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Memorandum

To: Project File

Date: September 18, 2014

Project No.: 12809.00

From: VHB

Re: Natural Resource Assessment
North 40
Wellesley, Massachusetts

This memorandum describes the natural resources as well as stands of significant trees located on the North 40 Parcel located at 156 Weston Road in Wellesley, Massachusetts. The memorandum also describes the regulatory status of each of the wetland areas, and the anticipated permitting requirements for development of the site.

On July 15, 2014, VHB personnel inspected the North 40 for the presence of wetland resources regulated under the Wellesley Wetland Protection Bylaw – Article 44 (the Bylaw), the Massachusetts Wetlands Protection Act (WPA), and the federal Clean Water Act (CWA). The parcel was also inspected for the presence of “significant trees” as defined in the Town of Wellesley Tree Bylaw (Section XVIIE). A desktop review was also completed using the following resources:

- Town of Wellesley GIS
- Town of Wellesley Natural Resources Commission
- MassGIS
- MA DEP
- MA Natural Heritage Program
- MA Water Resources Authority
- U.S. Department of Agriculture Soil Conservation Service

This memorandum also relies on information on the site history provided by others. The findings of the desktop review and site inspection are outlined below.

Site Description

The North 40 parcel is a triangular piece of largely undeveloped land located north of the Wellesley College Campus at 156 Weston Road in Wellesley, Massachusetts. The parcel is bounded by Weston Road to the east, the MBTA rail line to the south and Turner Road to the west. The parcel is transected east-west by the former Cochituate Aqueduct, now owned and controlled by the Town and part of its trail system and water and sewer infrastructure. The rail line and Aqueduct combine to effectively “landlock” six acres of the site from the larger parcel to the north. Fifty-five community garden plots are located in the northeast portion of the site with access from Weston Road. The Town of Wellesley leased approximately 23 acres of the parcel for use as a landfill for household waste. The landfill was in use from approximately 1955 to 1960 and the area has since revegetated. A network of walking trails runs throughout the parcel.

The majority of the site is made up of mixed coniferous-deciduous second growth upland forest. The conifer dominated communities have a sparse sub-canopy and groundcover layer and are vegetated

with white pine (*Pinus strobus*), red oak (*Quercus rubra*), white oak (*Quercus alba*), glossy buckthorn (*Frangula alnus*), lowbush blueberry (*Vaccinium angustifolium*), wild sarsaparilla (*Aralia nudicaulis*), spotted wintergreen (*Chimaphila maculata*) and wild lily of the valley (*Maianthemum canadense*). The communities dominated by hardwoods have a denser layer of undergrowth. Dominant species in include red oak, red maple (*Acer rubrum*), American elm (*Ulmus americana*), white pine, apple (*Malus* sp.), glossy buckthorn, bush honeysuckle (*Lonicera* sp.), lowbush blueberry, wild lily of the valley, Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*).

The soil map for Norfolk County shows that Hinckley sandy loam, Merrimac fine sandy loam, Merrimac-urban land complex and Sudbury fine sandy loam soils occur on the site. No mapped wetland soils occur on the site.

Floodplains

According to the Flood Insurance Rate Map (FIRM)¹ for the Town of Wellesley no portion of the North 40 parcel is within a designated 100-year floodplain zones (See attached FIRM Map).

Wetland Description

Approval of all wetland resource boundaries is subject to review by the Wellesley Wetlands Protection Committee and/ or DEP through an Abbreviated Notice of Resource Area Delineation (ANRAD) or Notice of Intent (NOI) process. To our knowledge, wetlands on the site have not been formally reviewed by the Wetlands Protection Committee, and there is no valid Order of Resource Area Delineation (ORAD) issued by the Wetlands Protection Committee in response to the filing of an ANRAD; therefore, all wetland boundaries and resource area identifications should be considered the opinion of VHB based on available survey information and other records and are subject to the approval of the Wellesley Wetlands Protection Committee.

