



Nathan L. Jacobson & Associates, Inc.

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Jacobson Consulting Civil and Environmental Engineers Since 1972

MEMORANDUM

To: Ms. Heidi Wallace, Inland Wetland Agent
Town of Westbrook
Date: March 10, 2020

From: Thomas H. Fenton, P.E.

NLJA #: 1062-0012

Subject: Dattilo Village - Preliminary Engineering Review

Copies: W. Thomas, R. Snarski, A. Wolfgram, R. Russo, E. Knapp, Z. Faiella

This memorandum summarizes our initial engineering review of materials submitted for the above referenced Inland Wetland Permit Application. In addition to reviewing the materials itemized below, on February 26, 2020 we met with you, Eric Knapp and the Applicant's design consultants to discuss the project and some of our initial review concerns. Our comments listed below include input from Richard Snarski, CPSS, CPWS, who also attended that meeting, as it relates wetlands impacts and function.

As noted below, some relevant aspects of the project, such as design of the stormwater management system, require submission of additional information. As such, we have not completed a detailed review of those specific elements at this time.

Our comments consider review of the following items received at our office through February 20, 2020:

- Item 1: Town of Westbrook, CT Application for Permission to Conduct a Regulated Activity with 100' of an Inland Wetland, Watercourse or Upland Review Area, dated 10/31/19.
- Item 2: Document entitled "Dattilo Village Westbrook Ct." which includes project narrative, maps and Westbrook IWCC Meeting Minutes, dated October 28, 2019, prepared by A-L Consulting, LLC.
- Item 3: Letter to Ms. Heidi Wallace, Wetlands Officer from CLA Engineers dated October 30, 2019.
- Item 4: Bound document entitled "Drainage Design Memorandum Dattilo Village" dated October 28, 2019, prepared by A-L Consulting, LLC.
- Item 5: Set of bound drawings entitled "Application For Dattilo Village Westbrook CT., Submission to Inland Wetlands & Watercourse Commission Town of Westbrook, CT" Sheets T-1, C-1 thru C-9, L-1 through L-6, and A-1 through A-9, dated 10-28-19, prepared by A-L Consulting, LLC.
- Item 6: Set of two drawings entitled "Dattilo Village, Storm Water Management Development Plan" dated October 29, 2019, prepared by A-L Consulting, LLC.

The project is a proposed multi-family development located on 8.69 acres north of Route 1 with access from Kirkland Street, which we understand is an existing gravel surfaced private road. Topography on the site slopes gently from west to east. There is one area of wetlands located in the northeastern portion of the site and two areas of wetlands off-site to the east and to the south toward which surface water from the site is directed. There is no proposed site disturbance within the wetland areas. Activities within the regulated upland area include portions of various elements of the developed project including the subsurface sewage disposal system (SSDS), building units, stormwater basins, gravel parking and associated grading and drainage improvements.



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The area of the site to be developed with residential units and associated infrastructure is located in the western part of the and includes a loop access road and four (4) building units. The SSDS is located in the middle to eastern portion of the site between the development areas and the easterly wetlands. Water supply is indicated to be by connection to an existing public water system.

Stormwater runoff from the developed area of the site, including the loop road and some of the buildings is proposed to be directed to a series of rain gardens and stormwater basins which ultimately have emergency spillways directing runoff to the south and east of the site. Stormwater runoff from the northerly buildings is directed untreated to the on-site wetland.

