NOTICE OF INTENT

DOWNTOWN MUNICIPAL COMPLEX CONNECTIVITY IMPROVEMENTS – PLAYSTEAD PATHWAY AND PARKING AREA
ANDOVER, MASSACHUSETTS

GPI

181 Ballardvale Street, Suite 202
Wilmington, MA 01887
(978) 570-2999

SUBMITTED TO:

Andover Conservation Commission
36 Bartlet Street
Andover, MA 01810

MAY 2020

GPI

Downtown Municipal Complex Connectivity Improvements – Playstead Pathway and Parking Area Notice of Intent May 19, 2020

TABLE OF CONTENTS

Notice of Intent

Downtown Municipal Complex Connectivity Improvements – Playstead Pathway and Parking Area

Andover, Massachusetts

REF.: MAX-2019091

May 18, 2020

Mr. Donald D. Cooper
Andover Conservation Commission, Chair
36 Bartlet Street
Andover, MA 01810

SUBJECT: Notice of Intent
Downtown Municipal Complex Connectivity Improvements – Playstead Pathway and Parking Area
Andover, Massachusetts

Dear Mr. Cooper and Members of the Commission:

On behalf of the Town of Andover, Greenman-Pedersen, Inc. (GPI) is submitting for your review a Notice of Intent (NOI) under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131 Section 40 (the Act) for the proposed Playstead Pathway and Parking Area (the Project). The purpose of this Project is to improve connectivity and accessibility between the various elements of the municipal complex and playstead including the ball fields, the Andover Housing Authority, the Andover Senior Center, Andover Town Hall, and Doherty Middle School.

The improvements proposed by this Project include the construction of a hot mix asphalt (HMA) parking lot with vertical granite curbing. The proposed parking lot will be Americans with Disabilities Act (ADA) compliant and provide 56 new parking spaces. The proposed parking lot will be linked to the other elements of the municipal complex via a 10’ wide pervious asphalt walkway. The walkway will be ADA compliant and lit with solar lights. Additional improvements proposed by the Project include construction of a 4’ wide hardpack pathway along Rogers Brook; construction of an accessible relief station; construction of a pavilion; construction of an infiltration basin with sediment forebay to provide treatment for stormwater runoff from the parking lot; planting of native species; grading and; installation of construction phase erosion and sedimentation control measures.

Portions of the Project are located within areas subject to protection under the Act including 200-foot Riverfront Area and 100-foot Buffer Zone. Portions of the Project are also located within areas subject to protection under the Town of Andover General Bylaw for Wetland Protection including the 25-foot Vegetated Buffer and 50-foot Setback.

As this is a Municipal Project it qualifies as fee exempt. On behalf of the Town of Andover, we respectfully request that the Commission waive the municipal filing fee.

Should you have any questions, or require additional information, please contact me directly at (978) 570-2989 or scampbell@gpinet.com.

Sincerely,

GREENMAN–PEDERSEN, INC.

Samuel Campbell
Environmental Scientist

enclosure(s) WPA Form 3 Notice of Intent and Supporting Documents
Notice of Intent Plans

c. Janet Nicosia, Director of Facilities, Town of Andover

Notice of Intent Project Narrative

WPA FORM 3 – NOTICE OF INTENT

PROJECT NARRATIVE

1.0 Introduction

The Town of Andover proposes to construct a new parking lot and connector path within the existing municipal complex, central park, and playstead located at 50 Bartlet Street (the Project). The purpose of this Project is to improve connectivity and accessibility between the various elements of the municipal complex and playstead including the ball fields, the Andover Housing Authority, the Andover Senior Center, Andover Town Hall, and the Doherty Middle School. A locus map of the Project area is provided as Figure 1 in the Appendix.

The parking lot and connector path represent a small portion of the proposed improvements that were included in the *Andover Park, Playstead, and Municipal Complex (PPMC) Master Plan*. The *PPMC Master Plan* was developed over a period of 18 months and included input from municipal officials and residents. The proposed parking lot and connector path were ranked as "most desirable" improvements by a survey of over 600 Andover Residents. The proposed parking lot will provide additional parking for both recreational and municipal activities within the municipal complex and playstead. The proposed connector path will improve the safety and walkability of the playstead, municipal complex, and Chestnut Court neighborhood.

Portions of the Project are located within areas subject to protection under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40 (the Act) including 200-foot Riverfront Area and 100-foot Buffer Zone associated with the southern bank of Rogers Brook. Portions of the Project are also located within areas subject to protection under the Town of Andover General Bylaw (the Bylaw) for Wetland Protection including the 50-foot Setback and 25-foot Vegetative Buffer Strip.

The Project has been designed to avoid impacts to wetland resource areas and comply with the provisions of the Act and the Bylaw. The Project proposes to enhance the area adjacent to Rogers Brook through the planting of native species and implementation of structural stormwater best management practices. The Project meets the Town of Andover's environmental and engineering standards for the design of stormwater best management practices.

2.0 Site Description

2.1 Project Locus

The Project is located south of Rogers Brook and west of Chestnut Court. There is an existing paved parking area located off of Chestnut Court that the Project proposes to remove. The Project will also require the removal of a small, underutilized softball field located adjacent to Rogers Brook. The total proposed work area is approximately 0.75 acres for the parking lot and 0.5 acres for the connector path. A locus map is included in

the Appendix as Figure 1. Project plans (bound separately) showing the proposed limit of work have been submitted with this application.

The municipal complex is home to a variety of public institutional and recreational uses including the Andover Housing Complex, located to the west of the proposed parking lot, several ball fields utilized by local youth sports organizations, Town Hall, the Senior Center, and Doherty Middle School. Other land uses within the vicinity of the Project include Participation Recreation, Urban Public / Institutional, Multifamily Residential, High Density Residential, and Forest.

2.2 Wetland Resource Areas

This NOI has been submitted under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40 (the Act). Work is proposed within areas Subject to Protection under the Act as well as the 100-foot Buffer Zone.

