



DUE DILIGENCE MEMORANDUM

TO: Massachusetts Housing Partnership
Attn: Susan Connelly, Director, Community Assistance
160 Federal Street
Boston, MA 02110

FROM: Zachary L. Richards, P.E
Mark M. Wixted, P.E

DATE: May 8, 2019

RE: Due Diligence & Constraints Memo
85R Pleasant Street, Manchester-by-the-Sea

1.0 INTRODUCTION

This memorandum summarizes due diligence findings and potential constraints for the subject properties identified as 85R Pleasant Street in Manchester-by-the-Sea, Massachusetts for a potential affordable housing development. This summary is based on available GIS information provided to and acquired by Bohler Engineering at the time of this report, as well a resource area delineation and sketch prepared by Lucas Environmental dated March 29, 2019.

Massachusetts Housing Partnership, in conjunction with the Town of Manchester-by-the-Sea, is reviewing the feasibility of an affordable housing development located at 85R Pleasant Street. The subject parcels are identified on the Town's GIS as Lot "58 0 55" and "58 0 67" (the "Site") and totals approximately 5.43 acres of land, as shown on Exhibits A and B and Attachment C. The existing buildings and associated site features located on the Site would be demolished and removed as part of the proposed project and the Town's goal would be to maximize the buildable area within the parcel. Based on our understanding, approximately 25 to 30 units would be required to make the project feasible for the Town. There are existing sewer, water, and stormdrain mains located within Pleasant Street that have capacity to serve the project.

A wetlands study was conducted on-site by Lucas Environmental on March 28, 2019 with a representative from the Town's Conservation Commission. The site visit and resource area delineation indicate that wetland resource areas are located on and adjacent to the Site and therefore site improvements are anticipated to be located within the 100-foot Buffer Zone, as depicted on Exhibit C. Per the Town of Manchester-by-the-Sea's General Wetlands By-Law, no



work would be allowed within the Town's requisite 30-foot No Disturb Zone, and no structures can be proposed within the Town's requisite 50-foot No Build Zone associated with these resource areas. In addition, the Town manages Conservation Land (see Exhibit D) on and adjacent to the Site. Per the Town's Zoning By-Law, the development shall minimize adverse impacts to the abutting Conservation Land. The resource areas and buffer zones cover approximately 60 percent of the Site, with approximately 40 percent of the Site located within the No Build Zone and Conservation Land. These project constraints are further detailed in the sections below.

2.0 SITE DESCRIPTION

The Site consists of the properties identified on Map 58 Lot 55 and Map 58 Lot 67 in the Town of Manchester-by-the-Sea. These properties encompass approximately 236,560 square feet (5.43 Acres). An existing conditions survey detailing site features and topography has been included in Attachment A. There is an existing private way encompassing approximately 6,200 square feet that provides access to the Site from Pleasant Street.

The southern half of the Site is developed with five (5) existing structures and associated paved and gravel areas. The remainder of the Site is wooded with vegetated undergrowth. The existing developed area is fairly level with a gentle slope from the west to the east. The rear portions of the Site are severely sloped, generally around 25% slopes, and are significantly steeper in some locations. These extreme slopes on the northern, rear portion of the Site present some barriers to development in that area. Elevations on the Site range from approximately elevation 54 to 104. The Site is bordered to the south and east by single family residences, to the north by wooded Town conservation land areas, and to the west by a cemetery. Resource areas exist to the east and west of the Site as well as on the northern portion of Site.

Based on the USDA Natural Resources Conservation Service's Soil Survey, soils identified on the properties include primarily Udorthents (Hydrologic Soil Group unclassified) in the developed areas with some Merrimac fine sandy loam (Hydrologic Soil Group A) on the west portion of the Site and Chatfield-Hollis-Rock outcrop complex (Hydrologic Soil Group D) on the north portion of the Site. Udorthents are generally representative of unclassified fill in developed areas. The NRCS Web Soil Survey report has been included as Attachment B as reference. Based on the mapped soils and unclassified fill, a geotechnical investigation is recommended to confirm suitable soils for the proposed buildings and associated foundations, as well as groundwater infiltration and recharge to meet stormwater standards.



