

RECEIVED

PLANNING AND ZONING COMMISSION  
TOWN OF BROOKLYN  
CONNECTICUT

DEC 24 2020

Received Date \_\_\_\_\_

Application # SD 21-001  
Check # 3388

APPLICATION FOR SUBDIVISION/RESUBDIVISION

Name of Applicant SQUARE 1 BUILDING ASSOCIATES Phone \_\_\_\_\_  
Mailing Address 101 MACLIN DRIVE, PRESTON, CT  
Applicants Interest in the Property OWNER

Property Owner SQUARE 1 BUILDING ASSOCIATES Phone \_\_\_\_\_  
Mailing Address 101 MACLIN DRIVE, PRESTON CT

Name of Engineer/Surveyor CLA ENGINEERS / ARCHER SURVEYING LLC  
Address 18 PROVIDENCE ST, BRIDGEVILLE CT  
Contact Person PAUL ARCHER Phone 779-2240 Fax 779-2240

Name of Attorney \_\_\_\_\_  
Address \_\_\_\_\_  
Phone \_\_\_\_\_ Fax \_\_\_\_\_

Subdivision  Re subdivision \_\_\_\_\_  
Property location TRIP HOLLOW ROAD  
Map # 2 Lot # 121 Zone RA Total Acres 232 Acres to be Divided 232  
Number of Proposed Lots 4 Length of New Road Proposed 0  
Sewage Disposal: Private  Public \_\_\_\_\_

Note: Hydrological report required by Section 11.6.2

Length of new Sewer proposed: Sanitary \_\_\_\_\_ Storm \_\_\_\_\_  
Water: Private  Public \_\_\_\_\_

Is parcel located within 500 feet of an adjoining Town? YES

The following shall accompany the application when required:

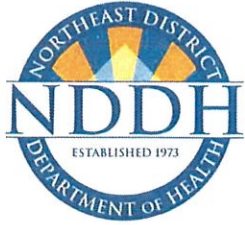
- 4.2.2 Fee \$ 1250 - State (\$60.00) 60 4.2.3 Sanitary Report \_\_\_\_\_ 4.2.5, 3 copies of plans \_\_\_\_\_
- 4.2.4 Application/ Report of Decision from the Inland Wetlands Com. & the Conservation Com.
- 4.2.6 Erosion & Sediment Control Plans
- 4.2.7 Certificate of Public Convenience and Necessity
- 4.2.8 Applications filed with other Agencies

The owner and applicant hereby grant the Brooklyn Planning and Zoning Commission, the Board of Selectman, Authorized Agents of the Planning and Zoning Commission or Board of Selectman, permission to enter the property to which the application is requested for the purpose of inspection and enforcement of the Zoning regulations and the Subdivision regulations of the Town of Brooklyn

Applicant: [Signature], member Date 12-1-20

Owner: [Signature], member Date 12-1-20

\*Note: All consulting fees shall be paid by the applicant



## NORTHEAST DISTRICT DEPARTMENT OF HEALTH

69 SOUTH MAIN STREET, UNIT 4, BROOKLYN, CT 06234

860-774-7350/FAX 860-774-1308 WWW.NDDH.ORG

October 27, 2020

Square 1 Building Associates  
101 Mackin Drive  
Griswold, CT 06351

**SUBJECT: FILE #21000003 -- TRIPP HOLLOW ROAD, MAP #7, LOT #12-1, BROOKLYN, CT**

Dear Square 1 Building Associates:

Upon review of the subdivision plan CLA ENGINEERS, ARCHER SURVEYING, SQUARE 1 BUILDING ASSOC., PROJ#CLA-6503, LAST REVISED 09/28/2020 submitted to this office on 10/22/2020 for the above referenced subdivision, The Northeast District Department of Health concurs with the feasibility of this parcel of land for future development. Additionally, approval to construct individual subsurface sewage disposal systems may be granted based on compliance with appropriate regulations and the Technical Standards as they apply to individual building lots with the following notations:

1. Lots #:12-1, 12-8, 12-9, and 12-10 require that a Professional Engineer design and submit individual plot plan(s) for review and approval prior to construction.
2. Proposed lots are based on 3 bedroom homes at the locations tested. If the number of bedrooms are increased, septic system sizes will require an increase per the Technical Standards.
3. If the proposed septic area is moved, additional testing may be required

Be advised you must receive approval from the appropriate commissions in the Town of Brooklyn prior to construction of these lots.