The parcel was inspected for wetland resource areas as defined by the local bylaw, the WPA and the U.S. Army Corps of Engineers. One ponded area was identified in the northernmost corner of the site. The wetland is shown as a certified vernal pool (CVP No. 32) by the latest Natural Heritage Program mapping (2008). It is a depression that appears to hold water for much of the year and receives runoff from the surrounding roadways and uplands. The pool itself is unvegetated and is underlain by a mucky substrate. The edges are vegetated with red maple, silver maple (*Acer saccharinum*), silky dogwood (*Cornus amomum*), burning bush (*Euonymus alatus*), multiple *Carex* species and Virginia creeper. This resource appears to meet the regulatory definitions of an Isolated Land Subject to Flooding (ILSF) under the WPA and as a Vernal Pool and Isolated Wetland under the local by-law as discussed in greater detail below. This wetland area is presumed to be not regulated by the USACE under Section 404 of the CWA as it does not have a significant nexus to a regulated Water of the U.S.

No other state regulated resource areas were identified on the site. The low lying areas adjacent to the former aqueduct were inspected closely during the site visit as the site topographic map provided by the Client showed several depressions in this area which could potentially hold water for short periods of time during the year. These areas did not meet the necessary criteria to be regulated as a wetland resource areas. While some of these areas contained hydric vegetation they lacked any evidence of wetland hydrology or hydric soils.

According to the most recent USGS topographic map, there are no perennial streams on or immediately adjacent to the site, and therefore Riverfront Area is not present. This determination is supported by observations made by VHB personnel during the site visit.

¹ Federal Emergency Management Agency, 2012. FIRM, Norfolk County, Massachusetts. Map Number 25021C0016E Map 16 out of 430.

Regulatory Jurisdiction and Constraints

Federal Wetlands Regulations

Wetlands meeting the regulatory definition (areas that contain hydric soils, have a wetland hydrology, and support hydrophytic vegetation) are subject to jurisdiction under Sections 401 and 404 of the federal Clean Water Act (CWA). No federally regulated wetlands were identified on the property. The vernal pool does not meet the specified criteria and does not have a significant nexus to a regulated Water of the U.S. and therefore is not believed to fall under federal CWA regulations.

Massachusetts Wetlands Regulations

The vernal pool on the parcel does not border on a stream or other waterway and therefore is not a Bordering Vegetated Wetland regulated under the WPA. It is not within Bordering Land Subject to Flooding or Riverfront Area. However, the depression containing the vernal pool may qualify as Isolated Land Subject to Flooding (ILSF) (310 CMR 10.57(2)(b)1.), as defined below:

Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.

The vernal pool receives roadway runoff discharges via a small swale from a storm water outfall. The DEP Wetlands Program Policy 85-2 clarifies definition of ILSF by explaining that presence of an inlet does not necessarily exclude an area from being classified as ILSF. This clarification allows us to conclude that the vernal pool; should it meet the necessary volume requirements, could be regulated as ILSF. Per the definition of ILSF, the depression must support ¼-acre-foot of water on an annual basis. Preliminary calculations of both available volume within the depression and the runoff volume contributed from the depression's watershed indicate that the depression will qualify as ILSF under the WPA regulations. Additional survey information on the contributing watershed area, in particular the upstream developed neighborhoods is needed to finalize this determination.

We note that the water surface in the depression is also in excess of 10,000 square feet based on engineering survey and may qualify as a Pond. Additional historical research will be required to determine if the pond dries up. The definition of a Pond in the WPA regulations is provided below.

Pond (inland) means any open body of fresh water with a surface area observed or recorded within the last ten years of at least 10,000 square feet. Ponds may be either naturally occurring or man-made by impoundment, excavation, or otherwise. Ponds shall contain standing water except for periods of extended drought.

Town Wetlands Protection Bylaw

The Town of Wellesley has a Wetland Protection Bylaw, which also takes jurisdiction over the certified vernal pool on the parcel. The bylaw defines a "vernal pool habitat" as the pool itself along with the area within 100 feet of the pool. No alterations are permitted within the vernal pool itself or the vernal pool habitat without the issuance of a waiver from the commission. The Town Wetland Bylaw also regulates the vernal pool as an isolated wetland as its area is greater than 2,500 square feet. Locally regulated isolated wetlands have a 100-foot buffer zone, including an inner 25-foot No Disturbance zone and an outer 75-foot Limited Disturbance Zone. In addition, the Town bylaw regulates lands within 200 feet of an ILSF. However, the Regulations only describe performance standards for 100-foot buffer zones. Work may be permitted that does not conform to these performance standards under a Waiver process, if the area does not contribute to the protection of the resource (for example, an existing road within 100 feet of a vernal pool) or where the applicant can demonstrate that there are no feasible alternatives, that the proposed activity is the least environmentally damaging, and that mitigation measures are provided.

