FUSS & O'NEILL

May 20, 2019

Ms. Juliet T.H. Walker, AICP
Planning Director
Planning Department
1 Junkins Avenue
Portsmouth, NH 03801

RE: Response to Cate Street Extension & West End Yards Site Stormwater Peer Review

Dear Ms. Walker,

The Stormwater Review Comments from TEC have been restated below in *bold italicized font*. The responses to these comments have been issued below in normal font.

Stormwater Management Review:

1. *It is noted that the Site Plans and Stormwater Management Report cited under the Reference Documents section above are not yet complete/finalized and those documents shall be resubmitted by the Applicant for review/approval, when finalized, prior to project approval.*

   Supporting information, such as Test-pits and Saturation Rates, necessary to appropriately size Sub-surface Infiltration Basins (SSIB's) have been obtained from the Wetland / Soils Scientists and Geotechnical Engineers. The revised plans and stormwater analysis are based on this information as well as revised site layout and grading that has been performed during the continued design of the project.

   We appreciate TEC's understanding of the process the design is going through.

2. *It is understood that the Applicant is in the process of procuring a City Conditional Use Permit as required by the City of Portsmouth due to disturbance within the wetland buffer zone. Construction shall not commence before such permit is granted.*

   The Wetland Conditional Use Permit was granted by the Portsmouth Planning Board.

3. *The hydrologic analysis calculations shall be revised to utilize the design storm rainfall data published by the Northeast Regional Climate Center at Cornell University, with an additional 15% factor added, as required by the NHDES AOT Regulation ENV-Wq 1503.08 (I).*
   The hydrological analysis calculations have been revised to adhere to the guidance of NHDES Env-Wq 1503.08 (1).

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4. *The Executive Summary notes in Section 2.1 that test pits will be performed to confirm site geotechnical conditions, including Hydraulic Conductivity and ESHWT (Estimated Seasonal High Water Table). Test pits shall be performed by the Applicant at all proposed locations of stormwater management practices in order to complete the proposed stormwater management design and verify compliance with City of Portsmouth and NHDES standards.*

   Test-pits have been performed and the Geotechnical Engineer has provided Hydraulic Conductivity calculations for a number of locations on the site. Some previously considered locations for SSIB's have been abandoned due to poor depth to ESHWT or poor Hydraulic Conductivity (Ksat).

   The Test-pit locations and logs and Hydraulic Conductivity Calculations have been provided as part of the revised Stormwater Management Report.

5. *Label all proposed stormwater infrastructure shown on the Grading, Drainage, & Erosion Control Plans, including subsurface infiltration basins (SSIBs), for clarity; and provide all dimensions and design details in the plan set for all proposed stormwater management practices.*

   The Stormwater Management System has been revised extensively. Structures have been labelled on the plans.

   Design details for the SSIB's are in progress at the selected chamber producer in support of the design. These will be added to the plans when received. All other structures are detailed. Minor revisions will be ongoing and completed prior to submission to NHDES Land Resources Management Bureau for Alteration of Terrain permitting.

6. *Subcatchments T9 and T10 appear to drain toward the storm drain system Pond AP2. However, the HydroCAD routing diagram appears to show subcatchments T9 and T10 draining toward Hodgson Brook, Pond AP1. The Applicant should review and revise the drainage design if necessary to confirm compliance with City of Portsmouth and NHDES standards.*

   As the design has progressed, subcatchments and the Analysis Points to which they flow have been revised. Subcatchments have also been renumbered as necessary. The revision of the Stormwater Management Report should have correct routing and will also have some subcatchment re-numbering.

7. *The Applicant shall confirm via a qualified hydrogeologist that the proposed drainage system additions do not result in any "adverse effect on other public or private groundwater sources", as required by the City of Portsmouth Site Plan Regulations, Section 7.2.4.*
   The Geotechnical Engineer will submit the required confirmation.