This letter is NOT to be construed as an APPROVAL TO CONSTRUCT the septic system and DOES NOT indicate that the Northeast District Department of Health endorses approval for issuance of any building permit.

Should you have any questions, please feel free to contact the sanitarian that reviewed your plan.

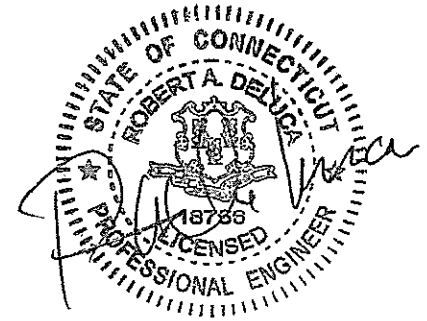
Sincerely,

Sherry McGann, RS  
Registered Sanitarian ~ NDDH

cc: Town of Brooklyn; CLA Engineers; Archer Surveying

## DRAINAGE NARRATIVE

4-Lot Subdivision  
Tripp Hollow Road, Brooklyn, CT  
Prepared for  
Square 1 Building Associates, LLC



The existing site consists of approximately 23.3 acres of undeveloped woodlands located to the west of Tripp Hollow Road in Brooklyn Connecticut. There are inland wetlands running in a north/south direction through the center of the site.

The proposed subdivision consists of 4 residential building lots served by approximately 1,000 L.F. of new shared driveway access from Tripp Hollow Road. Presently, storm water in the proposed development area drains west and north, exiting the site via the wetlands and eventually discharging to Tatnic Brook.

The driveway for the western most building lot is required to cross the wetland. The crossing location has been determined to minimize impact to the wetland (see CLA Wetland Letter to Inland Wetlands Commission 09/03/20). The crossing length is approximately 100 feet.

The following determines the size of the drainage culvert required to pass the 25-year storm event with inlet control, without submerging the culvert.

### Methodology:

In accordance with the Town of Brooklyn's Public Improvement Specifications, the site's watershed was analyzed using the Rational method for the 25-year storm. The Rational method predicts the peak runoff according to the formula:  $Q=CiA$ , where C is a runoff coefficient, i is the rainfall intensity, and A is the sub-catchment area.

Rainfall intensities used in the calculations were taken from the Brooklyn (06-0918) weather station readings accessed via the NOAA Atlas 14 Point Precipitation Frequency website.

The proposed watershed contributing to the driveway crossing was determined to be 5.77 acres using local DEEP watershed basin boundaries and Connecticut Elevation (Lidar) Data (See Fig. 1).

