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January 8, 2024

Zoning Board of Appeals
Dover Town House
5 Springdale Avenue
P.O. Box 250
Dover, MA 02030

Ref: Dover Homes
Comprehensive Permit

Dear Members of the Board:

I am writing to respond to comments from Tetra Tech dated November 28, 2023. Please find enclosed the following revised and additional information:

- Six full-size and five 11x17 copies of a revised site plan; and
- One copy of a revised stormwater report.

We offer the following responses to Tetra Tech's comments for the Board's consideration:

GENERAL COMMENTS:

1. *Comment: We recommend the plans show the location of homes and driveways on adjacent lots to better understand potential impacts associated with the significant fills being proposed on all lots. Locations can be approximated based on aerial photos.*

Response: Existing abutting driveways and dwellings have been added and are shown where possible. The existing dwelling to the south of lot 2A did not fit on the plan sheet (7 Trout Brook Road). The driveway lies about 70' from the property line and the dwelling lies about 115' from the property line.

2. *Comment: Similarly, we recommend contours be extended at least 15 feet onto abutting property to better understand grading patterns and any potential impacts from proposed fills. Grading can be approximated based on LiDar data available from MassGIS if needed.*

Response: Contours have been extended into abutting properties and is based on publicly available LIDAR.

3. *Comment: Please provide a summary of required cuts and fills on each lot to estimate the volume of fill required to raise the sites as shown. If possible, include a summary of cut volume associated with the required compensatory storage mitigation as well. This information will assist the Board in addressing/qualifying any trucking related concerns.*

Response: The proposed lot cut/fill calculations and compensatory flood storage cut/fill calculations have been added to each sheet.

SITE PLAN COMMENTS:

Lot 1A

4. *Comment: Proposed grade is substantially higher than existing grade (6' fill) which blocks runoff currently flowing directly off the road and the proposed grading does not clearly show how runoff accumulating at the edge of the right-of-way will be addressed. We request the applicant clearly show how runoff will be conveyed from the roadway to the wetland without ponding in the public way. At a minimum this should include definition of a channel cross section and all associated grading including resolution of the 109 contours.*

Response: We note that it is typical for stormwater to flow along the paved portion of a road or within/along the gutter for distances of up to 300 feet. For the road along Lots 1A and 2A, the road crests at the south edge of the proposed development area and the shoulder is slightly elevated above the road in front of the two proposed houses until the vicinity of the driveway for Lot 1A. Road runoff therefore runs along the edge of the pavement from the crest northerly to the vicinity of the proposed Lot 1A driveway, where the water then flows into and along the shoulder in a northerly directly to the wetland at the intersection. To the south of the proposed Lot 2A development pad, road runoff runs into the shoulder and into an existing swale leading to the wetland that will not be disturbed.

The proposed development will mimic these conditions. Road runoff will continue to flow along the edge of pavement northerly in front of the two proposed houses. At the north side of the proposed Lot 1A driveway, water would continue to flow off the paved portion of the road and into the shoulder. The proposed plans have been revised with more detailed grading information along the road in this area to ensure that these existing flow patterns are maintained.

5. *Comment: The plan shows area drains and a trench drain collecting runoff from paved surfaces but provides no pretreatment prior to infiltration. At a minimum applicant must demonstrate how the project intends to protect the infiltration system from the inevitable fouling from sediment if no treatment is provided.*

Response: While deep sump area drains had originally been proposed as pretreatment, as discussed at the last hearing, collection of stormwater runoff from paved surfaces has been eliminated in favor of focusing on recharging roof runoff.

6. *Comment: Although the septic system design appears reasonable it barely meets minimum setback criteria in several cases but provides no basis on which the system was designed to demonstrate viability at the dimensions shown. We recommend the applicant provide enough basic design information to demonstrate system compliance with 310 CMR 15.00 (Title 5) so the Board has a factual basis on which to conclude the wastewater needs of the project can be safely met.*

Response: Septic notes have been added to the plans providing the basic design criteria. Note also that the preliminary plans indicate the use of 3-foot-wide septic trenches, which is not the smallest possible footprint option available. There is therefore flexibility to decrease the system footprints if needed for the final design.

