Martin Brogie, Inc.
ENVIRONMENTAL SERVICES

• Environmental Site Investigations
• Building Contaminant Surveys
• Wetlands Consulting
• Remediation Contract Management

July 25, 2024

Will Walter, PE, LEED AP
Senior Project Manager
Alfred Benesch & Company
120 Hebron Avenue, 2nd Floor
Glastonbury, CT 06033

RE: Wetlands Delineation, Functions and Values and Impact Assessment
2333 Main Street
Glastonbury, Connecticut

Dear Mr. Walter:

Martin Brogie, Inc. (MBI) is pleased to submit the following information regarding a wetland delineation and assessment performed for the above referenced property. The work was completed to evaluate wetlands on the property for the purpose of assessing the wetland impacts of a proposed site redevelopment including building construction and stormwater management improvements.

Site Description

The subject property consists of 4 commercial properties totaling 7.67 acres and located along the west side of Main Street in downtown Glastonbury, Connecticut. The eastern portion of the property contains 5 commercial buildings and associated paved parking and driveway areas as well as lawn and landscaping. The western portion of the property consists of wooded wetlands.

A site location map is provided as Figure 1. An aerial view of the property is provided as Figure 2. Photographs of the wetland areas are provided as Attachment A.

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Wetland Delineation

On March 12, 2020 MBI's Soil Scientist Martin Brogie, LEP reported to the site to assess the presence of wetlands and watercourses/intermittent watercourses in accordance with the definitions provided in Connecticut General Statutes Section 22a-38 definitions (15) and (16) including: soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey; and, rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent. In addition, intermittent watercourses defined as having a permanent channel and bank and the occurrence of two or more of the following characteristics: evidence of scour or deposits of recent alluvium or detritus; the presence of standing or flowing water for a duration longer than a storm incident; and/or the presence of hydrophytic vegetation were delineated.

MBI accessed the property via the paved parking lot behind 2327-2333 Main Street and commenced the evaluation along the southern property boundary. A 48-inch, corrugated metal pipe discharges on to the southeastern portion of the property adjacent to a walking path that borders the property to the south. The watercourse associated with the discharge appears to exhibit perennial flows and bank floods during periods of heavy precipitation. Evidence of scour and rack lines were noted along the streambed. Subsurface exploration in this area using a hand auger exhibited soil generally consistent with the Scarboro Muck Soil Series. The adjacent non-wetland soil consisted of sandy, gravelly fill material along the edge of the paved parking area and extending along the eastern wetland boundary. Subsurface exploration west of the paved area, within the wooded wetland, exhibit similar soil as previously described with an apparent increase in organic matter. Wetland soils were generally characterized by 18-24 inches of black, mucky silt loam underlain with grey fine silty sand.

The wetland limits were identified at the boundary between fill materials located along adjacent paved areas and the very poorly-drained Connecticut-regulated wetland soil series. Wetland flags 1-1 through 1-36 were placed along the interpreted wetland limits.

The watercourse that enters the southeastern corner of the property meanders through the southwest portion of the property and becomes a deeply incised channel near where it exits the property at the western boundary.

A sanitary sewer easement crosses the central portion of the wetland from north to south. The easement is generally cleared of trees and carries overland flows from the northeastern portion of the site resulting primarily from a 36" storm water outfall located to the rear of 2377 Main Street. Similar to the southerly outfall, some base flow, possibly resulting from groundwater exfiltration, is evident although the discharge could dry up in summer months. MBI observed the pipe outfall in March and January so no dry season data was collected.

The northern portion of the wetland also receives intermittent stormwater discharges from a flared concrete pipe outfall located on the northern property boundary. This pipe appears to discharge stormwater generated by the adjacent paved parking area.

A pavement leak-off, located to the rear of 2327-2333 Main Street also delivers stormwater flows into the wetland area.

