November 3, 2020

Mr. Andrew Bevilacqua, P.E.
Town Engineer
Town of North Haven
18 Church Street
North Haven, Connecticut 06473

Re: Applicant - GBRSTORZ, LLC
Resubdivision of Anderson Sunnyside Farm
318 Kings Highway

Our response letter dated October 21, 2020 was prepared and provided to address your review comments dated 09/18/2020 with a Date of Meeting: 09/23/2020.

Upon review, additional information is required as described in your review comments with Date of Meeting of 10/28/2020.

The following are your original review comments in italics font, the new review comment in bold italics and our response is provided in normal font. Also, enclosed are revised plans which reflect the review comments.

1. *Although not strictly an Inland Wetlands issue, we have concerns over the historic effects of direct stormwater turnoff from this site on down stream properties to the east. Neighboring residents have reported excessive sheet runoff from this site that has been exacerbated by past clearing and other activities on the property. The developer's Engineer has provided a distribution system of rain gardens designed to retain the first 1" of runoff from the proposed impervious areas. Due to the downstream drainage concerns, an overall analysis is needed to review the effectiveness of this system on overall site runoff. Items for further consideration include:*

    a. *Ability of the existing site soils to effectively infiltrate site runoff within the proposed rain gardens. The design narrative discusses soils testing that has been performed in support of on-site septic disposal systems. Please provide details on this soil testing indicating soil types, seasonal high groundwater levels and infiltration rates.*

    Soil testing data has been added to the plans.

So noted.

    b. *Understanding the movement of groundwater within the existing soils, and the overall effect of the distributed rain garden approach on groundwater levels, downstream basements, and possible groundwater surface breakout.*

No information has been provided to date addressing the possible effects of stormwater infiltration on downslope groundwater levels, and impacts to neighboring residents.

The Wetland Delineation and Assessment Report prepared by Martin Brogie, dated September 2020 states that the subject area soils consist of Ludlow Silt Loam and Wethersfield Loam. Both soils are described as moderately well drained and well drained respectively.

The large size of the proposed lots and the minimal amount of impervious coverage provide significant area to dissipate any stormwater runoff. Additionally, excavated depressions have been provided on Lots 1, 2 & 7 to detain stormwater runoff. These depressions are designed to attenuate the increase in runoff from the proposed development prior to discharge into the drainage system on Hartford Turnpike.

c. *The proposed stormwater management approach relies on the action of individual residents for long term maintenance of the individual rain garden system. How will property owners within this development be compelled to perform the long-term maintenance that these systems will need to ensure proper long-term function? The Town does not have the resources to inspect and track each individual system on an annual basis to ensure that the required maintenance is performed.*

Per the Developer's Engineer, Maintenance Agreements will be included in property deeds. The Commissions may wish to include bonding and reporting requirements on the individual lots to ensure that long term maintenance is performed.

So noted.

2. *The proposed design plans show a direct connection of the site drainage to an existing Town drainage system in Hartford turnpike. Calculations must be provided to show that this drainage system has adequate capacity to properly convey drainage from this site. Analysis of this system should extend to the system outfall, and include an assessment of the ability of downstream channels and features to convey post development flows.*

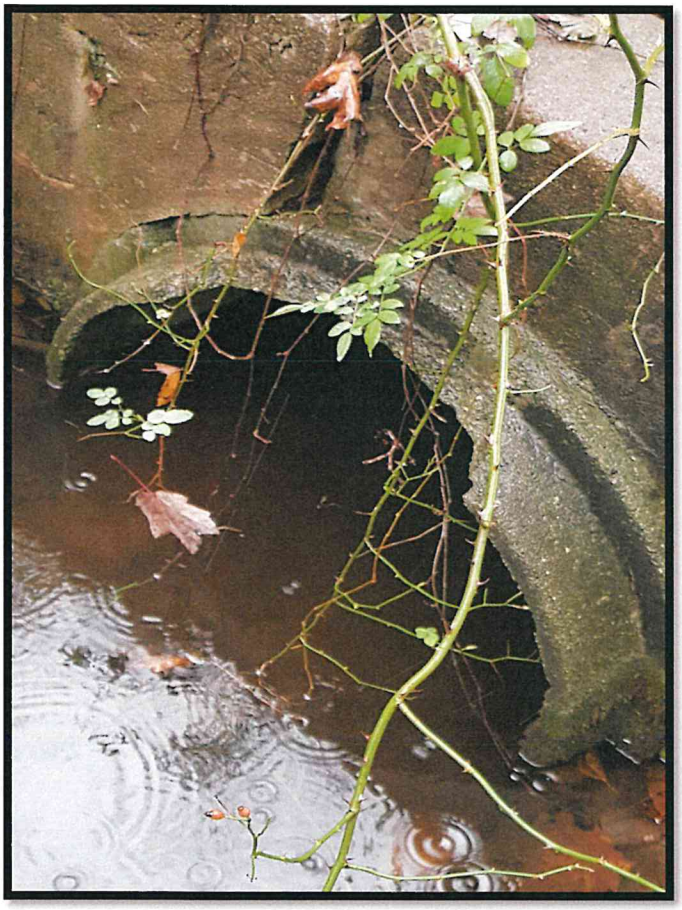
The Developer's Engineer has surveyed the existing drainage system on Hartford Turnpike, and performed an analysis of existing and proposed drainage conditions. The analysis indicates that the existing drainage system exceeds capacity downstream of the connection point from this development for even a two-year storm event. The proposed development will generate an approximately 5% greater peak site runoff for all storm events analyzed. Since the existing drainage system lacks available capacity to accommodate this increase in site runoff, additional mitigation measures will be needed. In addition, no evaluation of condition downstream of this outfall was provided.