3.0 RESOURCE AREAS

3.1 Resource Area Evaluation

A resource area delineation was performed at the Site by Lucas Environmental on March 28, 2019. A number of resource areas were located on the Site and in the vicinity, as depicted on Exhibit C. The site investigation resulted in a refinement of the mapped wetlands indicated on available GIS maps as well as some additional unmapped wetland areas. The USGS maps show a stream labeled “Sawmill Brook”; however, Lucas Environmental did not observe any evidence of this brook. There are existing wetland areas located on the northern portion of the Site, as well as on the adjacent properties to the northeast and west of the property. As shown on Exhibit C, a vernal pool was also located on the western edge of the Site. Lucas Environmental prepared a sketch defining these resource areas which has been included as Attachment C. The buffer zones associated with these resource areas will severely impact the subject development and constrain the developable area as indicated on Exhibit C. It’s anticipated that development of the Site will be essentially constrained to the currently developed extents. Bohler Engineering recommends that a surveyor be engaged to locate the flagged wetlands prior to preparation of concept plans.

In addition to the located wetland areas, the site delineation also noted the Site is extremely altered from past rock quarrying and other site uses. The wetland areas indicated as “B” and “C” on the sketch were particularly disturbed. Additionally, an isolated pocket of standing water was observed on site by Lucas Environmental and was not identified as a wetlands area; however, discussions with the Conservation Agent on site indicate that the Conservation Commission will have the final say regarding whether this area is jurisdictional.

A significant erosion channel was observed leaving the Site to the east towards the wetlands area “D”. This channel has conveyed sediment and road salt through the woods and wetlands area. The Town is aware of this issue and will be looking for solutions and cleanup in the future. Any development of this Site should incorporate the cleaning and renewal of these areas.

Bohler recommends ongoing discussions with the Town’s Conservation Commission during the conceptional phase of this project. The determinations of jurisdictional areas will impact the constraints on the Site development.

3.2 Resource Area Restrictions

Under the Wetland Protection Act (WPA) and the Manchester-by-the-Sea Wetland Bylaw, a 100-foot Buffer Zone extends from the limit of regulated bordering vegetated wetland areas. Any development within the Buffer Zone requires the project to conform to the MassDEP Stormwater Management Standards. The Town also regulates a 30-foot No Disturb Zone for new construction and a 50-foot No Build Zone under the Bylaw, which will prevent construction of any structures in said buffer. The approximate buffer zones are shown on Exhibit C based on GIS mapping and



the sketch provided by Lucas Environmental, but will need to be accurately located by a survey of the flagged areas. The contemplated development will be located within the 100-foot Buffer Zones and therefore will require a Notice of Intent filing with the Massachusetts Department of Environmental Protection (MassDEP) and Town of Manchester-by-the-Sea Conservation Commission. The filings will have associated fees and design requirements that will be cost premiums for the project.

4.0 UTILITY INFRASTRUCTURE

4.1 Sewer System

4.1.1 Existing Sewer System

The Town of Manchester-by-the-Sea owns, operates, and maintains the sanitary sewer mains in the vicinity of the Project Site. Per available record information procured from the Town, there is an existing 10-inch sewer main with in Pleasant Street.

4.1.2 Sanitary Sewer Connection

Based on discussions with the Town DPW, the existing 10-inch sewer will need to be evaluated for capacity to serve the proposed development. The proposed development will involve the construction of a sewer collection network on-site which would tie into the existing 10-inch main in Pleasant Street.

4.2 Water System

4.2.1 Existing Water Service

The Town of Manchester-by-the-Sea owns, operates, and maintains the water distribution systems in the vicinity of the Project Site. Per available record plans from the Town, there are existing 6-inch and 16-inch water mains in Pleasant Street. Based on discussions with the Town DPW, the existing 6-inch water main will likely be abandoned in the future. There are existing fire hydrants along Pleasant Street approximately 300' from the Site frontage.