The northern outfalls ultimately deliver surface flows that follow the sewer easement southward. The leak-off from the paved parking area joins these surface flows from the east where they join and form a channel that turns westward and joins the channel from the southern watercourse near the western property boundary. The confluence flows west and southwest, eventually discharging into the Connecticut River approximately 1500 feet west of the property. No man-made stormwater renovation features are currently associated with the site.

Woody vegetation observed within the Wetland area includes Red Maple (*Acer rubra*), Silver Maple (*Acer saccharinum*), Eastern Cottonwood (*Populus deltoides*), and Slippery Elm (*Ulmus rubra*). The shrub layer included Sweet Pepperbush (*Clethra alnifolia*), Silky Dogwood (*Cornus amomum*), Spice Bush (*Lindera benzoin*), Multiflora Rose (*Rosa multiflora*), and Asiatic Bittersweet (*Celastrus orbiculatus Thunb*.). Herbaceous species observed include Japanese Knotweed (*Polygonum cuspidatum*), Sensitive Fern (*Onoclea sensibilis*), Skunk Cabbage (*Symplocarpus foetidus)*, and Evergreen Woodfern (*Dryopteris intermedia)*. A large, dense stand of Japanese Knotweed occupies the northeastern portion of the wetland and extends along the majority of the wetland boundary where it abuts the paved areas. Abutting upland areas included Black Oak (*Quercus velutina*), Red Oak (*Quercus rubra*), Black Cherry (*Prunus serotina*) and Green Briar *(Smilax rotundifolia L.).*

The Natural Resource Conservation Service (NRCS) identifies Scarboro Muck as the wetland soil type in the delineated wetland area which is consistent with observed conditions. NRCS soil mapping and descriptions are provided as Attachment B.

Functions and Values Assessment

A qualitative review of the functions and values of the on-site wetlands was performed to assist in determining wetland impacts resulting from the project. Wetland functions consistent with U.S. Army Corps of Engineers methodology were assessed and are summarized below.

Groundwater Recharge/Discharge – This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface. The onsite wetlands system is complex and

includes areas of exfiltration along the topographic side slopes and along the brook. Opportunities for infiltration and recharge exists along the stream bottoms.

Floodflow Alteration - (Storage & Desynchronization) - This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events. The wetland system is primarily a flow-through system although opportunities for floodwater retention exist in the organic soils and broad floodways associated with the watercourses.

Sedimentation/Shoreline Stabilization – This function relates to the effectiveness of a wetland to stabilize streambanks and shorelines against erosion. Stream banks contain well-established woody vegetation offering soil stabilization on the whole. Some streamside erosion is evident as a result of flood flows and relatively erosive soil properties.

Sediment/Toxicant Retention and Nutrient Removal/Retention/Transformation – Stormwater associated with nearby and adjacent developed commercial areas pass through the site wetlands. Contaminant retention/removal is provided by the relatively long flow paths, the level grade/attenuation of flow velocities and the organic-rich wetland soils.

Production Export – This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms. The wetland offers some wildlife food sources including nut-producing trees, amphibians, and insects.

Fish and Shellfish Habitat – This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish and shellfish habitat. This function is not present in the wetland due to physical barriers inhibiting fish passage and the size and permanence of the watercourse.

Wildlife Habitat - This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species are considered. The wetland offers some wildlife habitat functions associated with wetland forest cover and interaction with nearby natural resources including the Connecticut River. Given the urban land use extending up to the eastern and northern wetland boundaries, significant wildlife habitat quality and use is not expected.

Two Vernal pools were identified during a survey performed in 2019 for the St. Paul's Church property located north of the site including one located on the northwest corner of the property and one beyond the northwest corner. The survey report, completed by others and on record with the town of Glastonbury, showed very low amphibian population levels and little breeding activity of only one common Vernal Pool Indicator species (Wood Frog) and one facultative Vernal Pool Species (Spring Peeper). These

species are the most common Vernal Pool users and their small populations indicate that these areas offer very limited wildlife value likely the result of the lack of suitable, surrounding upland habitat.

