September 6, 2018

Mr. Seymour Adelman - Chair
Planning & Zoning Commission
Bozrah Town Hall
1 River Road
Bozrah, CT 06334

Re: Stony Brook Transmission Main rehabilitation – Phase 1
Montville/Norwich, CT
CLA – 6073

Dear Mr. Adelman:

On behalf of Norwich Public Utilities (NPU), CLA Engineers has investigated the referenced site for environmental permitting needs in relation to the above referenced project. This report documents the need for permitting due to proposed activities proposed within the floodplain. The attached documentation prepared by CLA and submitted to the towns of Montville and Bozrah shows the floodplains and wetlands and watercourses in relation to the proposed water line installation. The project will be funded in part by loans from the State of Connecticut Department of Public Health Drinking Water State Revolving Fund (DWSRF).

EXECUTIVE SUMMARY – ATTACHMENT A

This document also serves as the Executive Summary for the CTDEEP Floodplain Certification Application which it accompanies.

Project Scope and Purpose

NPU proposes to extend an existing water transmission main through Montville and Bozrah via Leffingwell Road and Noble Hill Road. The project involves installation of approximately 4,700 feet of 16” and 24” diameter water transmission main to fulfill important planned maintenance and support proposed new development currently being constructed in Bozrah.

The water main will be extended from its current location on Leffingwell Road approximately 2900 feet west to the intersection of Noble Hill Road. The water main will then continue north approximately 900 feet, crossing Trading Brook Cove to the intersection of Salem Turnpike (Route 82). From this intersection, an additional 900 feet of water main will be run eastward within Route 82. The project will take place within paved or developed land.

Noble Hill Road crosses Trading Cove Brook, which serves as the town border between Montville and Bozrah. At this point, the water main will cross Trading Cove Brook via an elevated utility bridge that will be constructed east of and adjacent to the existing culvert.
The utility bridge will be an independent structure and not connected to the culvert in any way. The structure will comprise of a galvanized steel truss supported on cast in place, concrete foundations.

Additional project work includes appurtenant gate valves and hydrants. The water main installation will occur within the municipal right of way for Leffingwell Road and Noble Hill Road. (See enclosed plan entitled “Site Plan and Details” as prepared by CLA).

**Existing Floodplain Conditions**

Based on field observations and map resources, the on-site floodplain is associated with Trading Cove Brook. The Floodplain limits shown on the project plans were taken directly from FIRM mapping as shown on “COMMUNITY NUMBER PANEL NEW LONDON COUNTY, CONNECTICUT 09011C0194G”.

As shown on the plans, the area contains the steep banks of the brook, and a broad, gently sloping floodplain northeast of Noble Hill Rd in Bozrah. The floodplain contains fields, businesses, houses and Route 82. The USGS Streamstats web application shows a 5.2 square mile watershed and a 100 year peak flood flow of 815 c.f.s.

Since no Base Flood Elevation (BFE) has been determined at this location, an approximation of the BFE has been determined based on an interpolation of the FIRM map and existing contours. As such, the 100 year flood elevation at the existing culvert has been approximated at 102.5ft (NAVD 88). See Attachment A ‘Determination of Base Flood Elevation’.

No floodway is depicted at this location. The 102.5 BFE indicates that water will not overtop Noble Hill Road. Therefore, it can be assumed that the existing culvert and wing walls form the ‘common-sense’ limits of the floodway during storm events and that the existing culvert entrance operates as the restrictive feature through which flood waters will be channeled.

Surface water on the roadways currently runs off as sheet-flow or is collected in catch basins that outlet next to the road. The eventual receiving body of these flows is Trading Cove Brook. Surrounding land use includes low density residences and natural woodland. The site is shown on the plans provided by CLA as part of the application.

**Work Proposed Within the Floodplain**

Proposed work within the floodplain comprises installation of two utility bridge foundations at the crossing of Trading Cove Brook. The bridge foundations consist of cast-in-place cylindrical concrete foundations approximately 3-feet in diameter and 16-feet long. To minimize disturbance with the flood plain and upland wetland review area, the foundations will be installed using large diameter augers. This method will significantly reduce the physical footprint and impacts compared to a traditional spread footing and avoid the need for costly sheet piling to provide temporary earth support.
The proposed foundations are located within the road embankment, behind the existing culvert wing walls. Their location means they are located outside of the flood way and will not be exposed to flood water flowing through the culvert. The foundations would only become exposed to moving flood waters in the event that the culvert and wing walls failed. The bridge structure will be supported on and anchored to the foundations using chemical anchors.

The project will retain existing grades and not create above ground infrastructure detrimental to floodplain storage.