4.2.2 Proposed Water Service

The proposed water service for the project would connect to the existing 16-inch water main in Pleasant Street. It is anticipated that the existing main has sufficient capacity to serve the project. The proponent will need to coordinate with the Town of Manchester-by-the-Sea Water Department and Fire Department to ensure the proposed water system meets their needs and requirements, including any private fire hydrants installed on the Site. We expect at least one hydrant on-site will be required. Bohler also recommends that fire hydrant testing be performed in advance of design to ensure sufficient water pressure to serve the proposed development.



4.3 Storm Drainage System

4.3.1 Existing Storm Drainage System

The Town of Manchester-by-the-Sea owns, operates, and maintains the storm drainage system in the vicinity of the Project Site. Per available record plans from the Town, there is an existing 10" storm drain within Pleasant Street with catch basins on either side of Pleasant Street near the Site frontage.

4.3.2 Proposed Storm Drainage System

The proposed project will require a new storm drainage system on-site to serve the development and will need to meet the MassDEP Stormwater Management Standards. The proposed system is anticipated to consist of a series of catch basins, water quality treatment units and an infiltration basin to collect, treat and manage stormwater runoff from the buildings, parking areas, and other impervious surfaces. Since the Site development may likely result in an increase in impervious area, it will require a stormwater management system to retain and infiltrate stormwater in order match or reduce peak rates of runoff compared to that of existing conditions. Additionally, the Site is located within the Town's Water Resource Protection District Zone III, and therefore must meet the additional requirements as detailed in the Town's Zoning By-Laws. In particular, land uses that result in greater than 15% impervious will need a groundwater recharge system that is satisfactory to the Planning Board. Bohler believes that this criterion will likely be met through the MassDEP Stormwater Management Standards as described. The storm drainage system will need to be further refined as the conceptual planning process moves forward. In addition, Bohler recommends that soil testing be performed in areas identified for stormwater management to confirm site soil conditions and depth to groundwater or bedrock.

4.4 Electrical and Telecommunication Services

Based on available aerial data and field observations, there are existing utility poles along the south side of Pleasant Street. It is anticipated that electrical and telecommunication services can be extended from the existing poles to serve the subject development. The development will need to be reviewed with the private utility providers to confirm available services and any required infrastructure and related cost to serve the properties.