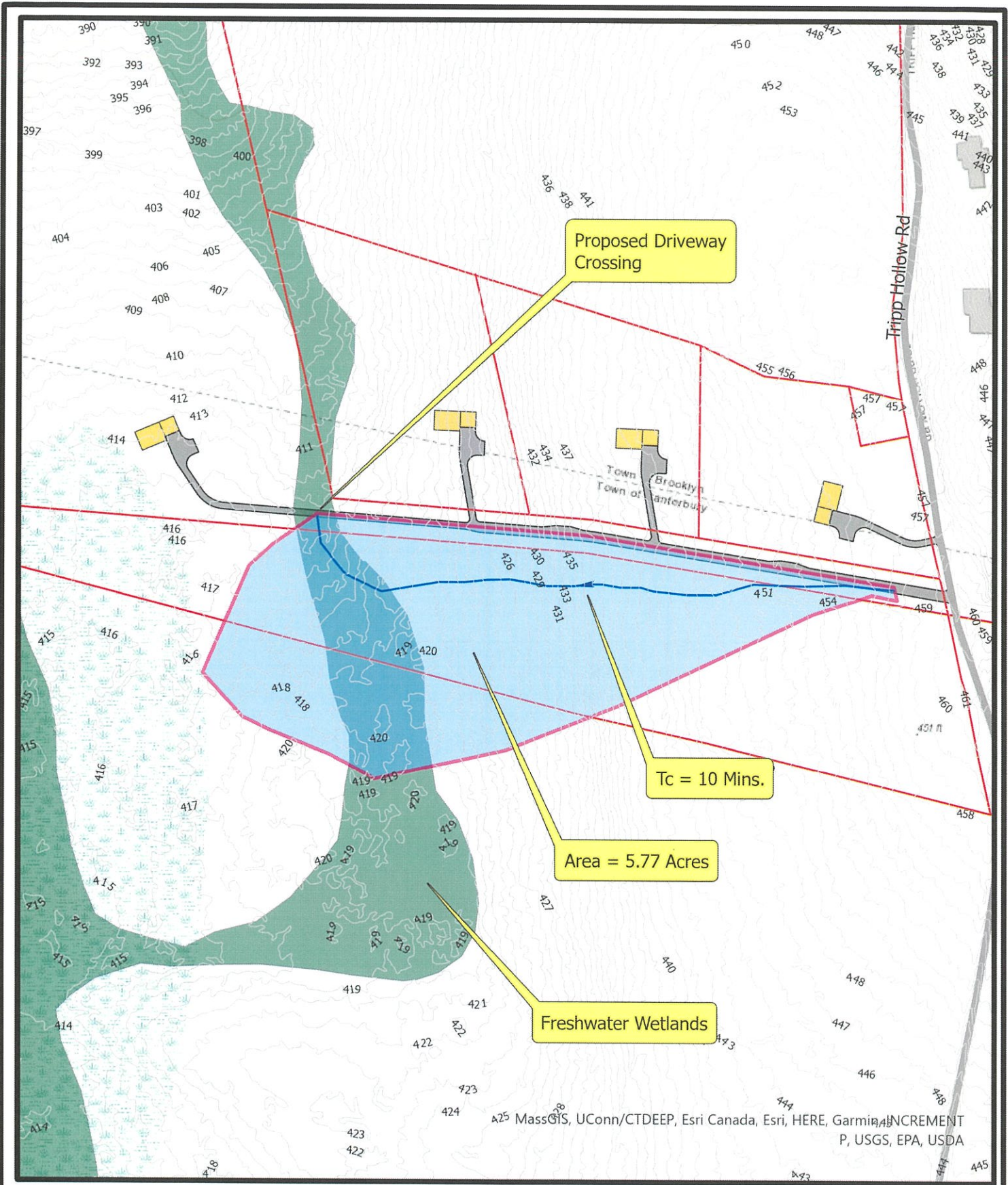
The site consists primarily undeveloped woodlands. A run-off coefficient (C) of 0.2 (Unimproved Surface) was utilized. The Time of Concentration was determined as approximately 10 minutes using the TR-55 method.

The peak discharge (Q) for the 25-year storm event was calculated as follows:

Peak Volume (Q) = CiA = 0.2 x 6.11 in/hr x 5.77 acres = 7.05 c.f.s. (See Appendix 1)

Analysis of the culvert crossing was performed using Hydraflow Express culvert modeler (used in HDS-5 Hydraulic Design of Highway Culverts).

The resultant analysis determined that three 15" diameter pipes, installed at a grade consistent with the existing wetland, are able to convey approximately 12 c.f.s without submerging the pipes (See Appendix 2).