Estimated Habitat of Rare Wildlife/Priority Habitat of Rare Species

According to the 2008 Edition of the Massachusetts Natural Heritage Atlas², the North 40 parcel is not located within an estimated habitat of rare wildlife or priority habitat of rare species.

² NHESP, 2008. Massachusetts Natural Heritage Atlas. 13th Edition.

Outstanding Resource Waters

The certified vernal pool by definition is a Class B Outstanding Resource Water (Surface Water Quality Standards - 314 CMR 4.00). Work within Outstanding Resource Waters requires a Water Quality Certification (310 CMR 9.00) and must meet the requirements therein or will require a variance from these regulations.

Wellhead Protection Area

The site falls within a Zone II wellhead protection area. Wellhead protection areas are established for the protection of the recharge area and groundwater sources of a public water supply (PWS). 310 CMR 22.00 defines a Zone II as *“that area of an aquifer that contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation). It is bounded by the groundwater divides that result from pumping the well and by the contact of the aquifer with less permeable materials such as till or bedrock. In some cases, streams or lakes may act as recharge boundaries. In all cases, Zone II shall extend upgradient to its point of intersection with prevailing hydrogeologic boundaries (a groundwater flow divide, a contact with till or bedrock, or a recharge boundary”*. State regulations at 310 CMR 22.21 establish prohibited uses within Zone II (and require municipal zoning bylaws reflecting these prohibitions), which include landfills, junkyards, fuel depots, and hazardous waste facilities. In addition to the underlying zoning district, the site falls within the Wellesley Water Supply Protection Overlay district. Within this overlay district, the requirements of the underlying zoning district continue to apply, however, there are several additional design and operational standards within the overlay district, which include but are not limited to:

- **On-site Recharge:** All storm water runoff from impervious surfaces shall be recharged on-site unless in conducting site plan review it is determined that either recharge is not feasible because of site conditions or is undesirable because of uncontrollable risks to water quality from such recharge. Such recharge shall be by surface infiltration through vegetated surfaces unless otherwise approved by the Special Permit Granting Authority (SPGA) during site plan review. If dry wells or leaching basins are approved for use, they shall be preceded by oil, grease, and sediment traps. Drainage from loading areas for toxic or hazardous materials shall be collected separately for safe disposal.
- **Grade Reduction:** Soil overburden shall not be lowered to finish exterior grades less than five feet above maximum groundwater elevation, unless technical evidence can be provided showing to the SPGA's satisfaction that groundwater quantity or quality will not be detrimentally affected. Technical evidence may include without limitation a determination of soil and geologic conditions where low permeability will mitigate leachate penetration and evaporation transpiration.

Other Non-Regulatory Programs

BioMap2

BioMap2 is a project of the Executive Office of Energy and Environmental Affairs, and consists of mapping produced by the Natural Heritage and Endangered Species Program in partnership with The Nature Conservancy. BioMap2 is a tool for community land use planning and protection, and maps three types of resources: Core Habitat (habitat necessary to protect rare species, exemplary natural communities and intact ecosystems); Critical Natural Landscapes (intact landscapes that are better able to support ecological processes and a wide array of species and habitats over long time frames); and Aquatic Core Habitats. According to the community information on the EEA Website, none of these important habitat types are present on the site.

Habitat of Potential Regional and Statewide Importance

A portion of the center of the site is mapped by the UMass Extension Center as Habitat of Potential Regional or Statewide Importance based on the Conservation and Prioritization System (CAPS) mapping dated November 2011. This CAPS mapping is not an area subject to regulatory jurisdiction

under any state regulatory program, but is used by DEP to determine whether supplemental wildlife habitat evaluations would be required for work in wetlands.

The CAPS mapping is created using a GIS model that accounts for a number of “stressor metrics” in order to identify land that may provide a level of ecological integrity that supports a priority for conservation, a goal of the UMass CAPS program. Among the stressors that may have led to the inclusion of a portion of the N40 site are distance from traffic, roadway sediment and impervious surfaces. We presume that the lack of these stressors in addition to the forested cover type resulted in the central part of the site being mapped by CAPS as “habitat of potential importance”. This mapping is not based on any actual field evaluations of wildlife habitat.