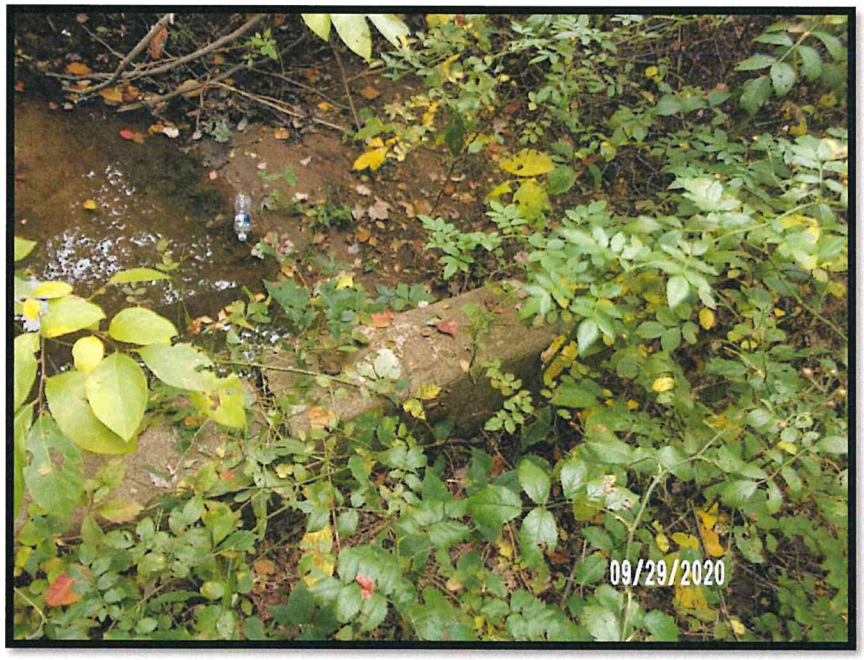
Existing conditions and developed conditions drainage area maps and HydroCAD Stormwater Modeling System computer program by Applied Microcomputer Systems was used to analyze the drainage system in Hartford Turnpike. HydroCAD uses the TR-55 curve number method to estimate the quantity and peak rates of runoff produced by each drainage area to each catch basin in the drainage system. This information is shown in tabular form for each catch basin for the 2-year, 10-year & 25-year storm event on the drainage area maps. Runoff rates chosen from the NOAA Atlas 14, Volume 10, Version 3 located in North Haven, CT.

Excavated depressions have been provided on Lots 1, 2 & 7 to detain stormwater runoff from the development. These depressions as designed reduce the rate of runoff to below the pre-development conditions. The rate of

runoff at each catch basin for the 2-year, 10-year and 25-year storm event are provided in tabular form on the plans entitled: "Existing Conditions Drainage Area Plan", sheet DA-1 and the "Developed Conditions Drainage Area Plan", sheet DA-2.

The drainage outlet consists of a 30" RCP pipe from a concrete headwall. A large crack exists in the headwall above the concrete pipe. A portion of the top of pipe exposed through the headwall has broken off. Silt, sediment & debris are visible at the outlet and downstream of the pipe which is limiting flow. At the time of inspection, the pipe was half full of water. It appears that a sink hole exists above the pipe approximately 10 feet west of the outlet (see pictures below).





3. *Based on review of the above requested information, further Engineering comments may be forthcoming.*

   Comment remains.

So noted.

Sincerely,

LRC Engineering & Surveying, DPC

Richard Reynolds
Project Engineer