5.0 CONCLUSION

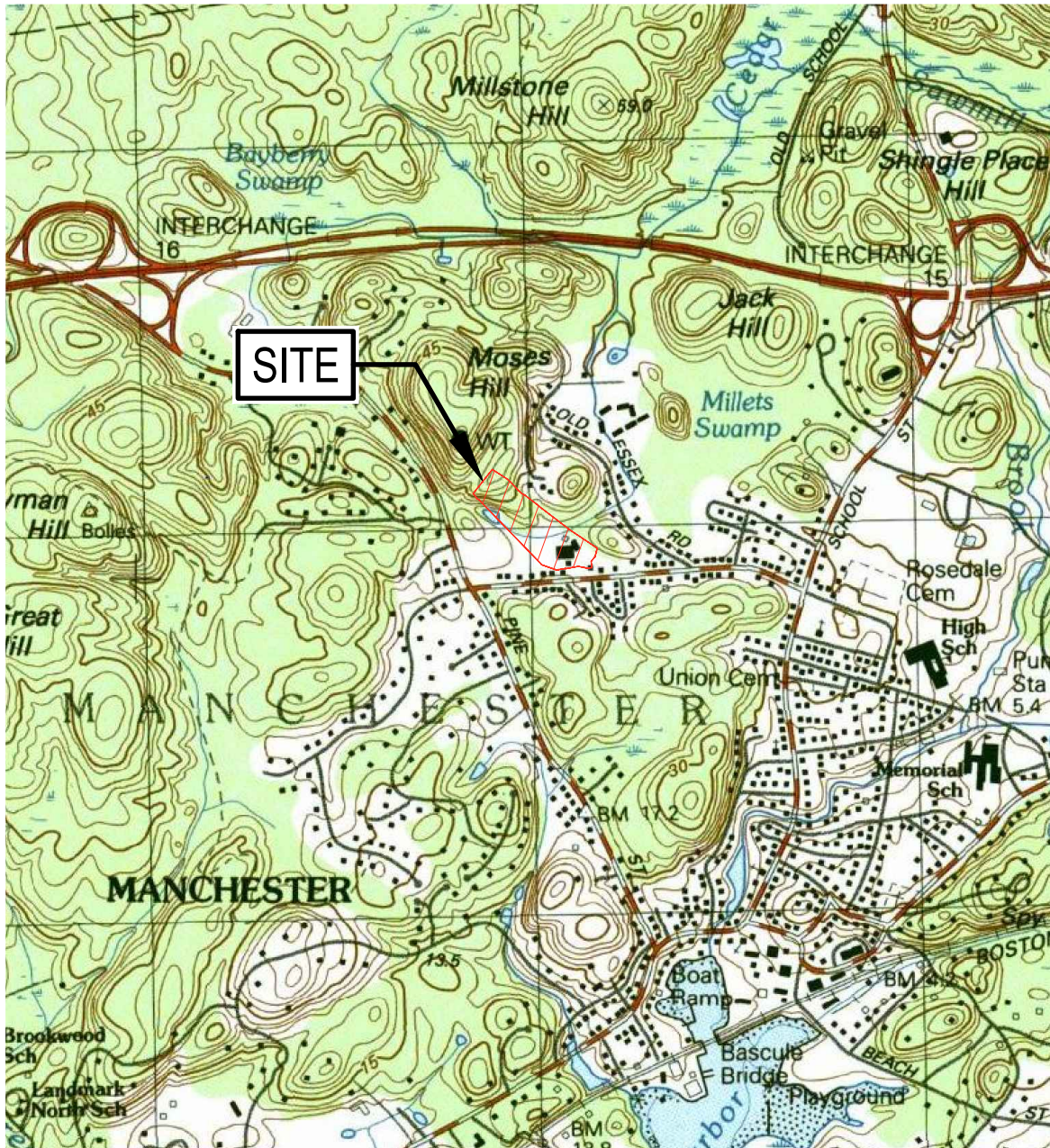
The initial due diligence for the Site has identified several site constraints and related cost premiums associated with the contemplated development, including the Town's No Disturb and No Build buffer zones. It is anticipated that the site will be significantly constrained. Permitting requirements for site development would include a Notice of Intent filing with the Massachusetts Department of Environmental Protection (MassDEP) and Town of Manchester-



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by-the-Sea Conservation Commission, and Planning Board review and approval. The project may also be limited by soil types, infiltration rates, bedrock, and groundwater elevations. Given the numerous constraints related to the development of this Site, the contemplated project may not be feasible from a size and cost perspective.

EXHIBITS



SCALE: 1"=2000'
SOURCE: MASSGIS
ONLINE MAP VIEWER

PROJECT:

EXHIBIT A
USGS LOCUS MAP
— FOR —
85R PLEASANT STREET
TOWN OF MANCHESTER-BY-SEA
ESSEX COUNTY
MASSACHUSETTS



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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING PROGRAM MANAGEMENT LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN PERMITTING SERVICES TRANSPORTATION SERVICES

◆ UPSTATE NEW YORK	◆ SOUTHERN NEW JERSEY	◆ BALTIMORE, MD	◆ CHARLOTTE, NC
◆ NEW ENGLAND	◆ PHILADELPHIA, PA	◆ SOUTHERN MARYLAND	◆ ATLANTA, GA
◆ BOSTON, MA	◆ PITTSBURGH, PA	◆ NORTHERN VIRGINIA	◆ TAMPA, FL
◆ NEW YORK, NY	◆ LEHIGH VALLEY, PA	◆ CENTRAL VIRGINIA	◆ SOUTH FLORIDA
◆ NEW YORK METRO	◆ SOUTHEASTERN, PA	◆ RALEIGH, NC	◆ DALLAS, TX
◆ NORTHERN NEW JERSEY	◆ REHOBOTH BEACH, DE	◆ WASHINGTON, DC	

