COMPREHENSIVE
ENVIRONMENTAL
INCORPORATED

Oct 25, 2021

Robert Moore, Conservation Agent
Haverhill Conservation Commission
4 Summer Street, City Hall Room 300
Haverhill, MA 01830

Re: Peer Review Services
38 Railroad Street
Haverhill, MA

Dear Mr. Moore:

As requested by the City of Haverhill, CEI has completed a follow-up review of the materials and information listed below for the proposed Industrial Site Development at 38 Railroad Street in Haverhill, MA. Our review focuses on design elements of the proposed project that pertain to the stormwater management design, based on the following information furnished to the Conservation Commission:

1. Notice of Intent Application, dated September 2, 2021, prepared by Huges Environmental Consulting;

2. Design Drawings entitled “Proposed Site Plan at 38 Railroad Street", revised date 10/13/21, prepared by Millennium Engineering Inc.;

3. Stormwater Management Report, revised date 10/13/21, prepared by prepared by Millennium Engineering Inc.;

4. Pollution Prevention and Operation and Maintenance Plan, dated 10/13/21, prepared by prepared by Millennium Engineering Inc.;

5. Flood Storage Sketch, dated 10/13/21, prepared by prepared by Millennium Engineering Inc.

CEI offers the following comments based on our review of the design drawings, stormwater report and NOI information listed above.

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.

Deep sump catch basins, hydrodynamic separator (CDS) and subsurface infiltration systems are proposed to provide treatment.

Standard 2: Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.

1. The precipitation frequencies used in the HydroCAD model are not consistent with the current NOAA14 Precipitation Frequency Estimates. The NOAA14 frequencies are recommended to reflect the current range storm events used to model peak runoff flows for pre and post-development conditions. The model should be revised with the NOAA14 precipitation frequencies for each storm event.

Comment Addressed
Precipitation frequencies were revised and are consistent with current NOAA14 estimates.

2. The total Pre-Development subcatchment area is greater than the Post-Development area in the HydroCAD model. The model should be revised with matching pre and post-subcatchment areas.

Comment Addressed
Pre and Post-Development drainage areas match.

Standard 3: Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures.

The Stormwater Report also indicates the soils on Site are mainly Hydrologic Soil Group A (HSG A). Soil test pit information provided on Sheet 11 supports the Site's soil characteristics. An infiltration rate of 2.41 in/hr is applied in HydroCAD to model the proposed infiltration systems.

3. Soil test pits were not completed within the two subsurface infiltration system areas. CEI recommends performing test pits to confirm the estimated Seasonal High Groundwater (ESHGW) elevation at each of the proposed locations.

Follow-up Comment
The Applicant has indicated test pits will be performed within the footprint of Infiltration Areas 1 and 2 and adjust the elevation of the infiltration systems, if needed, once the ESHGW elevation is established in those areas.

CEI recommends including a conditions that requires test pits to be performed in the proposed infiltration areas following the demolition of the existing buildings in order to confirm the ESHGW is 2 feet below the bottom of the system and soil texture classification is consistent with the characteristics used to design the BMPs. A city representative should be present while the test pits are being performed to observe soil and groundwater conditions.

4. The two nearest soil test pits (T.PIT#19-1 and #19-4) indicate ESHGW is approximately 75" to 82" below the existing grade. The ESHGW elevation in the proximity of the subsurface infiltration systems is 11.75' to 12.2'.

   The proposed bottom of stone elevation for the subsurface infiltration systems (indicated on Sheet 9) is 13.0'. The stone elevation does not provide a minimum 2 foot of separation to ESHGW, as required by the Stormwater Handbook design guidelines for infiltration systems.

See Follow-up Comment #3

5. The Simple Dynamic Method was used to calculate the storage volume needed by the two subsurface infiltration systems to meet the recharge volume requirements. This method takes into account that exfiltration occurs while the storage chambers are filling during a storm event. As indicated in the Stormwater Handbook (Volume 3, Chapter 1, page 19), the Simple Dynamic Method can produce smaller storage requirements in sandy soils (HSG A), which is the case at this Site.

   Calculations provided in the Stormwater report indicate the proposed infiltration systems provide sufficient recharge volume. However, concern for separation to groundwater may limit the infiltration capacity of the proposed systems and ability to achieve the design rate. CEI recommends using the Static Method (assumes no infiltration occurs until the system is filled to the required recharge volume elevation) to size the infiltration systems. This is a more conservative approach that will provide additional storage volume to increase stormwater attenuation.

See Follow-up Comment #3

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

TSS Removal Calculation Worksheets were provided with the Stormwater Report.