A site inspection and resource area delineation were conducted on February 28, 2020. Wetland resource areas identified in the vicinity of the Project include Bank (to perennial stream), Land Under Water, 200-foot Riverfront Area, and Bordering Land Subject to Flooding. The boundaries of these wetland resource areas were delineated by a Professional Wetland Scientist, indicated by flagging, and surveyed for location. A summary of the wetland resource areas delineated in the vicinity of the Project is provided below. A detailed delineation report is included in the Appendix as Figure 2.

2.2.1 Bank to Perennial Stream

The southern Bank / Mean Annual High Water of Rogers Brook (a perennial stream) was delineated in one (1) location. The Bank is indicated on the attached Notice of Intent plans by the WFA Flag Series. Rogers Brook has steep, abrupt Banks lined with large, granite blocks. There is evidence of scour along the Bank as well as an area of erosion where the granite block edging has failed.

Vegetation along the Bank generally consists of Norway maple (*Acer platanoides*), black cherry (*Prunus serotine*), red oak (*Quercus rubra*), black locusts (*Robinia pseudoacacia*), burning bush (*Euonymus alatus*), bittersweet (*Celastrus sp.*), multiflora rose (*Rose multiflora*), and glossy buckthorn (*Frangula alnus*). Many of these species are invasive and preclude the survival and viability of native species along the Bank.

2.2.2 Land Under Water

Land Under Water exists below the Bank boundary of Rogers Brook. Land Under Water within the Project limits generally consists of silty-sandy substrates with medium sized boulders dispersed throughout the stream bed.

As described in section 2.2.1 above, much of the natural streambed (LUW) within Rogers Brook has been replaced by large granite blocks that create a large stone channel or gutter. There is an approximately 50-foot section where the original

stone blocks have settled, collapsed, and been haphazardly replaced, resulting in erosion.

2.2.3 Bordering Land Subject to Flooding

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 25009C0219F (July 3, 2012) the Project is located with Zone X (0.2% Annual Chance Flood Hazard). The Project is not located within either Zone A or Zone AE (100-year Floodplain).

2.2.4 Riverfront Area

Rogers Brook is a perennial stream (River) with an associated 200-foot Riverfront Area. A River is any natural flowing body of water that empties to any ocean, lake, pond, or other River flowing throughout the year and is shown as perennial on the current United States Geological Survey or more recent map provided by the Department. The MAHW boundary of Rogers Brook is coincident with the Bank boundary and therefore, RA should be measured 200 feet horizontally from the Bank flags, where adjacent to the River/Pond.

2.3 Jurisdictional Wetland Resource Areas – Town of Andover

The Town of Andover General Bylaw for Wetland Protection and the Wetland Protection Regulations maintains the same jurisdictional wetland resource areas definitions as the Act. The Bylaw also requires the maintenance of an undisturbed 25-foot Vegetated Buffer from the edge of any Bank or BVW. The Wetland Protection Regulations require that a 50-foot Setback be maintained between a parking lot intended for use by four or more vehicles and the edge of any Bank or BVW. The 25-foot Vegetated Buffer and 50-foot Setback are indicated on the attached Notice of Intent Plans.

2.4 NHESP-Mapped Habitat

The Massachusetts Natural Heritage Endangered Species Program (NHESP) Estimated Habitat Map (August 2017) indicates that the Project area is not within or adjacent to any areas of NHESP Priority Habitat. The MassGIS NHESP Priority Habitat Map is included in the Appendix as Figure 3.

2.5 Soils

A soils investigation was conducted to characterize the existing soil profile and determine elevation of seasonal high groundwater. The soils investigation included a review of soil mapping data from the Natural Resources Conservation Service (NRCS) and observation and analysis of soil borings performed on site in April 2020. Based on the borings conducted in April, the soil stratification consists of sandy loams and HSG B soils with infiltration rates between 0.52 and 1.02 inchers per hour. For purposes of stormwater design, a conservative rate of 0.40 inches per hour has been used. The NRCS Web Soil Survey and soil boring logs are included in the Appendix as Figure 4.

3.0 Work Description

3.1 Work in Wetland Resource Areas

3.1.1 200-foot Riverfront Area

The Project involves work within the 200-foot Riverfront Area due to its proximity to Rogers Brook, a perennial stream. There is a total of 190,849 square feet of Riverfront Area on the site. The Project proposes 71,040 square feet (33,840 square feet temporary / 37,200 square feet permanent) of alteration within Riverfront Area. Of this area, 41,127 square feet (17,388 square feet temporary / 23,739 square feet permanent) occur within the Inner (0' – 100') Riverfront Area and 29,913 square feet (16,452 square feet temporary / 13,461 square feet permanent) occur within the Outer (100' – 200'). Work within Riverfront Area includes: construction of the proposed hot mix asphalt (HMA) parking lot; construction of a 4' wide hard pack pathway along Rogers Brook; construction of a 10' wide pervious pavement pathway; construction of an accessible relief station; construction of a pavilion; construction of an infiltration basin with sediment forebay to provide treatment for stormwater runoff generated by the parking lot; planting of native species; grading and; installation of construction phase erosion and sedimentation control measures.

All temporary alteration to Riverfront Area will be restored in place. Of the proposed 37,200 square feet of permanent Riverfront Area alteration, 9,243 square feet occurs within areas that can be considered previously degraded by the existing paved parking area and softball field. In total the Project proposes 27,957 square feet of permanent alteration (or 14.5% of the total Riverfront Area on the site) within non-degraded Riverfront Area. The Project proposes to plant native species within the Inner Riverfront Area including pepperbush (*Clethra alnifolia*), redosier dogwood (*Cornus sericea*), winterberry (*Ilex verticillate*), bayberry (*Myrica pensylvanica*), pussy willow (*Salix discolor*), highbush blueberry (*Vaccinium corymbosum*), serviceberry (*Amelanchier canadensis*), freeman maple (*Acer freemanii*), red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*), American sweetgum (*Liquidambar styraciflua*), Siberian crab apple (*Malus baccata*), and red oak (*Querus rubra*). Disturbed areas within the Riverfront Area will be reseeded with a native seed mix.