**CLA Engineers, Inc.**  
 CIVIL • STRUCTURAL • SURVEYING

317 Main Street Norwich, Connecticut  
 (860) 886-1966 Fax (860) 886-9165  
 e-mail: cla@claengineers.com

**PROPOSED WATERSHED**

SQUARE 1 BUILDING ASSOCIATES, LLC  
 4 LOT SUBDIVISION  
 TRIPP HOLLOW ROAD, BROOKLYN, CT

DATE: 9/7/20  
 SCALE: 1:2,400

FIGURE

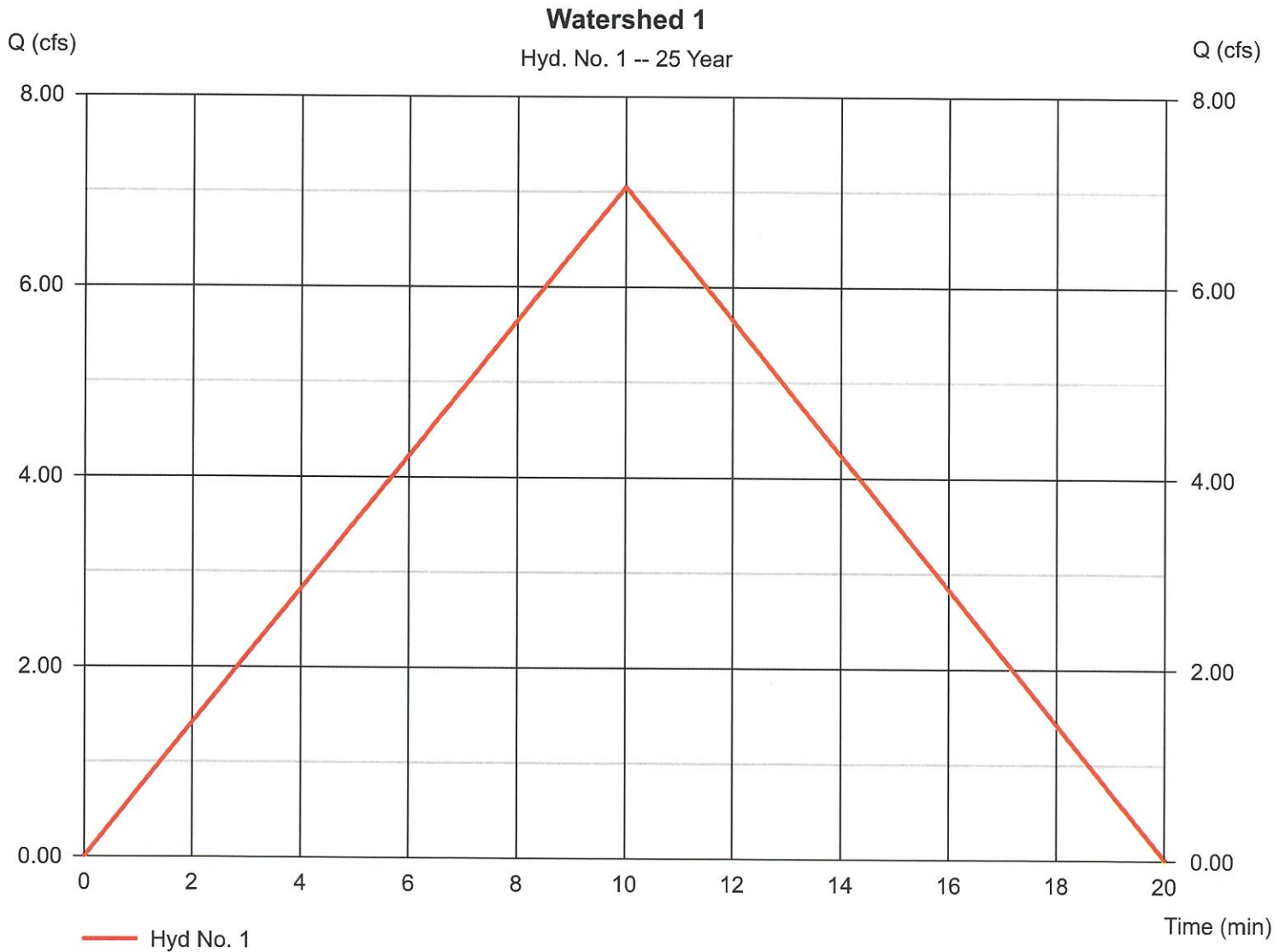
**1**

## Hyd. No. 1

### Watershed 1

Hydrograph type = Rational  
Storm frequency = 25 yrs  
Time interval = 1 min  
Drainage area = 5.770 ac  
Intensity = 6.111 in/hr  
IDF Curve = 6503 Pollock.IDF

Peak discharge = 7.052 cfs  
Time to peak = 10 min  
Hyd. volume = 0.097 acft  
Runoff coeff. = 0.2  
Tc by TR55 = 10.00 min  
Asc/Rec limb fact = 1/1



# Culvert Report

## Appendix 2

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc.