6. A TSS removal efficiency of 92% was included for the Contech CDS unit. A manufacturer TSS removal worksheet should be provided using the proposed water quality volume (WQV) flow rate through the unit.

Comment Addressed
Backup calculation sheets were provided with appropriate TSS removal efficiencies.

Standard 5: For Land Uses with Higher Potential Pollutant Loads (LUHPPL), source control and pollution prevention shall be implemented.

The proposed project does not meet thresholds or characteristics of a LUHPPL.

Standard 6: Stormwater discharges near or to any critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices.

The Applicant has indicated there are discharges to Critical Areas. The Limit of NHESP Estimated and Priority Habitat Areas is identified on the plans. The proposed stormwater management design includes BMPs to provide treatment and prevent impacts to the Critical Areas.

Standard 7: Redevelopments projects are required to meet the Massachusetts Stormwater Management Standards only to the maximum extent practicable.

The proposed project is considered a redevelopment and meets the definition outlined by Standard 7.

Standard 8: A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities.

7. The Applicant is required to submit NPDES Construction General Permit filing with EPA. The site owner and the contractor are each considered "operators" under that permit, and each will need to file an EPA Notice of Intent for coverage under that permit. Prior to filing a Notice of Intent, the applicant and its contractor must prepare a Stormwater Pollution Plan (SWPPP).

    a. The Applicant shall provide the Conservation Commission with a copy of the SWPPP before land disturbance commences.

    b. The Applicant shall provide the Commission with evidence that all "operators" (as defined in the NPDES Construction General Permit) have filed for coverage under the permit.

    c. The Applicant shall obtain authorization from the Conservation Commission or its agent prior to filing a Notice of Termination under the EPA permit.

Comment Addressed
The Applicant acknowledges a SWPPP will be submitted prior to start of construction.

8. CEI recommends the installation of temporary fencing around the proposed infiltration areas to provide an additional visual indicator to prevent encroachment of construction equipment into the area.

Follow-up Comment
A note has been added to the plans, requiring temporary fencing around the infiltration systems to prevent encroachment of construction vehicles.

CEI recommends showing the location of the temporary fencing with a bold line and label to clearly illustrate this requirement.

9. Due to the close proximity to the Merrimack River, CEI recommends installation of erosion control blankets in areas that are disturbed where invasive plant removal and other construction activities that will occur along the embankment.

Comment Addressed
A note requiring installation of erosion control blankets was added to the General Erosion Control Notes on Sheet 11.

10. Include silt sock perimeter controls around the proposed temporary stockpile location.

Comment Addressed
Sheet 6 was revised to show perimeter erosion/sediment controls along the downstream side of the stockpile area.

11. The silt sock installation detail should show overlapping ends with a minimum 2-foot requirement.

Comment Addressed
The Silt Sock detail was revised to show the required 2-foot overlap.

12. Catch basin inlet protection (e.g. silt sack) should be labelled for all proposed catch basins and any existing catch basins along Railroad Street that are adjacent to the Site.

    a. Locations should be identified on the Open Space & Erosion Control Plan;
    b. General Erosion Control Notes (Sheet 11)should include installation of silt sacks;
    c. A detail of the inlet protection should be included on the plans.

Follow-up Comment
Catch basin inlet protection locations are indicated on Sheet 6 for proposed CB locations. Additional inlet protection is needed for existing CBs along Railroad Street. Plans should be revised to show additional inlet protection at the existing CB locations.

A note requiring installation of silt sacks was added to the General Erosion Control Notes on Sheet 11.

A Silt Sack Installation detail was added to Sheet 11.

13. General Erosion Control Notes should include installation of construction entrance.

Comment Addressed

A note requiring installation of construction entrance prior to earthwork was added to the General Erosion Control Notes on Sheet 11.

14. CEI recommends including temporary construction fencing along the limit of work to contain construction wastes and prevent impacts to adjacent properties.

    a. Installation of temporary construction fencing should be included in the Construction Sequence.

Comment Addressed
A note requiring installation of temporary construction fencing along the limit of work was added to the Construction Sequence Notes on Sheet 11.

15. Include location for concrete cleanout and drum wash water.
    a. A detail of a containment structure should be added to the plans.

Comment Addressed
The Applicant has indicated concrete cleanout and drum washout areas will be addressed during the preparation of the SWPPP.

16. Snow storage locations during the construction period should be included on the plans.

Comment Addressed
The Applicant has indicated a plan for construction phase snow storage will be addressed once a Site Contractor is selected.

Construction phase snow storage should be included in the SWPPP.

Standard 9: A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

17. A standalone Long Term Pollution Prevention and Operation and Management Plan (O&M Plan) should be provided as a reference document for the facility owner(s) to review the property's stormwater management plan and BMP inspection and maintenance requirements.

    a. Please refer to the Massachusetts Stormwater Handbook for information that should be included in the O&M Plan.