3.1.2 25-foot Vegetated Buffer

The Project proposes 8,918 square feet of work within the 25-foot Vegetated Buffer. Work within the 25-foot Vegetated Buffer includes: removal of the existing paved parking area; installation of erosion and sedimentation control measures; grading and; the planting of native species. The Project will not increase impervious surface cover within the 25-foot Vegetated Buffer and enhance the Buffer with the planting of native species.

3.1.3 50-foot Setback

The Project proposes 21,106 square feet of work within the 50-foot Setback. Work within the 50-foot Setback includes; removal of the existing paved parking area; construction of a 4' wide hard pack pathway; installation of an infiltration basin and sediment forebay; grading; installation of erosion and sedimentation control measures; and planting of native species.

3.2 Work in Buffer Zones

The Project proposes work within the 100-foot Buffer Zone associated with the southern Bank of Rogers Brook (indicated by the WFA Flag Series on the attached plans). The Project proposes a total of 41,127 square feet of work within the 100-foot Buffer Zone. Proposed work within the Buffer Zone includes construction of the proposed hot mix asphalt (HMA) parking lot; construction of a 4' wide hard pack pathway along Rogers Brook; construction of a 10' wide pervious pavement pathway; construction of an accessible relief station; construction of a pavilion; construction of an infiltration basin with sediment forebay to provide treatment for stormwater runoff generated by the parking lot; planting of native species; grading and; installation of construction phase erosion and sedimentation control measures.

4.0 Mitigation Measures

The Project plans have been designed with an interest to avoid, minimize, and mitigate impacts to wetland resource areas, wildlife habitat, and other sensitive environmental resources. Mitigation measures provided for unavoidable impacts allow the Project to be conditioned to meet the General Performance Standards in the Wetlands Regulations and contribute to the interests found in the Massachusetts Wetland Protection Act. Impacts to resource areas Subject to Protection under the Act have been adequately compensated for as demonstrated below. Proposed mitigation measures include the control of invasive species, the planting of native species, and the construction of structural stormwater best management practices.

4.1 Erosion and Sedimentation Controls

Construction phase runoff, erosion, and sediment control is the responsibility of the designers, engineers, and contractors. Please refer to the attached Stormwater Management Report for further details and description of the proposed stormwater management. Erosion and sedimentation controls will be installed prior to and maintained until construction is complete and a Certificate of Compliance has been issued. Proposed erosion and sedimentation controls will provide a limit of work barrier while preventing silt and sediments from migrating towards the adjacent wetland resource areas. Routine inspections will be conducted to assess conditions and identify problems in the field during and after construction activities. Erosion controls shall consist of compost filter tubes and silt fences; no hay bales shall be used at any time on this Project. The erosion

and sedimentation control measures will be installed and maintained in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, March 1997 and the U.S.D.A. SCS's Erosion and Sediment Control in the Site Development, Massachusetts Conservation Guide, September – 1983. Best management practices for erosion and sedimentation control will be adhered to for all phases of construction to minimize potential impacts to wetland resource areas and wildlife habitat.

4.2 Stormwater Management

The Stormwater Management Standards were incorporated into the Wetlands Protection Regulations, 310 CMR 10.05 (6)(b) and defined at 310 CMR 10.05 (6)(k) through (q). The Project is classified as new development and, as such, stormwater runoff generated within the Project limits during site preparation and construction is subject to the Stormwater Standards. The Stormwater Checklist, Stormwater Report, and HydroCAD Analysis have been submitted with the Notice of Intent as required (Attachment B). The Project and proposed stormwater best management practices have also been designed and implemented in accordance with the Town of Andover Stormwater Management and Erosion Control Regulations.

5.0 Regulatory Compliance

Riverfront Area alteration that will result from the Project has been minimized to the extent practicable and feasible. The Project has been designed to meet the General Performance Standards for Riverfront Area at 310 CMR 10.58(4)(a-d):

General Performance Standard for Riverfront Area

Where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. In the event that the presumption is partially overcome, the issuing authority shall make a written determination setting forth its grounds in the Order of Conditions and the partial rebuttal shall be taken into account in the application of 310 CMR 10.58 (4)(D)1.a. and c.; the issuing authority shall impose conditions in the Order that contribute to the protection of interests for which the riverfront area is significant.

a) Protection of Other Resource Areas. *The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.30 (Coastal Bank), 10.32 (Salt Marsh), 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront rea shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any*

additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.

The Project does not propose to alter any other resource areas.

b) Protection of Rare Species. *No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.*

Standard b is not applicable as the Project is not located within a specified habitat site of Rare Species. The Project proposes native plantings to enhance the existing habitat adjacent to Rogers Brook.

c) Practicable and Substantially Equivalent Economic Alternatives. *There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.*

An Alternatives Analysis in compliance with 310 CMR 10.58(4)(c)(2) has been provided documenting that there is no practicable alternative to the proposed Project that would have less adverse effects on wetland interests.

d) No Significant Adverse Impact. *The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.*

The work is proposed on a lot recorded before 1997, preserves vegetative cover to the extent feasible, stormwater is managed according to the Stormwater Standards, the work does not impair the capacity of the Riverfront Area to provide habitat function, and the work will not impair ground water or surface water quality through the use of appropriate erosion control methods. The Project proposes to enhance the Riverfront Area on site through the planting of native species.

No practicable and substantially equivalent alternatives to the propose project with less adverse effects in the interests of the Act exist. As such, impacts to Riverfront Area have been minimized and mitigated to the extent practicable. Riverfront Area alterations have been minimized to the extent practical and feasible.