At this time, we have the following comments:

Site Plans (Drawing Sheets C1-C7)

1. The building unit parking spaces are indicated to be gravel surface. While we understand the desire to reduce impervious surfaces within the development, the gravel surface may be problematic from a maintenance standpoint and surface erosion may promote transmission of fines into the stormwater practices. In this regard, an alternative pervious surface could be considered such as pavers, a grass block system or pervious bituminous concrete or concrete pavement which would mitigate these issues.
2. The plans should indicate how the walking path will be surfaced. As further discussed below, it appears some of the overland concentrated stormwater flows as well as discharges from roof drains for Building "A" will be directed over the path.
3. The plans should identify what we understand are vents for the (SSDS) as well as the locations of key elements of the SSDS such as septic tank locations.
4. The plans should clearly identify all proposed impervious coverage including areas such as walks adjacent to buildings.
5. The Grading, Drainage Plan refers to the Drainage Design Memorandum for storm sewer piping sizing and invert elevations. This information should be included on the plans.
6. Emergency spillways from Retention Basin 1 (RB1), Retention Basin 2 (RB2) and Rain Garden 1 (RG1) are directed to the west and south and would appear to direct surface water onto properties off-site. The plan should indicate grading such as swales to maintain flow on the property or obtain a right to drain on adjacent property if that is required.
7. There are impervious areas of the site which are not directed to a treatment practice including discharges from roof drains for Buildings A, B, D and a small area of the upper portion of the loop road.
8. The distance from RB2 to the SSDS is 50 feet. The required separation distance from a storm water infiltration system in the *Connecticut Public Health Code* is 75' for multi-family lots, subject to a



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reduction to 50' with approval from the Department of Health if demonstrated that the leaching system or sewage tank shall not be adversely impacted. We understand that this aspect of the project is being reviewed by the Health Department.

9. The Rain Garden Detail on Sheet C-7 indicates that 12" deep rain garden bedding is proposed. The recommended depth of planting soil for bioretention/rain gardens is 2-4' as indicated in the *Connecticut Stormwater Quality Manual* (CTSQM) Section 4.4.2. Additional guidance, such as recommendations published in the *Prince George's County Bioretention Manual*, indicates that 2 to 2.5' depth is desirable. With respect to the retention basins, if they are also proposed as a water quality measure it is unclear why they have a different configuration of topsoil and fill.
10. Due to the disturbance of greater than five acres the project will subject to the requirements of the *CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* (Construction Stormwater General Permit) and the development of a conforming Stormwater Pollution Control Plan. While this is a construction permit to be obtained after local land use approvals, it is recommended that the Erosion and Sedimentation Control Plan consider relevant requirements of the General Permit such as the location and sizing of temporary sediment traps or basins.
11. Perimeter erosion controls are indicated on the Proposed Erosion Control, Sedimentation, Control Plan to be hay bales. Due to the short-term effectiveness of hay bales and easier installation of geotextile silt fence, the latter may be a better alternative. We also discussed wood chips as an alternative measure at our pre-review meeting.
12. The general construction sequence on the Erosion and Sediment Control Notes & Details seems to conflict with the more detailed breakdown of construction activities with regard to the sequence of construction. If, as indicated in the overall construction sequence, the SSDS is constructed before the buildings and associated site improvements, we question if that area of the site can be restored to minimize the extent of disturbed area throughout the project duration. In any case the Erosion Control Narrative should include requirements for temporary stabilization of disturbed areas that are not under active construction.

Stormwater Management and Drainage Design Memorandum

1. The Drainage Design Memorandum (Drainage Report) indicates that Water Quality Volume (WQV) and Groundwater Recharge Volume (GRV) values have been calculated. These calculations should be provided for review. In accordance with the Town of Westbrook Zoning Regulations (Regulations) Section 7.N.5.5.a, the WQV for all new impervious area on the site shall be calculated as described in section 7.4.1 of the CTSQM.
2. Section 7.N.5.5.b of the Regulations requires that the WQV shall be retained on-site in an off-line structure and treated by either infiltration or filtration or a combination thereof for each subarea of the site as approved by the Town Engineer.



