Jacobson

May 29, 2020

Ms. Samantha Marone, Chairwoman
Inland Wetlands and Watercourse Commission
Town of Westbrook
866 Boston Post Road
Westbrook, CT 06498

Re: Dattilo Village
Kirkland Road
Engineering Review
Revised Submission for Inland Wetlands
NLJA #1162-0012

Dear Ms. Marone:

As requested, in addition to the items noted in our March 10, 2020 Memorandum to Heidi Wallace, we have reviewed the following items received by email attachment through May 27, 2020:

Item 1: Memo to Heidi Wallace, Inland Wetlands Officer, from Alvin G. Wolfgram, PE, dated May 4, 2020 with the following Attachments:

A. Drawings entitled "Dattilo Village Westbrook CT", sheets C-2 thru C-9

B. Water Quality Volume and Groundwater Recharge Volume Calculations

C. Basin Sizing Criteria

D. Pre-Development and Post-Development Hydrographs

E. Post-Development Hydrograph 1" Rainfall Event

F. Groundwater Monitoring Data

G. Pre-Development and Post Development Drainage Area Maps

H. Letter to Ms. Heidi Wallace, Wetlands Officer, from Robert C. Russo CSS, dated May 1, 2020

I. Pipe Swale Summary

Item 2: Drawings entitled "Dattilo Village - Landscape Plans, Boston Post Road, Westbrook, Connecticut", sheets L-2 through L-6, scales as noted, last revised 05-12-2020, prepared by Talcott & Associates, LLC.

Item 3: Drawing entitled "Dattilo Village Westbrook, Ct. Erosion Control Notes & Details", scale as noted, last revised 05-19-2020, prepared by A-L Consulting, LLC.

Item 4: Email from Alvin Wolfgram, PE, with specifications for rain garden and detention basin bedding, dated 5/11/2020.

In addition to reviewing the materials listed above, on February 26, 2020 we met with the Applicant, their Consultants and Town Staff to discuss the project and some of our initial review concerns. Our

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comments provided in our first Memorandum and listed below include input from Richard Snarski, RPSS, PWS, who also attended that meeting.

The subject 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.

The area of the site to be developed with residential units and associated infrastructure is located in the western portion of the site 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. Stormwater runoff from the northerly buildings is directed by surface discharge overland to an on-site wetland.

The comments from our initial Wetland Review Memorandum are listed below in italicized text followed by our updated comments based on review of new information submitted by the Applicant's Engineer in Bold Text. Additional comments or further explanation follows.

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.*

   The Applicant's engineer has indicated that the parking spaces are to remain gravel as originally proposed.

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.*

   This comment has been addressed by redirecting surface drainage or reinforcing the trail surface and providing small diameter culverts at drainage ways.

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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.*

   This comment has been addressed; the relevant details shown on Sheet C3.

4. *The plans should clearly identify all proposed impervious coverage including areas such as walks adjacent to buildings.*

   This comment has been addressed; Sheet C-2 has been revised to identify the respective surface treatments more clearly.

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.*

   This comment has been addressed; a Drainage System Improvements Table has been added to Sheet C-4.

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.*

   A swale and conveyance system has been added along the southerly property line. Our only outstanding comment in this regard is that consideration should be given to shifting the outlet (P17) minimally to the north to ensure that outflow is not directed onto the developed portion of the adjacent property. (tennis courts).

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.*

   This comment has been addressed. The roof drains from Building D are now directed to the drainage system and RB2. Roof drains from building A and B are directed over grass surfaces. In this regard, we understand that all fill imported to bring the site to proposed grades will be select fill which will promote infiltration of surface runoff.

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 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.*

   This comment has been addressed by Relocation of RB2 to conform to the separation requirements.

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.*

   The Rain Garden Detail has been revised to indicate 2' depth of the bedding. Comments on the bedding soil specifications are included with the Wetland Scientist Comments.

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.*

    The Applicant's Engineer has indicated that these measures will be detailed in the Construction Permit process. The Town may want to consider requiring evidence of the CTDEEP submission as a condition of approval.

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.*

    The plans now include a note allowing material flexibility for the site contractor; with specifics to be reviewed at the pre-construction 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.*

    The Applicant's Engineer has indicated that the construction sequence allows some flexibility for the site contractor.

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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.*

   This comment has been addressed; the calculations have been provided.

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.*

   This comment has been addressed.

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.*

   This comment has been addressed.

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.*

   The requested information has been provided and reviewed.

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.*

   This comment has been addressed. Soil test data has been provided and now includes one monitoring event for this year which indicates results similar to the previous monitoring.

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.*

   The requested information has been provided and reviewed.

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.*

   The sheet flow lengths used in determining the Time of Concentration have been revised. While some of the lengths used in the pre-development analyses exceed the most likely lengths of 100' and even the recommended lengths of 300', the result of this would be to underestimate pre-development peak runoff rates and therefore retain more of the post development runoff on-site. As such, we find the design acceptable as proposed.

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.*

   This comment has been addressed. The methodology considers that post development runoff from the internal areas of the site is retained and infiltrated on site and not discharged as surface runoff to the design point.

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'.*

   This comment has been addressed. The revised Basin Sizing Criteria Structure Elevations indicate one-foot freeboard is provided for the 50-year storm. We checked the elevations for the 100-year storm and found that with the exception of RB2 which has 0.64', all have close to one-foot. Given the relatively small runoff volumes to each individual basin and the conservative nature of the design we find this acceptable.

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.*

    This comment has been addressed by verifying the storage capacity of the basins and underlying soil along with the proposed placement of the subsurface soil material in the basin side slopes. The building area will also require importing and placement of a considerable volume of select fill material.

We have the following additional comment regarding the Drainage Design submission:

1. We have requested that the Applicant's Engineer modify the Drainage Summary Sheet to clarify runoff volumes.

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.*

    This comment has been addressed. A vernal pool study has been conducted by Robert C. Russo, CSS, with the conclusion that none of the on-site wetlands function as vernal pools.

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.*

    Based on review of the revised drainage design information, it appears that both the rain gardens and retention basins will infiltrate runoff from more frequently occurring storm events and that the bedding soil will not maintain a saturated condition. Because of this it is recommend that the bottom of the basins be seeded with the New England Erosion Control/Restoration Mix for Detention Basins and Moist Sites and not the New England Wet Mix as now shown. In addition, it is recommended that all herbaceous plants and shrubs within the basin are facultative or upland facultative.

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We have the following additional comments regarding the stormwater basins/rain gardens:

1. It is recommended that the stormwater basin/rain garden plantings are native plants with no cultivars or varieties.

2. It is recommended that the Rain garden bedding soil medium is generally composed of 20-30% topsoil, 20-30% leaf compost and 50% coarse sand (reference *Prince George's County Bioretention Manual).*

If there are any questions, please feel free to contact me.

Very truly yours,

NATHAN L. JACOBSON & ASSOCIATES, INC.

Thomas H. Fenton, P.E.

THF:thf

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