6.0 Summary

The proposed Downtown Municipal Complex Connectivity Improvements project has been designed to provide safety and connectivity improvements within the context of the site and its adjacent environmental resources. Impacts to jurisdictional wetland resource areas have been avoided and minimized to the extent practicable and feasible. Where impacts are unavoidable they have been properly mitigated through native plantings and the introduction of stormwater management. The applicant respectfully requests

that the Andover Conservation Commission find these measures adequately protective of the interests within the Act and the Town of Andover General Bylaw for Wetland Protection and issue an Order of Conditions approving the work described in this NOI and the accompanying plans.

Alternatives Analysis

Evaluation of Alternatives

Downton Municipal Complex Connectivity Improvements

Andover, MA

As required by the General Performance Standards for Riverfront Area (RA) at 310 CMR 10.58(4)(c)(1-3), there must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 S 40. An alternative is practicable and substantially equivalent economically if it is available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics in light of overall project purposes. Available and capable of being done means the alternative is obtainable and feasible.

Based on the Evaluation of Alternatives presented herein, it has been determined that no practicable and substantially equivalent economic alternative to the current proposal for clearing and grubbing exists with less adverse effects on the interest identified in M.G.L. c. 131 S 40.

Overall Project Purpose

The overall project purpose is:

To improve safety, connectivity, accessibility between the various elements of the municipal complex and playstead including the ball fields, the Andover Housing Authority, the Andover Senior Center, Andover Town Hall, and the Doherty Middle School.

Project Description

The Town of Andover proposes to construct a new parking lot and connector path within the existing municipal complex, central park, and playstead located at 50 Bartlet Street.

Scope of Alternatives

According to 310 CMR 10.58(4)(c)(2), the scope of alternatives to consider shall be commensurate with the type and scope of the project. The issuing authority shall presume that alternatives beyond the scope are not practicable and therefore need not be considered.

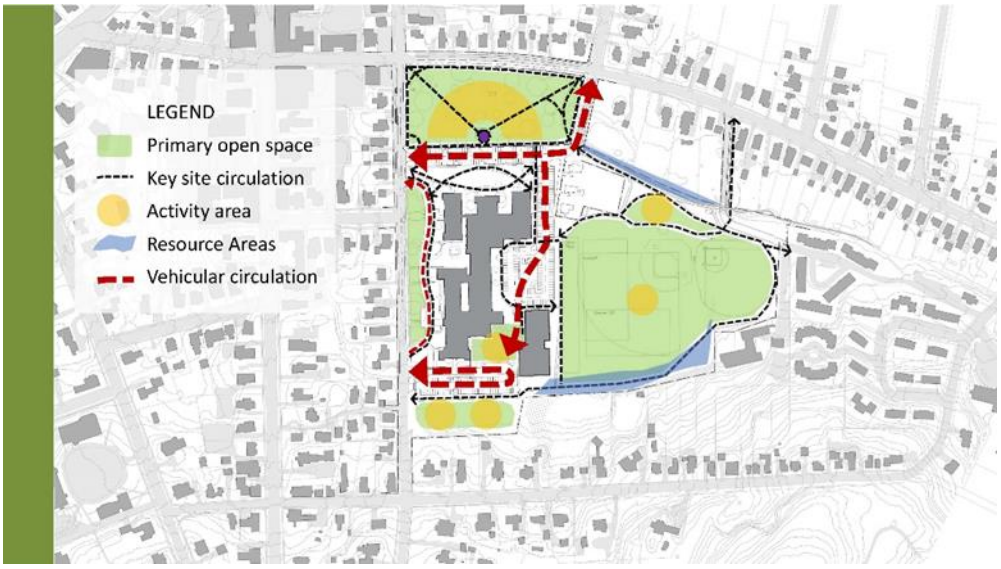
Evaluation of Alternatives

The applicant is required to submit information to describe sites and the work both for a proposed location and alternative site locations and configuration sufficient for a No Significant Adverse Impact determination by the issuing authority. The level of detail of information shall be commensurate with the scope of the project and the practicability of alternatives. The following alternatives were prepared as part of the *Andover PPMC Master Plan*.

Project Alternatives

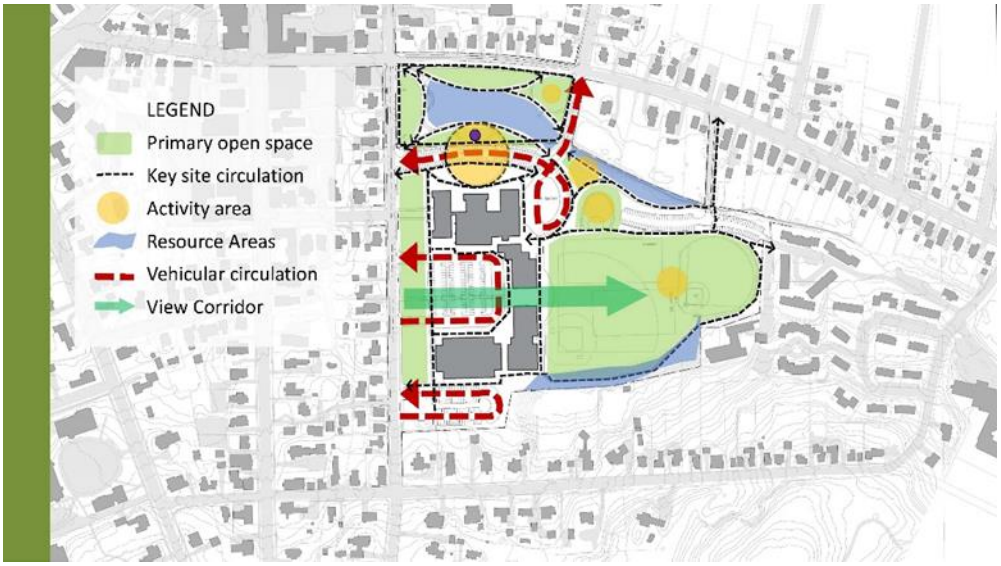
<u>Alternative 1 – No Parking</u>

The focus of alternative one was to create two new walkways connecting the playstead to the municipal complex and adjacent neighborhoods. This alternative would not construct the proposed parking area and would retain the existing softball field adjacent to Rogers Brook. The applicant determined that this alternative did not meet the parking needs generated by municipal and recreational activities within the complex.