Endangered Species Habitat – The Connecticut Department of Energy and Environmental Protection (CTDEEP) Natural Diversity Database does not depict any mapped State or Federal Listed Species or Significant Natural Communities on or adjacent to the Property.

Visual Quality/Aesthetics – The wetland offers some visual qualities/aesthetics associated with the perennial stream entering the site although the disturbed eastern edge of the wetlands has resulted in the presence of significant invasives species.

Educational/Scientific Value, Recreation, and Uniqueness Heritage – The onsite wetlands offer little in the way of recreational value, or educational/scientific resources due to the lack of uniqueness, small size and level of disturbance.

Overall, the functions and values of the site wetland area are primarily associated with flood attenuation associated with stormwater passing through the site from adjacent developed areas. Given the presence of the Connecticut River just downstream, these functions/values play an important role in maintaining downstream surface water quality.

Proposed Project

The proposed site redevelopment project consists of: selective demolition of the existing buildings and amenities located in the main lot; construction of a parking garage; construction of mixed-use building; and additional site improvements; construction of a stormwater management and treatment system; construction of ADA accessible improvements and parking areas; construction/rehabilitation of utility connections to the existing buildings and proposed buildings, and; interconnection of the existing businesses located on the subject properties. The project will disturb approximately 4.90 acres as well as approximately 0.28 acres of right of way improvements, including sidewalk, driveway, crosswalks, and utility and drainage trenching/restoration. The project will not result in any direct wetland impacts.

The proposed project under consideration significantly improves stormwater treatment associated with run-off from the site. Currently, stormwater is discharged directly across paved parking areas with no treatment or thermal impact reduction. Under the proposed design, the water quality treatment requirements of CT DEEP are met and thermal impacts are reduced by detaining and treating runoff prior to diffuse discharge to the wetlands. The design will include deep sump catch basins to capture initial sediment loads. The discharge from detention basin one will consist of exfiltration and two broad-crested riprap weirs before discharging into the wetlands allowing for diffuse flows. Detention basin two utilizes concentrated pipe flow and curbed leak-offs. The sub-watershed associated with the basin will be treated by a shallow drywell and deep sump catch basins and the leak-offs will be treated via a

modified riprap stone filter strip followed by a landscaped vegetated buffer strip. Basins were designed based in part on spring (March and April 2021) groundwater data which shows the basins are above groundwater and therefore storage volume is not displaced/reduced. The project engineering report indicates that there are 3.54 acres of untreated impervious surfaces discharging directly to wetlands under current conditions. The proposed project will capture all site stormwater run-off.

Conclusions and Recommendations

The identified wetlands on the subject property are the nexus between the urban/developed downtown area to the east and the forest/park and riparian areas along the Connecticut River to the west. The wetlands located on the property have been significantly disturbed as a result of the installation of a sanitary sewer line and by the placement of fill/improvements on its borders. Untreated stormwater enters the wetlands from 4 locations and significant, aggressive invasive species have taken hold along and within the wetlands. The wetland and its bordering forested uplands consist of a habitat island with some development or man-made improvements found nearby in all directions.

The primary function of the evaluated wetlands is to provide for stormwater renovation and attenuation as it receives untreated stormwater from developed areas, decreases velocities, retains volumes, and renovates water quality prior to discharge offsite to the Connecticut River.

Construction activity including installation of detention and bioretention areas, weirs, splash pads, and parking is planned along the eastern wetland boundary and occurs primarily along the filled/disturbed wetland edge. No direct wetland impacts will occur. Proposed erosion and sedimentation control will mitigate erosion into wetlands during construction. Weirs will avoid point discharges which could also lead to erosion.

The project will install stormwater storage and treatment facilities across the site resulting in 100% improvement over current, untreated conditions under outdated facilities. The upland area along the eastern wetland boundary is filled/disturbed and contains heavy invasive species. The project improvements will include removal of fill and invasives from this area and we propose installation of native wetland and upland shrubs along the boundary to enhance natural conditions.