Monday, Nov 23 2020

### Wetland Crossing

Invert Elev Dn (ft) = 417.10  
Pipe Length (ft) = 24.00  
Slope (%) = 1.25  
Invert Elev Up (ft) = 417.40  
Rise (in) = 15.0  
Shape = Cir  
Span (in) = 15.0  
No. Barrels = 3  
n-Value = 0.012  
Inlet Edge = Projecting  
Coeff. K,M,c,Y,k = 0.0045, 2, 0.0317, 0.69, 0.5

### Embankment

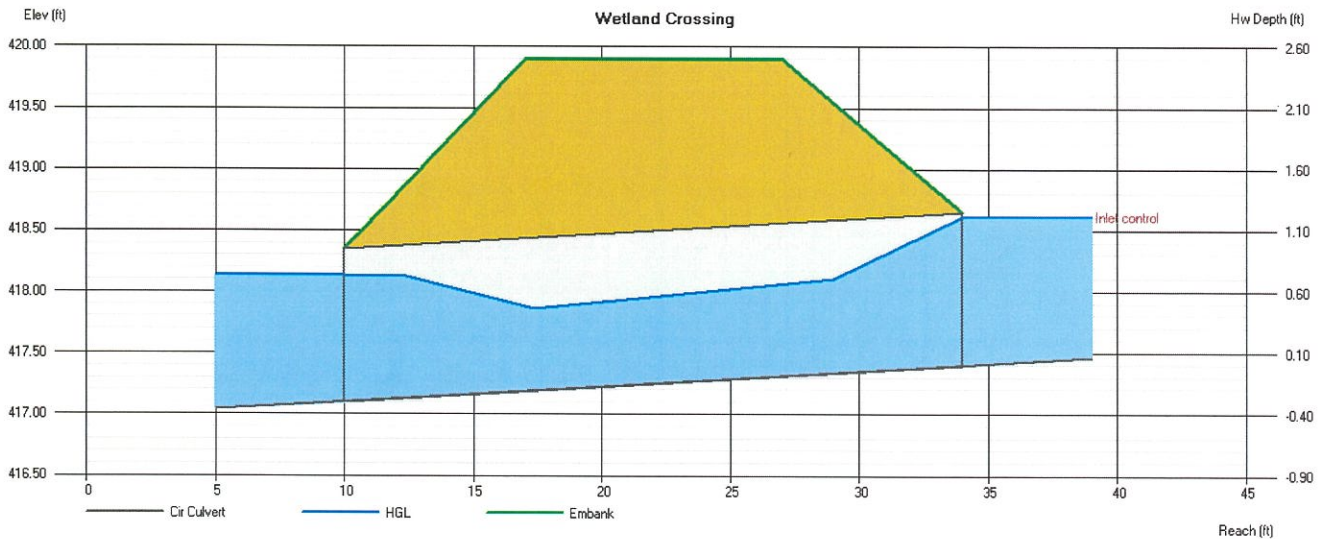
Top Elevation (ft) = 419.90  
Top Width (ft) = 10.00  
Crest Width (ft) = 50.00

### Calculations

Qmin (cfs) = 1.00  
Qmax (cfs) = 20.00  
Tailwater Elev (ft) = (dc+D)/2

### Highlighted

Qtotal (cfs) = 12.00  
Qpipe (cfs) = 12.00  
Qovertop (cfs) = 0.00  
Veloc Dn (ft/s) = 3.69  
Veloc Up (ft/s) = 4.74  
HGL Dn (ft) = 418.13  
HGL Up (ft) = 418.21  
Hw Elev (ft) = 418.61  
Hw/D (ft) = 0.97  
Flow Regime = Inlet Control



# CLA Engineers, Inc.

Civil • Structural • Survey

317 MAIN STREET

NORWICH, CT 06360

(860) 886-1966

(860) 886-9165 FAX

September 3, 2020

Inland Wetlands Commission  
Town of Brooklyn  
69 South Main Street  
Suite 22  
Brooklyn, CT 06234

RE: CLA 6503  
Square 1 Subdivision  
Tripp Hollow Rd

To the Commission:

CLA Engineers was retained by Square 1 Building Associates LLC to conduct a wetlands investigation and functional assessment on the parcel of land, located on Tripp Hollow Road, that is proposed to be developed for a residential subdivision. The 23+/- (Source NECOG GIS) acre site is located within the Town of Brooklyn on the Canterbury border. It is currently wooded undeveloped land. The approximate site location is shown on the cover sheet of the site plans. The purposes of the investigation were to: establish the wetland delineation, provide background data in the form of determining wetland functions, and assess the potential for wetland impacts due to the proposed development.