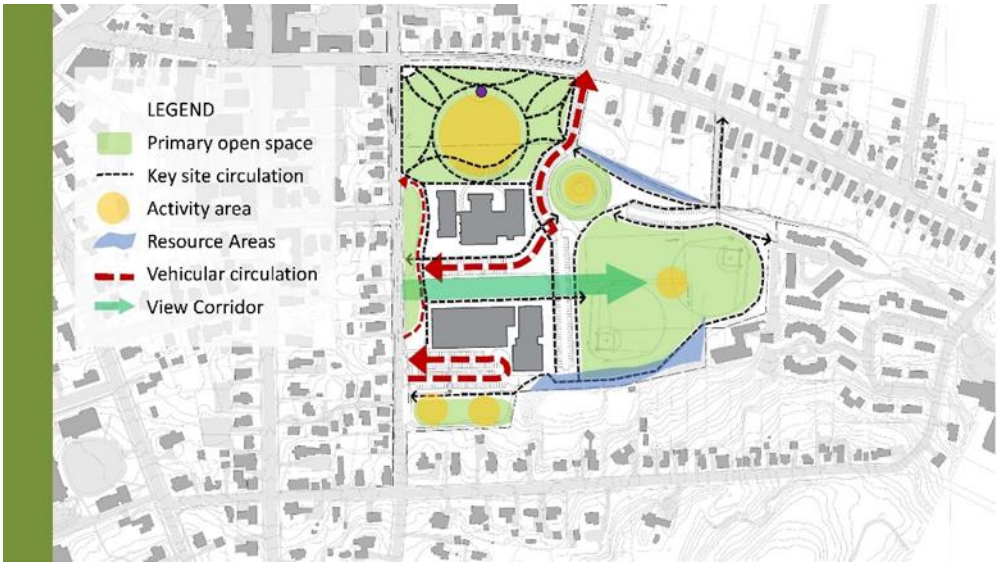
Alternative 2 – Parking, Connector Path, and Playground

This alternative would construct a new playground in addition to the proposed parking area and playstead. In this alternative the size of the parking area would be reduced. The applicant determined that this alternative would provide the necessary parking and would introduce additional impacts to the Riverfront Area.



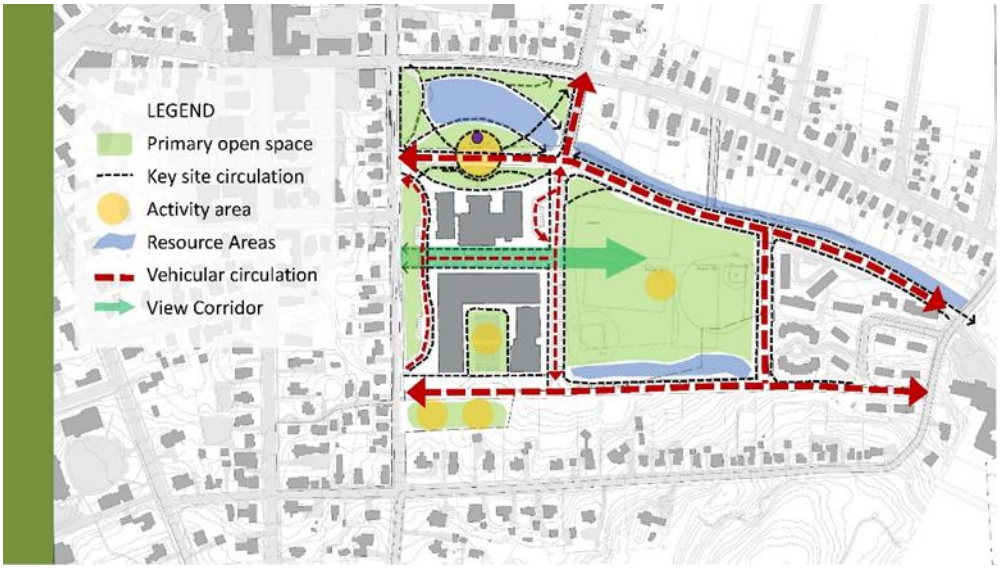
Alternative 3 – Parking, Connector Path, Revised Traffic Pattern, & New Middle School

This alternative evaluated major property acquisitions and changes to street layouts and parking to provide a more prominent “Riverwalk”. This alternative was deemed to expensive and impactful.



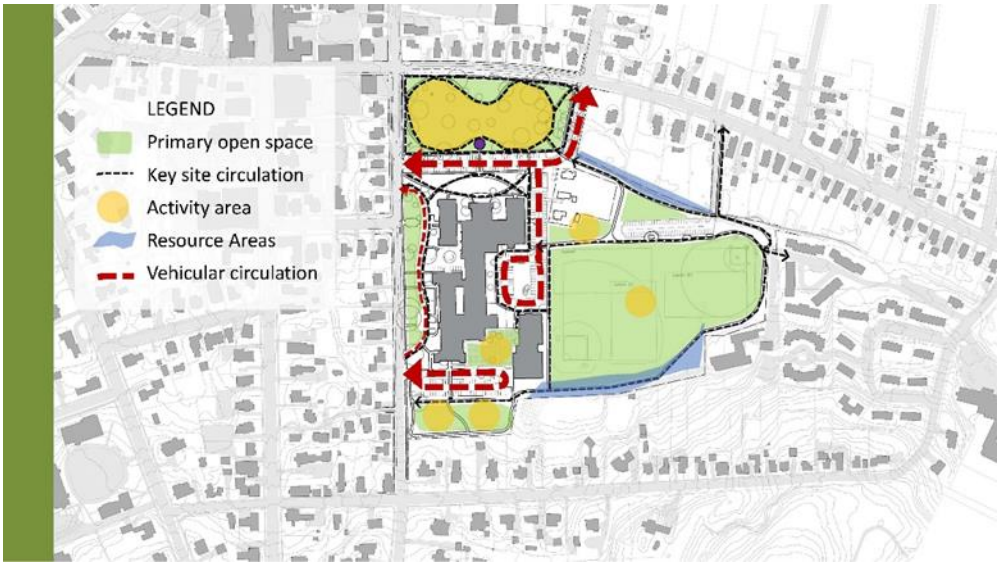
Alternative 4 – No Parking, Maximize Field Areas, Revised Traffic Pattern & New Middle School

This alternative also evaluated major property acquisitions and significant layout alterations. This alternative was also deemed to impactful and expensive.