**Potential for Floodplain Impacts**

The project will be performed without adverse impacts to floodplains wetlands and watercourses through use of Best Management Practices (BMPS) and minimal disturbance to the wetlands. The work proposed within the mapped floodplain will not alter the existing topography and does not call for new development. The proposed water main will be carried above the floodplain by a steel truss whose lowest elevation will be 103.00; above the BFE of 102.5 ft. The work to be constructed within the floodplain and below the BFE is limited to two, 3 ft diameter, cylindrical concrete foundations and two short runs of 24-inch ductile iron pipe. The 24-inch main will transition from below ground to the support bridge between the existing guide rail and the proposed 3 ft diameter concrete supports.

The proposed project will take place within the municipal right of way and predominantly within the paved portion of the road. The only infrastructure that will protrude above ground is at the Trading Cove Brook crossing. Based on the minimal footprint of new construction, CLA believes that the floodplain capacity at this location will not be measurably reduced.

In summary, CLA believes that based on the project plans there will be no negative affects to the floodplain or downstream properties.

Please contact me if you have any questions.

Sincerely,

Darren Hayward, P.E.
PLANNING & ZONING COMMISSION
Town of Bozrah, 1 River Road
Bozrah, Connecticut 06334

ZONING APPLICATION

Date of Submission: 09/06/18 Application Number:

Fee Paid: 

(X) Site Plan Approval ( ) Zoning Regulation Amendment
( ) Special Exception ( ) Zoning Map Amendment
( ) Home Occupation ( ) Change of Use
( ) Other 

Name, address and phone number of applicant:
NORWICH PUBLIC UTILITIES,
16 SOUTH GOLDEN STREET,
NORWICH, CT 06360

Name and address of property owner: (if different than above)
NOBLE HILL ROAD AND LEFFINGWELL ROAD
MONTVILLE & BOZRAH MUNICIPAL RIGHT OF WAY

Describe in detail what is being requested by this application: (attach all plans and sketches as required)

INSTALLATION OF APPROXIMATELY 4,300 FEET OF NEW 16" & 24" WATER TRANSMISSION MAIN
THE NEW WATER MAIN WILL CROSS TRADING COVE BROOK REQUIRING THE INSTALLATION OF A UTILITY STRUCTURE SUPPORTED ON PILLED FOUNDATIONS.

(Signature of Owner) Chris LaRose (Signature of Applicant)

COMMISSION ACTION: ( ) Approved; ( ) Denied. Date: _______ Initialed: _______
The map details the project for the Norwich Public Utilities Stony Brook Transmission Main Rehabilitation Phase 1. The proposed 24" transmission main extension is shown connecting to the existing transmission main from Stony Brook Reservoir. There are annotations for existing transmission lines, proposed 24" water mains, alternate 1, water by others, and town boundaries. The project involves utility crossings at Trading Cove Brook and Leffingwell Road. The map includes a legend explaining the different line types and their uses.
**PLAN VIEW**

- **TRENCH DETWATERING:** A clear water discharge is required. Use portable sediment tank or de-watering silt bag as needed. Trench size (CF) = Pump rate (GPM) x 16 or an ACF heavy duty dirtbag 55 or equal.

**SECTION VIEW**

- **PROVIDE STORMWATER SETTLEMENT LOG (WATTLE):** Approx. area of disturbance to upland area = 400 Sq. Ft. (0.009 Acres)

**PROFILE VIEW - NOBLE HILL ROAD**

- **Sta. 5+00 to Sta. 10+50**
  - Horiz. Scale: 1" = 40'
  - Vert. Scale: 1" = 4'

**FLOOD HAZARD AREA ZONE 'A'**

- **INSULATE WATER MAIN WHERE COVER IS LESS THAN 4.5 Ft. (TYP).**

**FLOOD PLAIN MANAGEMENT**

- Special flood hazard area

**PROVIDE 24" D.I. WATER MAIN**

- On support structure

**PROVIDE 18" THICK INTERMEDIATE RIP-RAP (APPROX. 120 S.F.)**

**SPECIAL FLOOD HAZARD AREA ZONE 'A'**

- **INSULATE WATER MAIN**
- **HEAT TRACE WATER MAIN, FITTINGS AND BENDS OVER TRADING COVE BROOK CROSSING WHERE COVER IS LESS THAN 4.5 Ft.**

**UTILITY BRIDGE SECTION DETAIL**

- **PROVIDE 24" D.I. WATER MAIN**
- **PROVIDE ELECTRICAL HEAT TRACE**

**STONY BROOK TRANSMISSION MAIN REHABILITATION - PHASE 1**

- **MINIMUM PUBLIC VOLUME**
- **TOWN OF MONTVILLE**
- **TOWN OF BOZRAH**
- **FLOOD PLAIN MANAGEMENT**
- **PROVIDE STORMWATER SETTLEMENT LOG (WATTLE):** Approx. area of disturbance to upland area = 400 Sq. Ft. (0.009 Acres)
Proposed pipe/structure: 101.00'
Between intervals 100’ and 105’
Interpolated BFE: 102.50’

FEMA ‘A Zone’

Between intervals 100’ and 105’
Interpolated BFE: 102.50’

PROPOSED STRUCTURE =103.00

Between intervals 100’ and 105’
Interpolated BFE: 102.50’