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3. Section 7.N.5.2.a of the Regulations indicates that stormwater management systems shall meet the criteria as specified herein "to the maximum extent practicable". If there are elements of the design that do not meet the criteria it should be noted in the Drainage Report with an indication of why the design criteria cannot be met.
 4. The Drainage Report provides a summary table of results for 2, 5, 10, and 50-year storm return events and provides a detailed runoff analysis data for the 50-year storm return event. Typically, and as addressed in the CTSQM Section 7.6.3, the recommended peak runoff attenuation criterion in Connecticut includes control of peak discharge rates from the 10-year, 25-year and 100-year storms to the corresponding pre-development peak discharge rates. While Section 7.N.5.3.d the Westbrook Zoning Regulations requires that peak runoff is calculated using the 2, 10, 25 and 50-year storm events, it would seem that peak run-off rates for the 100 year storm should be calculated to verify that there are no on-site or off-site impacts. Hydrographs should be provided for all analyzed storm events and also for the 1" rainfall to understand how the post-construction stormwater practices function during the water quality storm event.
 5. Soil test data is provided for test holes within areas of the proposed stormwater treatment measures. It was indicated at our pre-review meeting that groundwater monitoring has been conducted. The groundwater monitoring results should be provided. In this regard, we would recommend that monitoring be conducted this year as well.
 6. In order to provide a complete review of the stormwater management design the Drainage Report should include the TR-55 Time of Concentration (Tc) Worksheets and Tc lengths for all drainage areas (if minimum Tc is assumed that should be noted), Runoff Curve Number Calculations, Hydrograph Summary Reports and Pond Reports for the stormwater basins.
 7. Based on research as summarized in the publication *NRCS, Northeast NTC, Hydrology Technical Note N4, 1986*, it is recommended that for sheet flow lengths used in determining the Time of concentration a most likely length of 100' should be used in overland flow computation for unpaved areas.
 8. With respect to the Post Development Drainage Plan, the delineation and flow path for Area "B" does not appear to be accurate. Based on the proposed site grading and routing of stormwater runoff through the treatment practices, runoff from the central and southerly portions of the developed site is directed to either to Retention Basins RB1, RB2 or Rain Garden RG1 which have spillways to the west and south. This drainage pattern is consistent with the Pre-Development Drainage Area "C". The delineation and flow path for Drainage Area "B" on the Post Development Drainage Area Map seems to represent existing surface water drainage patterns on the site and not the proposed conditions.
 9. For the basins with emergency spillways, as noted above, the Drainage Report indicates maximum water surface elevations for the 50-year storm, emergency spillway elevations and the top of embankment elevation. It is recommended that one-foot freeboard be provided between the routed water surface elevation and the top of the embankment for the design storm (*2002 Connecticut Guidelines for Soil Erosion and Sediment Control*). As currently designed, the difference between the 50-year storm water surface elevation and the top of embankment ranges from 0.24' to 0.41'.



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10. We understand that the rain gardens and retention basins are designed to technically meet the standards of the Westbrook Zoning Regulations, which allow infiltration basins to be sized to drain within a 72-hour period based on the infiltration rate of the underlying soils. However, we note that in this case, the 3-foot separation is created by filling to an elevation above the existing surrounding grade. Because of less separation from high groundwater to the existing grade, the downgradient soils may not have sufficient hydraulic capacity to accept the infiltrated water. This could potentially result in seepage through the basin embankment and/or the basins not fully draining in between storm events as anticipated. The intent of the separation requirement is to provide vertical separation for development of the groundwater mound beneath the basin.

Wetland Scientist Comments

1. Based on a visit to the site it was observed that there are two areas with 3" to 4" of ponding water within the wetland located to the south on the adjacent property and the wetland to the northeast located on the property. These areas should be checked to determine if vernal pool amphibian species are breeding.
2. It is unclear from the information provided as to the ongoing hydrology of the stormwater practices with respect to supporting the proposed plantings. Some of the rain garden/basin plantings are suitable for wet or inundated conditions while others are suitable for dry conditions. The ponds are indicated to be designed to infiltrate stormwater runoff over an extended period of time, but it is unclear if the basin surface will maintain a saturated condition to support the plantings.

END OF MEMORANDUM