Alternative 5 – Selected Alternative

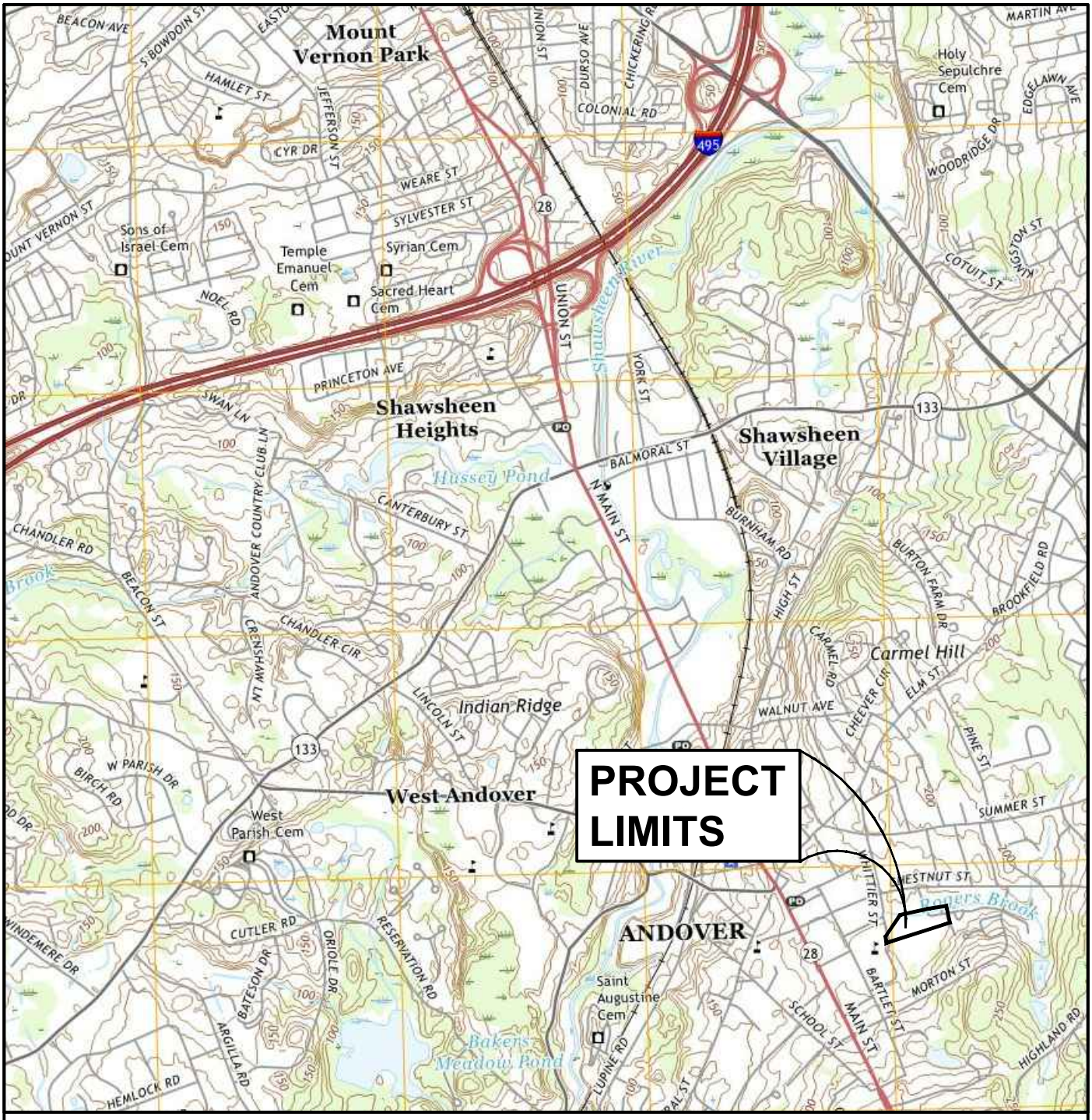
The selected alternative proposes to remove the existing ball field and construct a new parking area and connector path. This alternative will improve the safety, connectivity, and accessibility of the downtown municipal complex. The selected alternative will also provide adequate parking while minimizing impacts to sensitive environmental resources.



Findings

The analysis of alternatives concluded with the finding that only the selected alternative is economically feasible and meets the need for improvements to the Downtown Municipal Complex.

Figure 1 – USGS Site Locus Map



USGS SITE LOCATION MAP

LAWRENCE, MASSACHUSETTS QUADRANGLE

PROJECT:

Downtown Municipal Connectivity Improvements
Phase 2 Playstead Pathway & Parking Area
Chestnut Court
Andover, Massachusetts

PREPARED FOR:

Town of Andover
36 Bartlet Street
Andover, MA 01810

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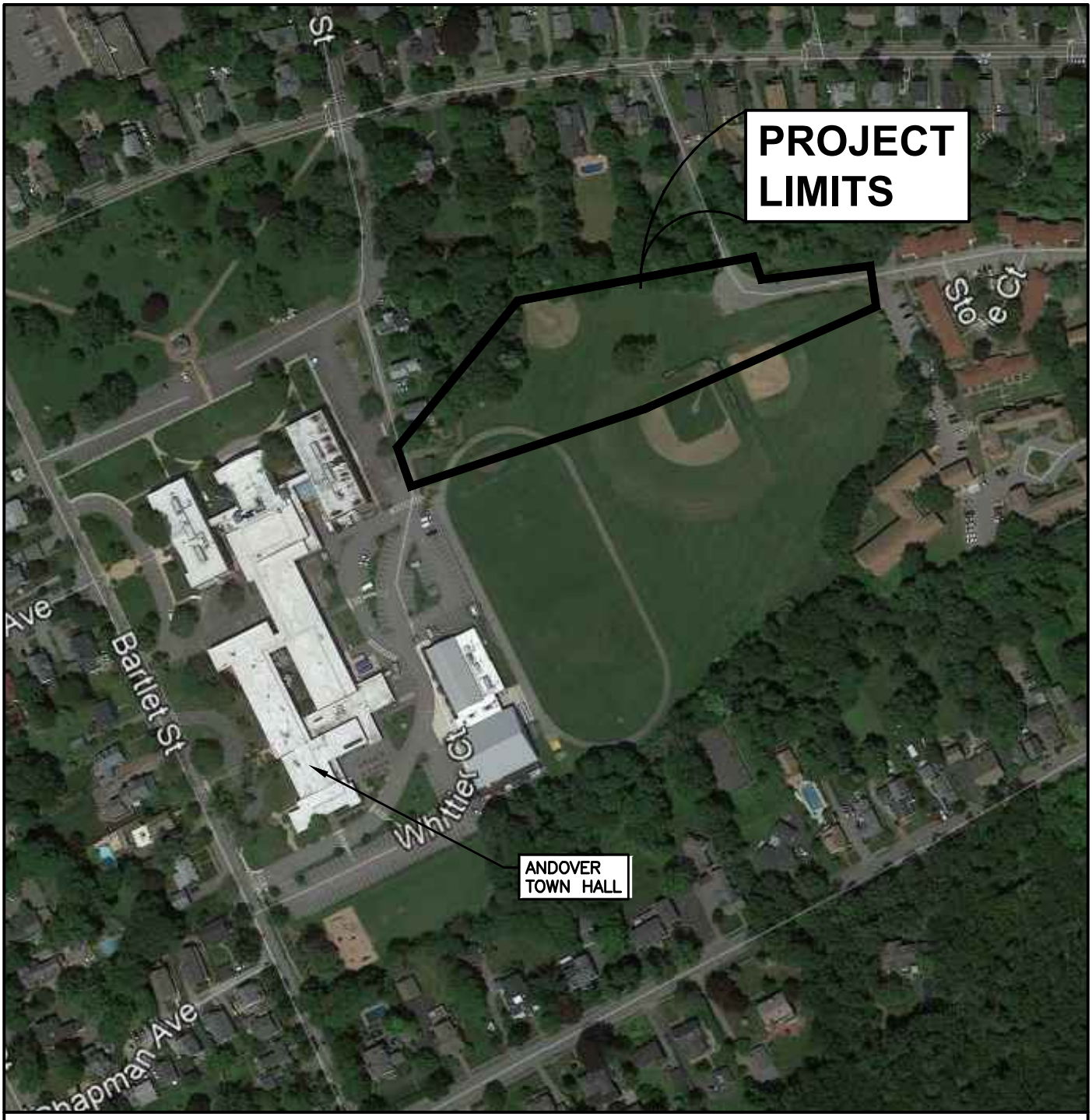
Greenman-Pedersen, Inc.
181 Ballardvale Street
Suite 202
Wilmington, MA 01887

DATE: May 18, 2020

PROJECT NUMBER: MAX-2019091.01

SCALE: 1"=2,000'

Figure 2 – Aerial Site Locus Map



AERIAL LOCUS

PROJECT:

Downtown Municipal Connectivity Improvements
Phase 2 Playstead Pathway & Parking Area
Chestnut Court
Andover, Massachusetts

PREPARED FOR:

Town of Andover
36 Bartlet Street
Andover, MA 01810

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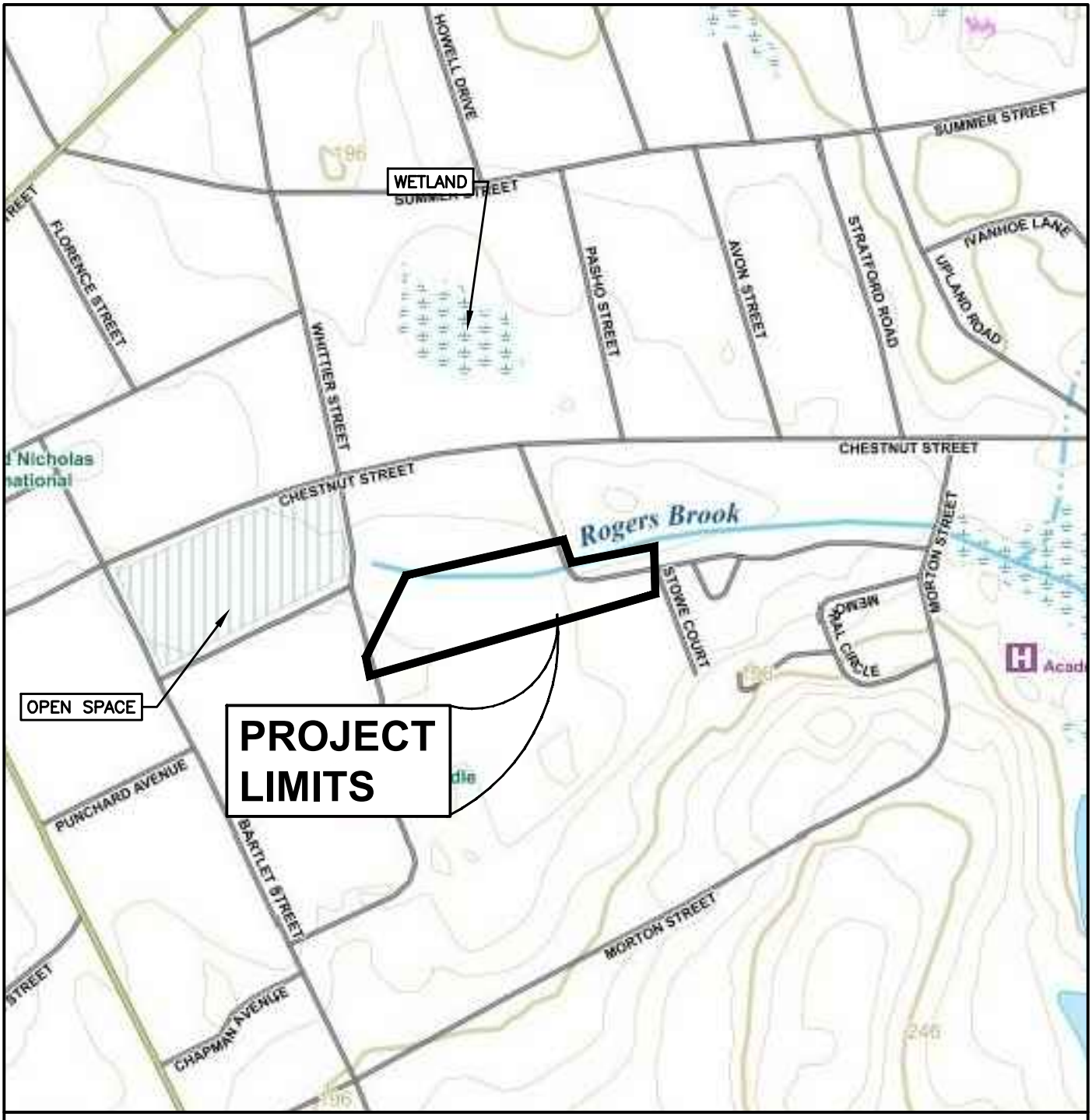
181 Ballardvale Street
Suite 202
Wilmington, MA 01887