Given the primary function of the wetlands which serve to renovate and attenuate stormwater flows from adjacent developed land with no treatment systems, the proposed project will significantly improve this function by reducing loads on to the natural system. Understanding that the wetland is significantly disturbed and bounded by fill and development to the east and north and considering the existing low functionality of the identified Vernal Pools due to development and lack of upland habitat, the proposed project will have no impact to existing wetland wildlife functions and values.

Based on our understanding of the site resources and proposed project, we offer the following recommendations:

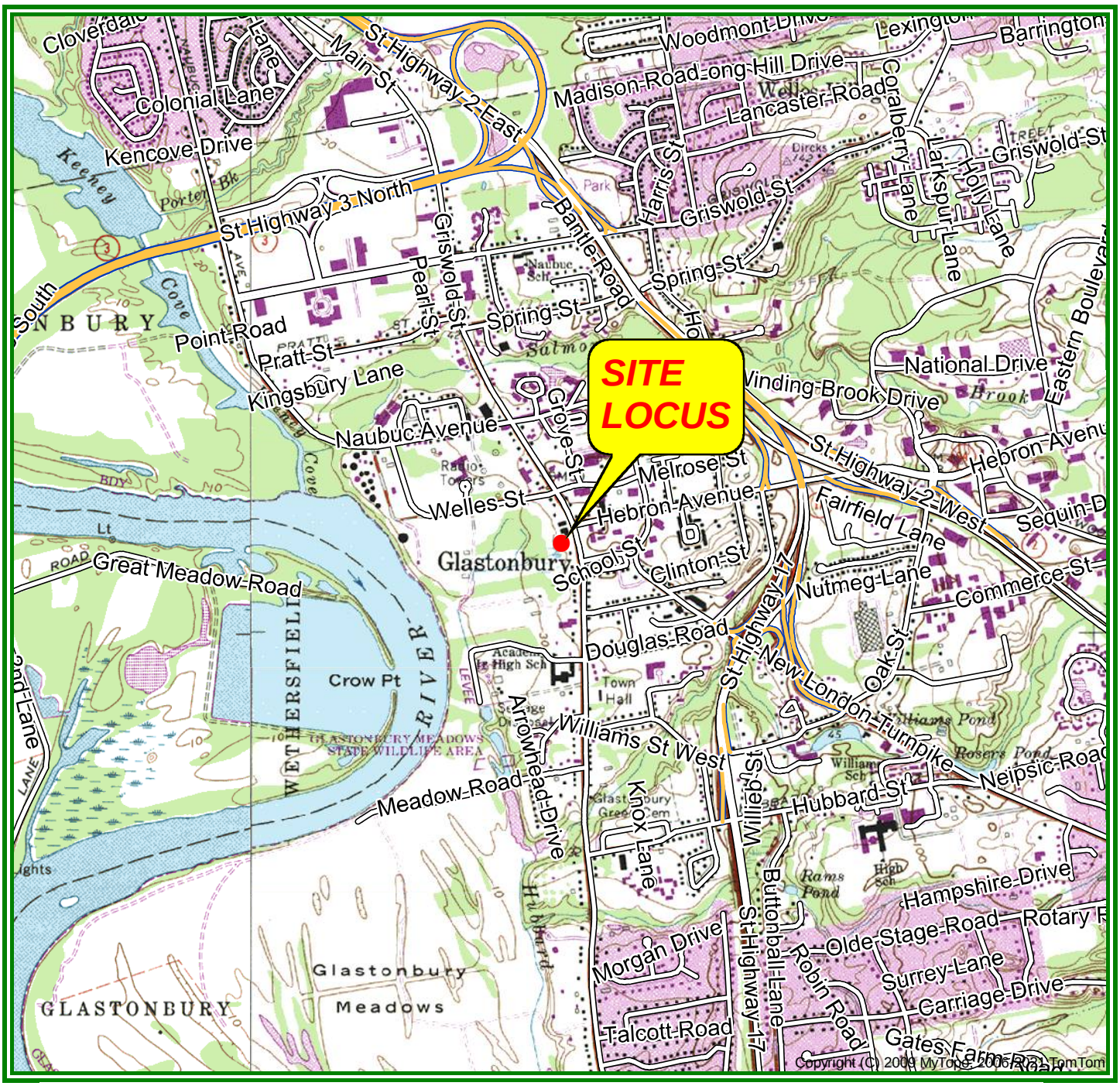
- Project erosion control measures should be strictly enforced and monitored in accordance with CTDEEP's 2024 Manual to ensure that no sediment intrusion into the wetlands occurs;
- Install native wetland and upland (as appropriate) shrubs along the basins and other improvements that will be located along the wetland boundary.
- Ensure that Knotweed removed as part of the project installations is properly managed so that fill material containing plant material is not distributed to other areas of the site or offsite.

