysis.
 36. It appears the analysis takes credit for exfiltration in sediment forebays. While not specifically precluded under applicable guidance, forebays are required “pre-treatment” for infiltration systems and are designed to hold contaminants and provide for maintenance that typically hinders infiltration. We recommend the design not include the forebay area in the exfiltration calculation.
 37. Please confirm that the expected volume of the Gabion Wall is excluded from the pond geometry (volume and bottom area) considered in the analysis. The Gabion Wall is shown as a line on the drawings but in application will likely be several feet tall and at least as wide.
 38. Please clarify the origin of the 4.21 in/hr infiltration rate used in the drawdown calculations provided for basins 2-6.

We have tried to focus our initial comments on foundational issues that are most likely to influence design and reserve the right to comment on finer details as the applicant and the ZBA approach consensus. We are pleased to discuss any of our comments at your request. Please don't hesitate to contact us with any questions, or if you require additional information.

Very truly yours,



Sean P. Reardon, P.E.,
Vice President

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