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SCALE: 1"=300'
SOURCE: MASSGIS
ONLINE MAP VIEWER

PROJECT:

EXHIBIT B
AERIAL MAP
— FOR —
85R PLEASANT STREET
TOWN OF MANCHESTER-BY-THE-SEA
ESSEX COUNTY
MASSACHUSETTS



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SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING PROGRAM MANAGEMENT LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN PERMITTING SERVICES TRANSPORTATION SERVICES

◆ UPSTATE NEW YORK	◆ SOUTHERN NEW JERSEY	◆ BALTIMORE, MD	◆ CHARLOTTE, NC
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SCALE: 1"=300'
SOURCE: MASSGIS
ONLINE MAP VIEWER

PROJECT:

EXHIBIT C WETLAND AREAS - MAPPED AND UNMAPPED

— FOR —

85R PLEASANT STREET

TOWN OF MANCHESTER-BY-THE-SEA
ESSEX COUNTY
MASSACHUSETTS



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SCALE: 1"=300'
SOURCE: MASSGIS
ONLINE MAP VIEWER

PROJECT:

EXHIBIT D
TOWN OF MANCHESTER-BY-THE-SEA
CONSERVATION LAND

— FOR —
85R PLEASANT STREET

TOWN OF MANCHESTER-BY-THE-SEA
ESSEX COUNTY
MASSACHUSETTS



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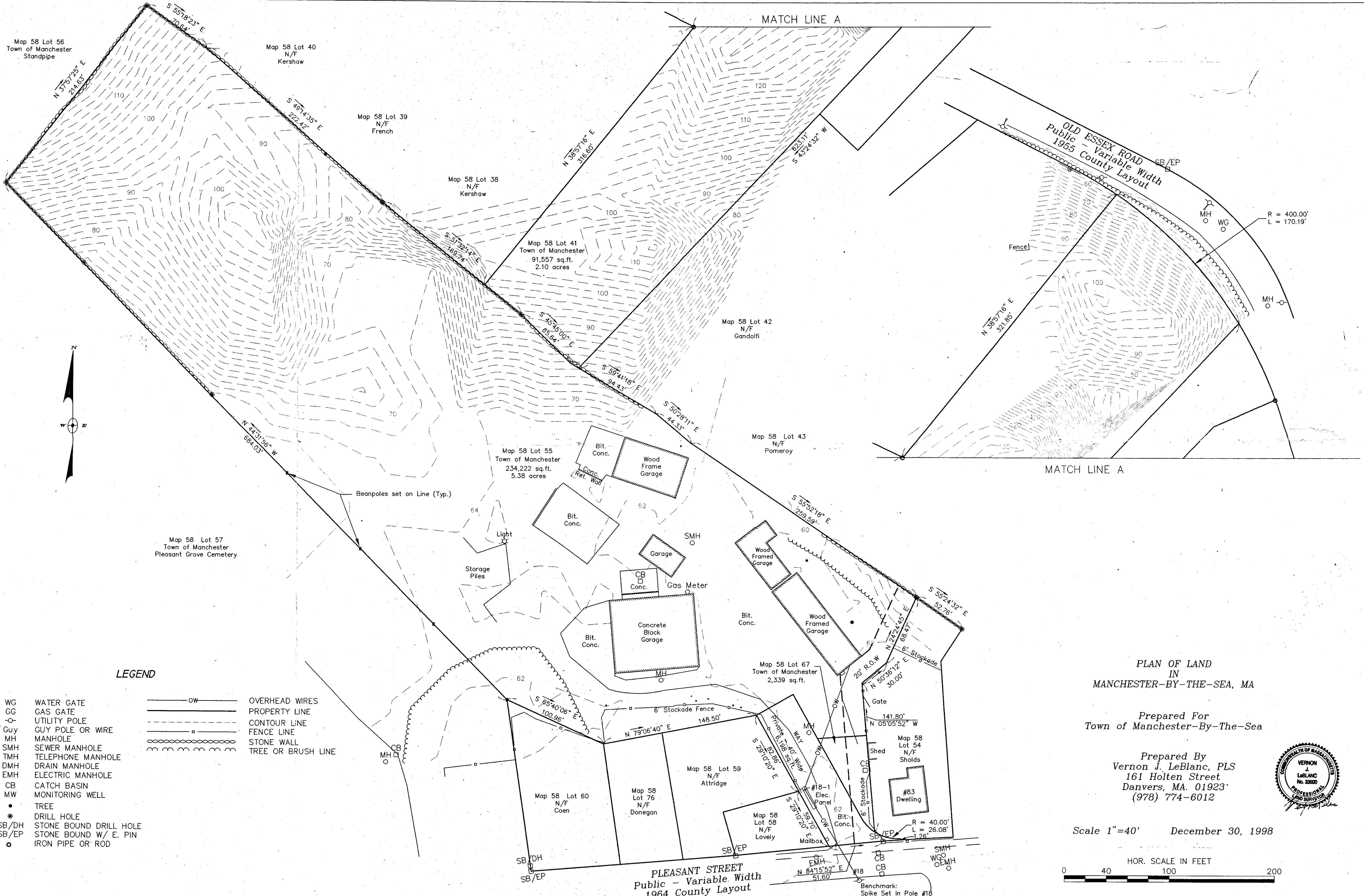
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LAND SURVEYING **PROGRAM MANAGEMENT** **LANDSCAPE ARCHITECTURE**
SUSTAINABLE DESIGN **PERMITTING SERVICES** **TRANSPORTATION SERVICES**