7. *Comment: The work on Lot 1A includes creation of compensatory storage to offset flood plain fill required for the septic system on Lot 2A. While we know of no prohibition for providing compensatory storage on an adjacent lot the Board should be aware that a portion of the work shown on Lot 1A is required for development of Lot 2A.*

Response: No response required.

8. *Comment: Access, drainage, and utility easements are required over Lot 2A to serve Lot 1A. We recommend any required easements be clearly shown and described on the plans.*

Response: The easement area was depicted on the plan but has been shaded for clarity on the attached revision. The future ANR plan creating Lots 1A and 2A would depict this easement for legal reference purposes.

9. *Comment: Test pits indicate Estimated Seasonal High Groundwater (ESHG) several feet below the adjacent wetland elevation which seems counterintuitive as we would expect groundwater to flow toward the wetland rather than away from it. Records indicate test pits were performed by a licensed soil evaluator and approved by the Dover Board of Health and as such we have no reason to question the results. However, we request a brief explanation for the results and confirmation the test pits were witnessed as part of the BOH approval.*

Response: As the forms indicate, the test pits were formal septic soil testing witnessed by a licensed soil evaluator and also by the Board of Health agent. We have raised the proposed stormwater infiltration systems as high as possible in the context of the proposed grading, and note that they are well above the elevation of nearby wetland areas.

10. *Comment: Recommend the Lot 2A sewer line be shown on the plans for Lot 1A.*

Response: The Lot 2A septic line has been added to the Lot 1A plan.

11. *Comment: The proposed stormwater infiltration system is located approximately 55' from the proposed well location which does not meet the minimum 100' setback requirement from private wells as noted in Table RR –Rules for Groundwater Recharge in Volume 1 of the Massachusetts Stormwater Handbook. We recommend the applicant consider NOT connecting paved surfaces to the infiltration systems if possible.*

Response: As recommended, the revised design no longer includes collecting driveway runoff and routing it to stormwater infiltration systems. The size of the infiltration system remains unchanged such that more roof runoff will be recharged.

Lot 2A

Because the comments are similar to the previous comments for Lot 1A, the following comments and responses have been summarized where repetitive:

12. *Comment Topic: Road runoff & lot grading.*

Response: See response to #4.

13. *Comment Topic: Driveway runoff pretreatment.*

Response: See response to #5.

14. *Comment Topic: Septic design detail.*

Response: See response to #6.

15. *Comment Topic: Flood plain compensatory storage area location.*

Response: No response required.

16. *Comment: The plans should include enough detail on the proposed grading plan to demonstrate the actual limits of work required to provide compensatory storage. None of the proposed compensatory storage extends beyond the flood plain boundary which suggests no connection. We recommend plans be revised to show spot grades and actual extent of required disturbance to offset proposed flood plain fills.*

Response: The compensatory flood storage areas have been extended to connect with the existing floodplain. Spot shots have been added for improved clarity of the grading intent.

17. *Comment Topic: Lot 1A easement over Lot 2A.*

Response: See response to #8.

18. *Comment Topic: Test pit data.*

Response: See response to #9.

19. *Comment Topic: Lot 2A septic line.*

Response: See response to #10.

20. Comment Topic: Driveway runoff.

Response: See response to #11.

Lot 4

Because the comments are similar to the previous comments for Lot 1A, the following comments and responses have been summarized where repetitive:

21. Comment: Proposed grade is substantially higher than existing grade including as much as 3' of fill over an existing gas line. Please provide documentation or response that the resulting change in soil load is within gas company accepted tolerances.

Response: The proposed grades are not substantially different than the existing grades at the front of the adjacent property at #6 and we do not anticipate any issues with soil depths as proposed grades can be adjusted as needed in this area. Nonetheless, we recommend a condition of approval requiring the Applicant to provide some documentation with respect to the gas company's accepted tolerances for soil cover prior to issuance of a building permit for Lot 4.

22. Comment: The proposed contours suggest a portion of the Project runoff will be directed toward the Gordon property with no obvious outlet in contrast to what happens under existing conditions where runoff appears to flow from the Gordon property through the subject property to the wetlands. This change in runoff pattern is further complicated by the proposed use of a portion of the drainage path for compensatory storage to offset flood plain fills elsewhere on site.