Wetlands were delineated by Robert Russo of CLA Engineers according to the State of Connecticut statutory definition as described in Section 22a of the State Statutes. CLA conducted field work in June and July of 2020.

After wetland delineation was complete, the wetland resources of the site were surveyed by conducting a deliberate walk through of the site, traversing each wetland in order to collect data characteristic of that wetland. During the walk through, vegetation identifiable was noted, and described.

## Site Setting

Much of the site had been used for agriculture up until the 20<sup>th</sup> century as demonstrated by abundant stonewalls. The Square 1 subdivision site currently has two vegetative cover types that were established after farming ceased. Both cover types, wooded upland and wooded swamp, are dominated by mixed hardwoods.



The areas of upland have mixed hardwoods such as red maple, red oak, white oak, black cherry and black birch. The wetlands are dominated by red maple trees with other species such as yellow birch and pin oak in lesser numbers.

The land uses surrounding the site include residential, agricultural and woodland. The residential development is primarily located to the east along Tripp Hollow Rd. Undeveloped farmland and woodland surrounds the site to the north, west and south.

Throughout the site slopes vary from moderate to nearly flat. The surface water drains from the west and east to the centrally located wetland and flows northward off site to Tatnic Brook. The slopes on the east and west side of the wetland are gentle at the edge of the wetland and are not prone to erosion.

### **Surficial Geology and Soils**

Southern New England was overlain by glacial ice as recently as 12,000-15,000 years ago. The materials that the glaciers deposited over top the local bedrock determine the surficial geology of the region and of the Square 1 subdivision site. Connecticut's glacial deposits are generally divided into three categories: glacial till (un-stratified sand, silt and rock), glaciofluvial (water sorted, stratified sand and gravel), and glaciolacustrine (stratified sand, silt and clay that settled out in lakebeds). Only glacial till is present on the site. However, one of the wetland soil types is formed in post glacial deposits of organic matter. The soils formed in till deposits typically have sandy loam to silt loam textures and in this case they are the coarser, sandy loams. The slopes are moderate to flat throughout the site and this leads to differences in soil mapping classification as listed by the NRCS.

Table 1 is a summary table of the soils found on the site.

**Table 1 - Soil Types and Properties at the Square 1 Subdivision Site**

<u>Soil Series</u>	<u>Parent Material</u>	<u>Drainage Class</u>	<u>Texture/Characteristics</u>
*3 Ridgebury, Leicester and Whitman	Glacial Till	Somewhat poorly to very poorly drained	Stony sandy loam
*17 Timakwa and Natchuag	Decayed organic matter	Very poorly drained	Well to moderately decayed
47 Woodbridge	Glacial Till	Moderately Well Drained	Sandy loam

\* Wetland soil types

## **Wetland Descriptions and Functions**

The Square 1 Subdivision site has one wetland system that occupies a broad swale approximately 1000 west of Tripp Hollow Rd. The wetland itself varies from approximately 100 to 200 feet wide. It is nearly level but has hummocky micro-topography. Under the USFWS system is a palustrine deciduous swamp (PF01) that is seasonally flooded/saturated. This designation reflects its vegetation which is dominated by mature trees, and its hydrology which has shallow standing water in the winter and after storm events. The wetland lacks standing water in the summer and was not found to contain a perennial stream or vernal pool.

The typical vegetation of the wetlands includes: trees such as red maple trees and saplings, yellow birch trees and saplings; shrubs such as spice bush, highbush blueberry, winterberry holly, sweet pepperbush, clammy azalea, alder and plants such as skunk cabbage, cinnamon fern, sphagnum, royal fern, and sensitive fern.

The principle functions of this wetland system are typical to local red maple swamps and the wetland is generally undisturbed with an undisturbed wooded upland buffer. The CTDEEP NDDB (June 2020) shows no known habitat of threatened, endangered or special concern species.

The functions were found to include:

- Wildlife habitat
- Floodwater retention/detention
- Groundwater recharge/discharge
- Biomass production export
- Recreation
- Aesthetics

These values associated with the wetland and are supported by several important features of that wetland:

- Areas of undeveloped buffer
- Limited development within the watershed
- Evidence of use by a diversity of wildlife species.