◆ UPSTATE NEW YORK	◆ SOUTHERN NEW JERSEY	◆ BALTIMORE, MD	◆ CHARLOTTE, NC
◆ NEW ENGLAND	◆ PHILADELPHIA, PA	◆ SOUTHERN MARYLAND	◆ ATLANTA, GA
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ATTACHMENT A

EXISTING CONDITIONS SURVEY



PLAN OF LAND
IN
MANCHESTER-BY-THE-SEA, MA

Prepared For
Town of Manchester-by-the-Sea

Prepared By
Vernon J. LeBlanc, PLS
161 Holten Street
Danvers, MA. 01923
(978) 774-6012

Scale 1"=40' December 30, 1998

HOR. SCALE IN FEET
0 40 100 200

VERNON J. LeBLANC
No. 3360
PROFESSIONAL
LAND SURVEYOR

ATTACHMENT B

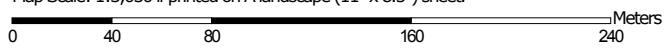
NRCS WEB SOIL SURVEY REPORT

Hydrologic Soil Group—Essex County, Massachusetts, Southern Part (Manchester By-the-Sea)



Soil Map may not be valid at this scale.

Map Scale: 1:3,030 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

2/12/2019
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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 1:15,800.

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: Essex County, Massachusetts, Southern Part
Survey Area Data: Version 15, Sep 7, 2018

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

Date(s) aerial images were photographed: Aug 29, 2014—Sep 19, 2014

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32A	Wareham loamy sand, 0 to 3 percent slopes	A/D	0.0	0.1%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	1.3	3.8%
102E	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	D	14.0	41.6%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	3.0	9.0%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	B	10.5	31.2%
651	Udorthents, smoothed		4.9	14.4%
Totals for Area of Interest			33.7	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

ATTACHMENT C

LUCAS ENCIRONMENTAL SKETCH

Wetland flag locations shown are approximate, not field surveyed, and based on site visit conducted 03/28/2019.
For informational purposes only.



WFA1 - 23

WFB-1 to 12

WFC-1 to 7

WFD-1 to 7

CVP 1-1 to 15

small wet pocket at
corner of yard. Not
jurisdictional.

Severe erosion
channel

MANCHESTER

M

Pine Street

Parsons Lane

Pleasant Street

Old Essex Road