Outback Engineering Incorporated

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July 14, 2022

Bourne Zoning Board of Appeals
c/o James E. Beyer, Chairman
24 Perry Avenue
Bourne, MA 02532

RE: Response to Comments by PSC dated May 9, 2022 and June 15, 2022
Chase Estates at 230 Sandwich Road, MGL Ch. 40B Modification of Comp Permit No. 08-18

Dear Chairman Beyer and Board Members,

On behalf of the applicant, Chase Developers, we are providing updated responses to the Stormwater and Project Plan comments prepared by PSC dated May 9, 2022 and PSC's June 15, 2022 Memorandum, as was discussed with the Board on July 6, 2022. I understand other comments and information relative to an updated traffic study may be provided by others. Please see attached revised Site Plans (revision date 7/8/22) and Supplemental Drainage Report dated July 8, 2022.

STORMWATER

Soils

1. Excavate a minimum of one additional test pit in the footprint of the proposed infiltration basin extending to elevation 42 or lower. If the Rawls rate based on soil texture is less than 8.27 or depth to Estimated Seasonal High Groundwater is above elevation 42, revise the basin design as required.

Response 4: TP-IB was excavated on 6/30/22 and soil log is added to plans sheet 10. Very permeable, medium to coarse sand with gravel was found and no changes to the drainage calculations or leaching system elevations are required.

2. Calculate the bottom stone elevation for Leach Pit #1.

3. Within the footprint of Leach Pit #1:

   a. Excavate a minimum of one test pit that extends to a minimum depth of 4 ft. below bottom of stone elevation.

   b. If the Rawls rate based on soil texture is less than 8.27 or depth to Estimated Seasonal High Groundwater does not provide a minimum separation to the bottom of stone of 2 ft., revise the leach pit design.

   c. If ESHGW is between 2 ft. and 4 ft. below the bottom of stone elevation, provide a mounding analysis.

7. Within the footprint of Leach Pit #2:

   a. Excavate a minimum of two test pits that extends to elevation 108.5 or lower.

b. If the Rawls rate based on soil texture is less than 8.27 or depth to Estimated Seasonal High Groundwater does not provide a minimum separation to the bottom of stone of 2 ft., revise the leach pit design.

c. If ESHGW is between 2 ft. and 4 ft. below the bottom of stone elevation, provide a mounding analysis.

Response 5-7: Similar to response #4, TP-LP1, TP-LP2A and TP-LP2B were excavated on 6/30/22 and soil logs are shown on plans sheet 10. Very permeable, medium to coarse sand with gravel was found and no changes to the drainage calculations or leaching system elevations are required. Also applicable LP-1 elevations have been added to the details on the plans.

Predevelopment Hydrology

8. Recompute all predevelopment runoff using CN=30.

Response 8: Although we disagree that the entirety of the site should be treated as woods in the pre-development condition because the property was a permitted and partially constructed homesite with a garage prior to the 40B application, CN=30 was used in pre-development calculation (see supplemental drainage calcs). No changes were required, except a lawn catch basin will be used at the south end of the road turnaround area to divert a small area from draining to the south, and instead piping it to LP2.

Infiltration Structure Construction

9. Add emergency overflow devices for Leach Pit #1 and Leach Pit #2.

Response 9: As discussed with Mr. Houston on July 12, in lieu of overflow devices due to the site topography and impracticality, we increased the storage capacity of these 2 Infiltration BMPs so that they are over-designed for the 100-year storm. The leach structures will be less than ½ and 2/3 filled in a 100-yr. storm, providing considerable additional storage capacity in them.

10. Add high visibility construction fence around all three infiltration BMPs and include a note stating that no construction equipment shall enter these areas prior to construction of the BMP.

11. Add a notes detailing construction procedures to be followed to protect and maintain the infiltration capacity of the soil at the infiltration systems by avoiding compaction of the soil beneath the infiltration BMP during its construction.

12. Adjust the Sediment and Erosion Control Plan and the sequence of work in order to prevent runoff from entering any of the infiltration BMPs prior to complete stabilization of the site.

Response 10-12: Due to the site configuration, it is impracticable for construction equipment to avoid the infiltration basin and Leach Pit areas. Mr. Houston also acknowledged the site contains sand soils that are not susceptible to overcompaction, and these infiltration systems require deep excavations that will remove compacted and unsuitable soils when the systems are installed. Therefore, no construction fencing is proposed. As discussed with Mr. Houston on July 12, 2022, the infiltration systems will be protected from sediment inflow during construction by leaving the bottom of Infiltration Basin temporarily 1' above finished grade so that it can be used as a sediment, and to temporarily use an open basin in lieu of the leach pits and stone at LP2; to protect LP1, we've added labels on the Erosion and Sediment Control Plan to install a temporary inlet pipe from DMH 1 to the sediment forebay at the Infiltration Basin (the outlet pipes to WQT-1 and LP1 shall be capped).