Response: The grading along these two lots has been revised to incorporate a low area that will positively drain towards the east. The reduction in existing elevations throughout this area and the proposed compensatory flood storage area will improve stormwater runoff patterns on the neighbor's land.

23. Comment Topic: Driveway runoff pretreatment.

Response: See response to #5.

24. Comment Topic: Septic design detail.

Response: See response to #6.

25. Comment Topic: Flood plain compensatory storage area grading.

Response: See response to #16.

26. Comment Topic: Test pit data.

Response: See response to #9.

27. Comment Topic: Driveway runoff.

Response: See response to #11.

Lot 45

Because the comments are similar to the previous comments for Lot 1A, the following comments and responses have been summarized where repetitive:

28. Comment Topic: Road runoff & lot grading.

Response: In the vicinity of the proposed house and septic system, the shoulder of the road along the front of Lot 45 is raised above the road elevation resulting in road runoff flowing along the edge of pavement towards the existing catch basin. The proposed lot grading will not change this condition. North of the proposed driveway, there will be no obstruction of flow behind the road shoulder, and we note that the shoulder of the road could be lowered, if desired to allow more road runoff to flow through the lot than currently does.

29. Comment Topic: Driveway runoff pretreatment.

Response: See response to #5.

30. Comment Topic: Septic design detail.

Response: See response to #6.

31. Comment Topic: Flood plain compensatory storage area grading.

Response: See response to #16.

32. Comment Topic: Test pit data.

Response: See response to #9.

33. Comment Topic: Driveway runoff.

Response: See response to #11.

STORMWATER REPORT:

Lot 1A

34. Comment: The stormwater model does not include flow from the street that results from the damming effect of the site fills noted in prior comments. We recommend the model be modified to match design conditions.

Response: Watershed P1e includes the portion of the roadway that sheds runoff through the property. The proposed design does not create any damming effects on the roadway runoff. Refer to comment 4 for a summary of existing flow patterns.

35. Comment: The model suggests the infiltration system is designed to overflow to the public way by surcharging the trench/area drains near the driveway. In our opinion this is unacceptable and exacerbates the damming conditions created by the site fills. We recommend the design be modified so that infiltration system surcharges are directed toward the wetland and not toward the public way.

Response: The roof recharge system will overflow at the downspouts via an overflow wye at the rear of the house, towards the wetland.

Lot 2A

36. *Comment: The model applies an exfiltration rate of 2.41 in/hr when test pit results indicate sandy loams beneath the infiltration system rather than loamy sands. Model should incorporate an exfiltration rate for sandy loams of 1.04 in/hr.*

Response: The bottom of the infiltration field lies within the fill layer of the existing soil structure. The fill, topsoil and subsoil below the infiltration field will be removed and replaced with septic sand, all of which will lie above a 34" thick medium sand layer. This would normally allow for using an infiltration rate of 8.27, however a rate of 2.41 was used instead as a conservative measure. This information can be found in the "Soil Permeability" portion of the Stormwater Report narrative (page 4).

37. *Comment Topic: Overflow of infiltration system.*

Response: See response to #35.

Lot 4

38. *Comment Topic: Overflow of infiltration system.*

Response: The roof recharge system will overflow at the downspout at the northeast corner of the house, towards the wetland.

39. *Comment: The outlet geometry used in the model does not match design conditions. The model shows a 288" x 12" horizontal orifice grate when the french drain is installed on a slope with only a very small portion of it being at elevation 110.3 resulting in the model understating the depth of discharge at the street. We expect this problem to be addressed in response to prior comment, but the model must accurately reflect as-shown design conditions.*

Response: The modelled outlets have been changed for all infiltration fields.

Lot 45

40. *Comment Topic: Overflow of infiltration system.*

Response: See response to #35. The downspout overflow will be located at the northwest corner of the house, towards the wetland.

41. *Comment: The elevations shown for pond 16P do not appear to reflect elevations noted on the site plans. Please address as needed.*

Response: Elevations shown on the plans and in the HydroCAD report now agree.

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Page 8 of 8



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Do not hesitate to contact me should you have any questions.

Yours Truly,

LEGACY ENGINEERING LLC

Daniel J. Merrikin, P.E.
President

cc: File