## **Potential for Impacts**

As shown on the project plans there are proposed activities in the inland wetlands. The total area of wetland excavation and fill proposed is 2,800 square feet. These activities are limited to impacts necessary to provide a driveway for the lot located furthest from the road. This lot has significant developable area that cannot be accessed without wetland

impacts. The driveway crossing location is at a narrow point in the wetland to assist in minimizing wetland impacts. There is one other narrow point to the north, but this location would result in no further reduction of wetland impact. The width of the driveway has been kept to the minimum required and the use of multiple, smaller diameter culverts assists in keeping the elevation of the driveway low, minimizing the side slopes needed for the crossing. CLA believes that the proposed driveway crossing is the most feasible and prudent alternative.

As shown on the plans, work in the upland review zone will include:

- Clearing and grading
- Construction of driveways, a houses and a septic systems
- Installation of erosion and sedimentation controls
- Construction of utilities

These activities in the upland review zone present limited potential for wetland impacts. The site has only moderate slopes and short length of slope. CLA believes that the Best Management Practices (BMPs) measures shown on the plans for erosion and sediment control and stormwater management will be adequate in preventing wetland impacts if properly installed and maintained.

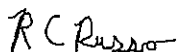
CLA notes that in order to minimize the potential for impacts to wetlands, the E&S has been designed in compliance with the CTDEEP 2002 E&S Manual.

### **Summary**

The proposed development activities will directly impact wetlands. The work in the upland review zone can be managed with BMPS so as to not impact wetlands during construction. In summary, if the proposed erosion and sedimentation control measures are adhered to, CLA believes that the wetland impacts will be limited to what is necessary to provide a driveway for a building lot.

Please contact me if you have any questions.

Very truly yours,



Robert C. Russo  
Soil Scientist

# **Appendix A**

## **Soils Data**

## NRCS Soils descriptions

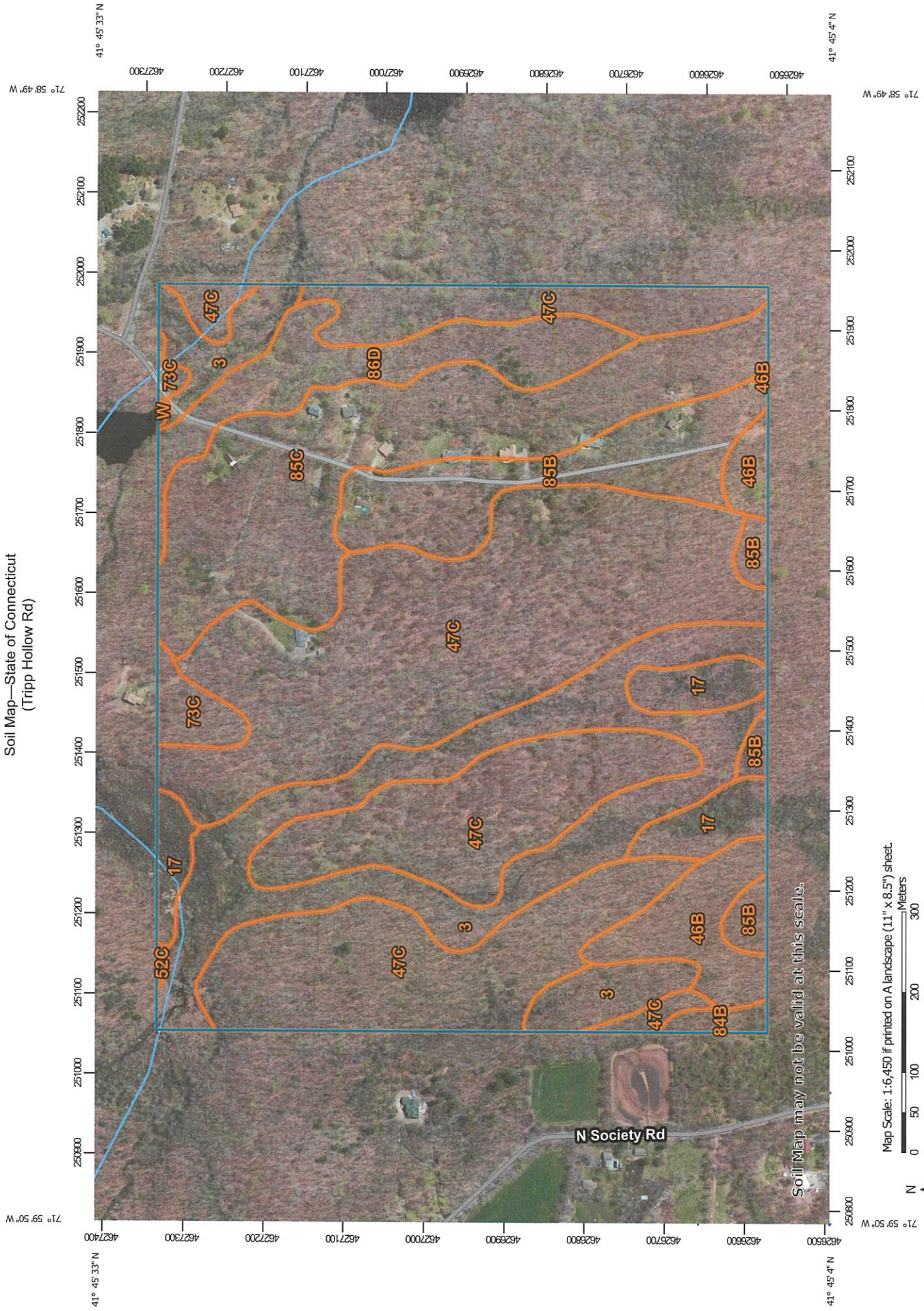
(3) The Ridgebury series consists of very deep, somewhat poorly and poorly drained soils formed in lodgment till derived mainly from granite, gneiss and/or schist. They are commonly shallow to a densic contact. They are nearly level to gently sloping soils in depressions in uplands. They also occur in drainageways in uplands, in toeslope positions of hills, drumlins, and ground moraines, and in till plains. Slope ranges from 0 to 15 percent. Saturated hydraulic conductivity is moderately high or high in the solum and very low to moderately low in the substratum. Mean annual temperature is about 9 degrees C. and the mean annual precipitation is about 1143 mm.