However the site and surrounding area is on City Water and Sewer. The area is also outside public and private well head protection areas.

8. *The Applicant should review Tables 1.1 and 2.1 of the Executive Summary and revise as necessary. The Net Change in the 50-year AP1 and 10-year AP2 peak flows appear to be incorrect based on the Existing and Proposed Flows cited.*

   The hydrological analysis has been updated in its entirety.

9. *4" perforated underdrain pipe is proposed in the Bioretention System details. NHDES Stormwater Manual Volume II requires ≥ 6" pipe.*

   The 4" perforated pipe underdrain has been replaced with a 6" perforated pipe underdrain.

10. *Deep sump catch basins are proposed throughout the design. The Applicant shall confirm that each deep sump catch basin has a contributing impervious drainage area of ≤ 0.25 acres, as parametrized by NHDES Stormwater Manual Volume II.*

    Subcatchment Areas contributing to the catch basins will be reviewed. Whether the catch basins should be considered for deep sumps or additional catch basins should be added will be evaluated.

11. *There appears to be a slight (±3 SF) discrepancy in total area between the pre/post HydroCAD conditions. Please consider revising.*

    The pre / post areas have been reviewed and requisite corrections made.

12. *Groundwater Recharge Volume Calculations, BMP worksheets and calculations, Infiltration Feasibility Report, UIC Registration, and I&M Manual are noted as "pending" items. "Pending" items have not been reviewed by TEC and shall be completed prior to final approval.*

    Groundwater Recharge Volume (GRV) Calculations have been performed, however, please note due to the reduction in impervious cover within the project area, there will be a negative required GRV without any infiltration. The design and implementation of infiltration will serve to expand this negative value, essentially a "credit". This is a good thing for the watershed in general.

    BMP worksheets have been prepared and provided.

    Infiltration Feasibility Report information has been prepared and provided.

    UIC Registration will be prepared prior to submission to NHDES for AoT permitting.

An I&M Manual will be prepared for the Stormwater Management Plan prior to submission to NHDES for AoT permitting.

13. *Consider revising the location of proposed catch basins 5 & 6. Catch basins should be located at the low point (Station 2+78).*

    All catch basin locations have been reviewed and revised to be in the low spots in their subcatchments.

14. *Consider revising catch basin locations throughout Cate Street / Cate Street Extension to provide a minimum spacing of 300'.*

    Traditionally the 300-ft maximum separation between catch basins / drainage structures has to do with pipe cleaning and ensuring the jet trucks have adequate hose length to clean the lines. None of the drainage pipes employed in the design exceed 300-ft in length.

    All but one set of catch basins are no more than 300-ft form anther catch basin or a high spot. CB 12 and CB13 are 357-ft from the high spot at the intersection with the existing Cate Street as it heads toward the bridge over Hodgson Brook. The subcatchments to these two catch basins are small and will allow for them to receive deep sump credit.

15. *Show and label proposed curb openings to bioretention basins on the applicable plan sheets. The detail shows a curb opening to the BMP but the plans do not shown such information.*

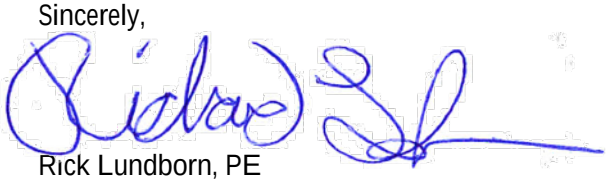
    Curb openings have been labelled on the plans.

16. *Adjust existing catch basin #1346 at the southeast corner of the US Route 1 Bypass / Cate Street Extension intersection to proposed final grade. Currently this catch basin is raised above the existing pavement and is not currently proposed to be adjusted.*

    Existing catch basin #1346, has been reviewed appropriate adjustments will be called for.

Thank you for providing the review. Should you have additional questions/comments, please do not hesitate to contact me.

Sincerely,



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