Stormwater Standards

Compliance with the Massachusetts Stormwater Standards is summarized as follows:

Standard 1: No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. Outback Engineering states in part that there are no wetlands on or near the site. We concur that there is no discharge to wetlands.

Response: No response required.

Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04. Outback Engineering states in part that there are three infiltration BMPs and runoff is controlled at each design point. To fully demonstrate compliance additional soils tests are required to confirm the design. See Comments 4 through 7. Recalculation of predevelopment runoff is required to confirm that the post development runoff is less than predevelopment for EDA-2 vs PDA-7 and EDA-3 vs PDA-4.

Response: See Responses 4-8.

Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook. Outback Engineering states in part that the infiltration BMPs infiltrate substantially more than the required recharge volume. We believe that compliance with Standard 3 is likely, however, test pits should be submitted to verify design of the infiltration BMPs.

Response: See Responses 4-8.

Standard 4: Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

a. Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.

b. Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and

c. Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

Outback Engineering states in part that the stormwater management system is designed to remove a minimum of 80% of the average annual post development TSS. We concur.

Response: No response required.

Standard 5: Land Use with Higher Potential Pollutant Loads (LUHPPL). Outback Engineering states in part that the project site is not characterized as a Land Use with Higher Potential Pollutant Loads. We concur.

Response: No response required.

Standard 6: Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source

control and pollution prevention measures and the specific structural stormwater best management practices determined by DEP to be suitable for critical areas. Outback Engineering states in part that there are no critical areas within or near the site. We concur.

Response: No response required.

Standard 7: Redevelopment project. Outback Engineering states in part that the Proposed Project is not a redevelopment project. We concur.

Response: No response required.

Standard 8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented. Outback Engineering states this standard is met. While the plans include construction phase sediment and erosion controls, and a construction phase sedimentation and erosion control narrative is required.

Response: The plans contain extensive notes on Sheet 2, and a detailed Sediment and Erosion Control Plan (sheet 7) that collectively provide a narrative on construction sequencing that was previously reviewed with the Town Engineer, and now enhanced per Mr. Houston's comments. I attempted to call the Town Engineer recently but was unable to connect with Mr. Lydon to further review this.

Standard 9: A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed. Outback Engineering states in part that long-term operation and maintenance plan provide for compliance. We concur.

Response: No response required.

Standard 10: All illicit discharges to the stormwater management system are prohibited. Outback Engineering states in part that the standard is met based. An endorsed Illicit Discharge Compliance Statement should be provided that is endorsed by the Owner who will at least initially be in charge of operating the site.

Response: An Illicit Discharge Compliance Statement, signed by the Owner, will be provided as part of Final Plans and prior to construction.

Bourne Zoning Bylaw Section 3490, Stormwater Regulations (ZBSR)

13. Evaluate compliance with the requirement that BMPs must be optimized for nitrogen removal.

Response 13: See prior response from Applicant's attorney.

Bourne Planning Board Subdivision Regulations (BSR) for Stormwater

14. Add catchbasins at approximately Station 8+50 (BSR Section 352, A. 1, 2, and 5).

Response 14: As discussed with Mr. Houston on July 12, double cascade grates are now provided at CB 6A and 5B such that additional catch basins are not warranted at Station 8+50.

15. Demonstrate how the proposed infiltration systems will comply with BSR Section 352, B.4.d) which requires "the SMS1 shall be designed and constructed so that operational failure of the infiltrative capacity of the SMS will be manifested by indicators that are readily visible."

Response 15: See response to Comment #9. Indicator of failure for Leach Pit #2 will be evident by overflow through catch basin grates at CB 7A and 7B; Indicator of failure for Leach Pit #1 will be similar via seeing ponding at CB 1A and 1B. Indicator of Failure for the infiltration basin will be retention of water for extended time after rain events.

16. Recompute the Water Quality Volume using 1.7 inches (BSR Section 352, D.1).

Response 16: Use of 1.7 inches for WQV was added to the supplemental drainage calculations, and no other changes to the site design required.