Comment Addressed
A Pollution Prevention and Operation and Maintenance Plan was submitted and includes inspection and maintenance requirements for the proposed stormwater BMPs.

18. A Site plan should be included in the O&M Plan to identify the locations of stormwater BMPs. Snow storage areas should also be identified on the plan at locations where snow melt runoff will be directed to stormwater BMPs for proper treatment.

    a. Proper snow storage requirements should be outlined in the O&M Plan.

Follow-up Comment
The O&M Plan should include additional information or guidance for snow removal and storage. For example, snow storage should be prohibited on the river embankment to prevent untreated snow melt from flowing into the river. CEI recommends including installation of signs adjacent to the parking lot, at the top of the river embankment, to notify maintenance staff that snow storage is prohibited in that area.

If available, the Applicant may consider a snow storage area located adjacent to the parking spaces facing Railroad Street. This location will allow snow melt to flow into proposed drainage system and receive proper treatment prior to discharge. Providing a depression in this area would also provide snow melt infiltration.

19. Outfall riprap apron inspection and maintenance procedures should require removal of sediment and debris and repair of any erosion channels or vegetation loss.

Follow-up Comment
A section for rip-rap inspection was added to the O&M Plan but only requires "Notation" of low spots or erosion. This section should be revised to require repair of displaced rip-rap and/or erosion at the outlet aprons when observed during inspections.

20. Underground Detention System inspection and maintenance procedures should be included in the O&M Plan.

Comment Addressed
A section for inspection and maintenance of the underground detention system was included in the O&M Plan.

21. Procedures for embankment inspection and repair of eroded areas should be included in the in the O&M Plan.

Comment Addressed
A section for inspection and maintenance procedures to maintain slope stabilization is included in the O&M Plan.

Standard 10: All illicit discharges to the stormwater management system are prohibited.

22. Upon completion of the drain age system construction, the Applicant shall furnish documentation to the Conservation Commission, which states illicit discharge inspections were performed following the construction of the drainage system. Inspections are required prior to the discharge of any stormwater to post-construction BMPs.

23. Dumpster location should be included on the plans. The dumpster pad should include curbing to direct runoff to an adjacent catch basin for proper treatment.

Comment Addressed
Dumpster locations are shown on Sheet 3, adjacent to the parking locations facing Railroad Street. This is an acceptable location since runoff form the dumpster pad will flow into the proposed drainage system and receive treatment prior to discharge.

General Comments

24. The Grading and Drainage Plan (Sheet 4) includes a Flood Storage table of the Project's compensatory flood storage. It's difficult to identify these locations on the plans and would be helpful to show them as shaded areas that correspond to the summary table.

Follow-up Comment
The Flood Storage Sketch was provided with shaded areas representing storage volumes between incremental elevation contours under proposed conditions. A significant net storage increase is provided in the parking garages below the proposed buildings.

Additional information is needed to clarify how flood waters would enter and recede from the parking garage. Does the parking garages include drainage structures connected to the proposed stormwater management or sewer system?

25. The Infiltration Chamber Detail (Sheet 9) should include the size of crushed stone around the chambers. Washed crushed stone should be required for use in all infiltration BMPs.

Comment Addressed
Stormtech crushed stone and fill specifications were added to Sheet 9.

26. Infiltration system inspection/cleanout port detail was provided. Cleanouts are needed for each row of chambers to provide proper maintenance access to remove sediment and debris.

Comment Addressed
The infiltration area details were revised to include inspection ports at the end of each row of chambers.

27. Plans of the proposed infiltration systems should be added to the plans that show the configuration of the chambers and header pipes. Locations of risers, inspection ports and cleanouts should be indicated on the infiltration chamber plans.

Comment Addressed
Infiltration area details were added to sheet 9.

28. Include outlet protection (e.g. riprap aprons) downstream of all outlet pipes along the embankment.
    a. A detail of the outlet protection, with sizing requirements, should be added to the plans.

Follow-up Comment
Rip Rap Outlet Details were added to Sheet 9.

The aprons should also be shown on the Grading and Drainage Plan (Sheet 4). Both outlet pipe labels should also be revised to show 18" pipes.

29. ***New Comment:***

    CEI recommends including a crushed stone infiltration trench along the proposed walkway at the top of the embankment slope. A stone trench would provide a method to collect runoff, remove sediment and reduce flow down the embankment.

If you have any questions or comments regarding this report, please contact me at 508-281-5160.

Sincerely,

COMPREHENSIVE ENVIRONMENTAL, INC.

Curt Busto
Project Engineer