The only regulatory significance of this mapping is with regard to the analysis of impacts to wetland wildlife habitat. If the project resulted in the alteration of any wetland jurisdictional area that was as “habitat of potential importance” a wildlife habitat evaluation would be required. However, only wetland on the site is not within the mapped area. Work within the mapped area would not require a wildlife habitat evaluation or any regulatory review.

Significant Trees

The Town of Wellesley has a Tree Bylaw (Section XVIIE Tree Preservation and Protection) which protects trees deemed significant based on their diameter at breast height (DBH). As stated in the tree bylaw, any tree with a DBH of 10 inches or greater is considered significant and therefore protected when located within a property’s Tree Yard. Based on the sites zoning as a Residential 15 property, the property’s Tree Yard is 20 feet from the parcel boundaries.

Three stands of significant trees were identified on the site (Figure 1). These trees were not all located within the parcel’s Tree Yard. The majority of the trees of significance were white pines. While there are trees with a DBH of greater than 10 inches elsewhere on the site, only stands of multiple trees of significance were identified by this effort.

Summary – Regulatory Constraints

- A review of the 2008 Massachusetts Natural Heritage Atlas has shown there is a certified vernal pool in the northernmost corner of the parcel. This was confirmed during the site inspection. This vernal pool would be regulated as an Outstanding Resource Water under the state water quality standards. It is potentially regulated under the WPA and local bylaw as ILSF and under the local by-law as a Vernal Pool and an Isolated Wetland. Multiple buffer zones extend from the limits of the VP. Alternatively the depression appears to meet the definition of a Pond in the WPA regulations. The jurisdictional determination of the depression needs to be pursued with the Wellesley Wetlands Protection Committee. The vernal pool is not believed to fall under federal jurisdiction.
- Review of FEMA mapping for Wellesley has determined that no designated mapped 100-year floodplain (Bordering Land Subject to Flooding) exists on the parcel.
- No areas of estimated habitat of wildlife habitat or priority habitats of rare species occur on the property.
- A Zone II wellhead protection area encompasses nearly the entire parcel. As such, the site falls within the Town of Wellesley Water Supply Protection Overlay district. Within this overlay district which include but are not limited to increased stormwater recharge requirements and limitations on grade reduction as it relates to groundwater elevation.
- Three stands of significant trees were identified on the site (Figure 1). These trees were not all located within the parcel’s Tree Yard.



Source: MassGIS 2013, VHB 2014, NH

Natural Resources Due Diligence
North 40 Parcel
Wellesley, Massachusetts

Vanasse Hangen Brustlin, Inc.

Figure 1
July 2014

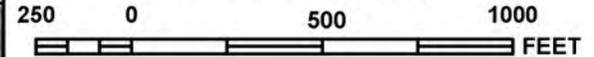
- Approximate Limits of North 40 Parcel
- Certified Vernal Pool
- Approximate Significant Tree Locations



0 500 1,000 Feet



MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0016E

FIRM
FLOOD INSURANCE RATE MAP
NORFOLK COUNTY,
MASSACHUSETTS
(ALL JURISDICTIONS)

PANEL 16 OF 430
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|--------------------|--------|-------|--------|
| DOVER, TOWN OF | 250238 | 0016 | E |
| NEEDHAM, TOWN OF | 255215 | 0016 | E |
| WELLESLEY, TOWN OF | 250255 | 0016 | E |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
25021C0016E
EFFECTIVE DATE
JULY 17, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



- NOTES:
- 1) PROPERTY LINES SHOWN ARE APPROXIMATE AND HAVE BEEN TAKEN FROM AVAILABLE BASE PLANS.
 - 2) TREE YARD SETBACKS ARE BASED ON DIMENSIONAL REQUIREMENTS FOR SR15 ZONING DISTRICT.
 - 3) AREAS OF SIGNIFICANT TREES SHOWN ARE APPROXIMATE AND ARE BASED ON AVAILABLE IMAGERY SUPPLEMENTED BY FIELD OBSERVATIONS.

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Figure 2
August 2014



0 250 500 Feet

Tree Yard Setbacks
North 40
Wellesley College
Wellesley, Massachusetts