(17) The Timakwa series consists of very deep, very poorly drained soils formed in woody and herbaceous organic materials over sandy deposits in depressions on lake plains, outwash plains, till plains, moraines, and flood plains. Saturated hydraulic conductivity is moderately high or high in the organic layers and high or very high in the sandy material. Slope ranges from 0 to 2 percent. Mean annual temperature is about 13 degrees C and the mean annual precipitation is about 1258 mm.

(17 The Natchaug series consists of very deep, very poorly drained soils formed in woody and herbaceous organic materials overlying loamy deposits in depressions on lake plains, outwash plains, till plains, moraines, and flood plains. Saturated hydraulic conductivity is moderately high or high in the organic layers and moderately low to high in the loamy material. Slope ranges from 0 to 2 percent. Mean annual temperature is about 9 degrees Celsius and mean annual precipitation is about 1205 millimeters.)

(47) The Woodbridge series consists of moderately well drained loamy soils formed in lodgment till. They are very deep to bedrock and moderately deep to a densic contact. They are nearly level to moderately steep soils on hills, drumlins, till plains, and ground moraines. Slope ranges from 0 to 25 percent. Saturated hydraulic conductivity ranges from moderately high to high in the surface layer and subsoil and low or moderately low in the dense substratum. Mean annual temperature is about 9 degrees C., and mean annual precipitation is about 1168 mm.

Soil Map—State of Connecticut  
(Tripp Hollow Rd)



Soil Map may not be valid at this scale.

Map Scale: 1:6,450 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

## MAP LEGEND

- Area of Interest (AOI)
- Area of Interest (AOI)
- Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points
- Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features
- Water Features**
- Streams and Canals
- Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads
- Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut  
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—May 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	28.9	16.4%
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	6.7	3.8%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	7.1	4.0%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	79.2	45.0%
52C	Sutton fine sandy loam, 2 to 15 percent slopes, extremely stony	0.1	0.1%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	2.5	1.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	1.0	0.5%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	13.8	7.8%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	26.9	15.3%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	9.9	5.6%
W	Water	0.1	0.0%
<b>Totals for Area of Interest</b>		<b>176.1</b>	<b>100.0%</b>