PROJECT PLANS

17. Provide a revised Existing Conditions Plan that is signed and sealed by a Massachusetts Professional Land Surveyor (PLS). The Outback Engineering portion of Sheet 3 shows metes and bounds and must be prepared by a Massachusetts Professional Land Surveyor.

Response 17: The requested PLS-signed Existing Conditions Plan will be provided in the Final Plans.

18. Provide a zoning table to facilitate evaluation of waiver requests.

Response 18: A zoning table has been added to the site plans.

19. Show the proposed streetlights on the Final Site Plans, specifying maximum pole height per Town requirements.

20. Provide light fixtures:
a. That are consistent with residential scale
b. That have a style typically acceptable in the Town
c. That comply with all dark-sky requirements.

21. Provide a photometric plan depicting illumination levels at the street and at property lines.

Response 19-21: The requested information is provided in the revised Site Plans.

22. Provide a minimum of 8 visitor parking spaces and show these parking spaces on all plans. The number of visitor parking spaces shown is not consistent among the plan sheets.

Response 22: The plans currently show 8 visitor parking spaces, on all plan sheets.

23. Given the length, steep grades, and pavement width of the on-site access drive, maintaining access including emergency vehicle access is critical:
a. Post both sides of the access drive as "NO PARKING ANYTIME" (MUTCD R7-1).
b. Describe the method of enforcement of the parking restriction.

Response 23: As indicated previously, we are proposing "No Parking" signs on one side of the street (see Sheet 6) as was discussed with Town Engineer and Fire Department; enforcement will be provided via the bylaws of the Condominium Association, which will allow the Association to impose fines for noncompliance.

24. Show roofwater control:
a. If Proposed, provide a typical drywell detail.
b. If drywells are not proposed, provide an erosion control detail for downspouts.

Response 24: Roof drywells are not currently proposed. Gutter downspout splashblock detail has been added to the Site Plans.

25. Provide a note stating that that private maintenance of the proposed retaining walls is required.

Response 25: Retaining walls will be "common elements" of the Condominium; the Condominium Association will be responsible for their maintenance, and a note was added to Sheet 4.

26. Given a sidewalk width of 4 ft., ensure that no obstructions such as signs, hydrants, light poles, etc. are placed in the sidewalk to avoid obstructing the accessible route.

Response 26: There will be no obstructions in the sidewalk.

27. Provide a detail of the driveway aprons for locations
   a. Provide a detail for driveways that cross the sidewalk
   b. Provide a detail for driveways without a sidewalk.

Response 27: The requested details were added to the revised Site Plans.

28. Given that numerous closely spaced driveways are proposed that will impose vehicle loads on the sidewalk, increase the sidewalk pavement section providing a 1¼-inch thick top course and 2¾-inch thick binder course.

Response 28: This requested detail was changed on the Typical Road Cross Section in the revised Plans.

29. If standby power is required for the sewer pump station:
   a. Show the generator on the site plan and locate it where it will have minimum impact on residences.
   b. The generator should be natural gas fired to eliminate the potential for a diesel fuel spill.
   c. Provide screening for the generator using fencing or landscaping.

Response 29: The revised site plans depict a natural gas, emergency generator for the pump station, screened with appropriate fencing.

30. Provide cascade grates for all catch basins located on profile grades of 6% or greater.

Response 30: The plans notes specifying cascade grates on grades 6% or greater have been clarified (see Note regarding cascade grates in the middle of the profile on Sheet 6, and Catch Basin details on Sheet 9).

31. Provide a consistent erosion control detail:
   a. Delete the "Erosion Control Barrier Detail."
   b. Modify the "Straw Wattle with Silt Fencing Detail" deleting "Straw Wattle (Typ.)" insert "12-Inch Compost Sock."
   c. Specify the "Straw Wattle with Silt Fencing Detail" is to be used in all locations.

Response 31: These requested details are included in the revised Site Plans, sheet 7. As discussed with Mr. Houston, straw wattles are proposed across the road entrance, to be placed at the end of each work day.

32. Provide a construction detail for the proposed 1:1 Slope Rip Rap showing as applicable, the minimum dimensions/weight of the rip rap stone, the thickness and gradation of the underlying crushed stone layer, and specifications of the underlying geotextile fabric.

Response 32: This requested detail has been added the revised Site Plans.

Should you have any comments or questions in the meantime, please contact me at (508) 946-9231 or email jpavlik@outback-eng.com.

Sincerely,
OUTBACK ENGINEERING, INC.

James A. Pavlik

James A. Pavlik, P.E.
Project Manager, Principal

cc : Tom Pappas, Chase Developers
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