Overall, the proposed project is not expected to have any negative impact to the existing wetland functions and values. In fact, in this case, the project will result in significant improvement over existing conditions.

Please contact the undersigned at 860-208-0360 is you have any questions or require further information. Thank you for the opportunity to be of service.

Sincerely,

Martin Brogie, LEP
Soil Scientist



GLASTONBURY Topographic 1964 41072-F5-TF-024 National Geodetic Vertical Datum 1929

N NE E SE S SW W NW

SCALE 1:24000

0 1000 2000 3000 4000 5000
FEET

0 1
MILE

Site Coordinates:
041° 42' 41.91" N, 072° 36' 35.14" W

Project:
2333 Main Street

Site Location:
2333 Main Street
Hartford County,
Glastonbury, Connecticut

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Figure 1 - Site Locus Map

— APPROXIMATE PROPERTY BOUNDARY

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Figure 2 - Aerial Site Plan

2333 Main Street

Glastonbury, Hartford County, Connecticut

Project:	2333 Main Street
Drawn by:	KMH
Date:	1/11/21
Scale:	NOT TO SCALE

ATTACHMENT A

SITE PHOTOGRAPHS

SOUTHERN PORTION OF SITE LOOKING EAST TOWARD CORRUGATED METAL PIPE OUTFALL (SEE ARROW) AND ASSOCIATED STREAMBED. NOTE FLOOD DEPOSITION IN FRONT OF MAPLE TREE CLUSTER IN LEFT CENTER OF PHOTOGRAPH.

WETLAND AREA SOUTHWEST OF PAVED PARKING AREA WITH EVIDENCE OF FLOOD FLOWS ALONG BROOK

TYPICAL WETLAND AREA CONTAINING BUTTRESSED RED MAPLES. NOTE SITE COMMERCIAL BUILDING IN BACKGROUND..

SURFACE WATER FLOWS FROM NORTHEAST PORTION OF WETLAND FLOWING SOUTHWARD

VIEW LOOKING NORTH ALONG SEWER EASEMENT SHOWING THE CLEARED EASEMENT AREA AND SURFACE FLOWS.

STORMWATER OUTFALL IN NORTHEASTERN PORTION OF WETLAND LOCATED WITHIN KNOTWEED STAND.

KNOTWEED STAND IN NORTHEAST PORTION OF WETLAND. BEHIND 2341-2355 MAIN STREET BUILDING

ATTACHMENT B

NRCS SOIL SURVEY DATA

Soil Map—State of Connecticut
(Glastonbury)

Map Scale: 1:2,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Raypol silt loam	4.8	18.1%
15	Scarboro muck, 0 to 3 percent slopes	5.2	19.9%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	0.3	1.2%
36B	Windsor loamy sand, 3 to 8 percent slopes	0.6	2.4%
236B	Windsor-Urban land complex, 0 to 8 percent slopes	0.4	1.5%
307	Urban land	5.7	21.6%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	9.3	35.3%
Totals for Area of Interest		**26.3**	**100.0%**