DATE: May 18, 2020

PROJECT NUMBER: MAX-2019091.01

SCALE: NOT TO SCALE

Figure 3 – MassDEP Priority Resource Map



MASSDEP RESOURCE PROTECTION MAP

PROJECT:

Downtown Municipal Connectivity Improvements
Phase 2 Playstead Pathway & Parking Area
Chestnut Court
Andover, Massachusetts

PREPARED FOR:

Town of Andover
36 Bartlet Street
Andover, MA 01810

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181 Ballardvale Street
Suite 202
Wilmington, MA 01887

DATE: May 18, 2020

PROJECT NUMBER: MAX-2019091.01

SCALE: NOT TO SCALE

Figure 4 – FEMA Flood Insurance Rate Map

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/15/2020 at 1:35:56 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 5 – Wetland Delineation Report

DEROSA Environmental CONSULTING, INC.
167 Main Street
P. O. Box 716
Rowley Massachusetts
USA
978.948.7717 Office
derosaenvironmental.com

April 9, 2015

BY ELECTRONIC MAIL

Lindsey DiTonno, P.E.
Project Manager
181 Ballardvale Street, Suite 202
Wilmington, MA 01887

Tel: 978-570-2997
Email: ldditonno@gpinet.com

RE: Wetland Delineation Report

Andover Park, Playstead & Municipal Complex
30 Whittier Court
Andover, MA 01810

Ms. DiTonno:

As you requested, we have prepared this report with regard to the existing wetland resource area boundary determinations located at portions of the Site at 30 Whittier Court in Andover, Massachusetts. The boundaries of the existing wetland resource areas were delineated according to methodology described in the Massachusetts Wetlands Protection Act (MGL Ch. 131 Sec. 40) and its Regulations at 310 CMR 10.00, et seq., as well as guidance documents prepared by the MADEP, including *The Guide to Inland Vegetated Wetlands in Massachusetts, dated March 1988*, as well as, Appendix G of *Delineating Bordering Vegetated Wetlands Under the MA Wetlands Protection Act, dated March 1995.*

Bordering Vegetated Wetland (310 CMR 10.55)

Due to the steep topography of the Site, there were no bordering vegetated wetlands that bordered Rodgers Brook, a perennial stream at the Site. As a result, the only resource area that was delineated in this area of the Site was the mean annual high water (MAHW) line/bankfull conditions of the perennial stream.

Riverfront Area (310 CMR 10.58)

We delineated the MAHW/bankfull line of Rodgers Brook, a perennial stream, on February 28, 2020. The MAHW/bankfull line was flagged with blue surveyor's flagging consecutively numbered WF A1 to WF A51 (Appendix A). The bank of Rodgers Brook generally has abrupt banks. Bank scouring is present along the bank of Rodgers Brook. The MAHW line of the brook is consistent with the bank scouring lines observed during the delineation.

Photo of Rodgers Brook that flows through portions of the Site. The topography that borders the stream is steep as seen in this photo.

Vegetation

Due to the steep topography and the upland areas that border the brook, the canopy layer within the upland resource area consisted principally of Norway maple (*Acer platanoides*), black cherry (Prunus serotina), red maple (Acer rubrum), red oak (*Quercus rubra*) and black locust (Robinia pseudoacacia). The shrub community consisted principally of burning bush (*Euonymus alatus*), bittersweet (*Celastrus sp*.), multiflora rose (*Rosa multiflora*), and glossy buckthorn (*Frangula alnus*). The herbaceous plant community was dormant during the time of the wetland delineation. These plant species specified constitute an upland plant community under the Act and the Bylaw.

Soils

Soils were not necessary to establish an accurate wetland boundary delineation at this site as there was a clear break in slope between the wetland and upland areas at the site. This clear break in slope was marked by the MAHW/bankfull line that was delineated in the field.

In our professional opinion, the boundary of MAHW line of Rodgers Brook delineated in the field accurately represents the definition of MAHW/bankfull conditions described at 310 CMR 10.58 et seq.

Should you have any questions or comments, please call anytime.

Respectfully submitted,

DeRosa Environmental Consulting, Inc.

Michael J. DeRosa, Principal
Professional Wetland Scientist (PWS No. 2250)

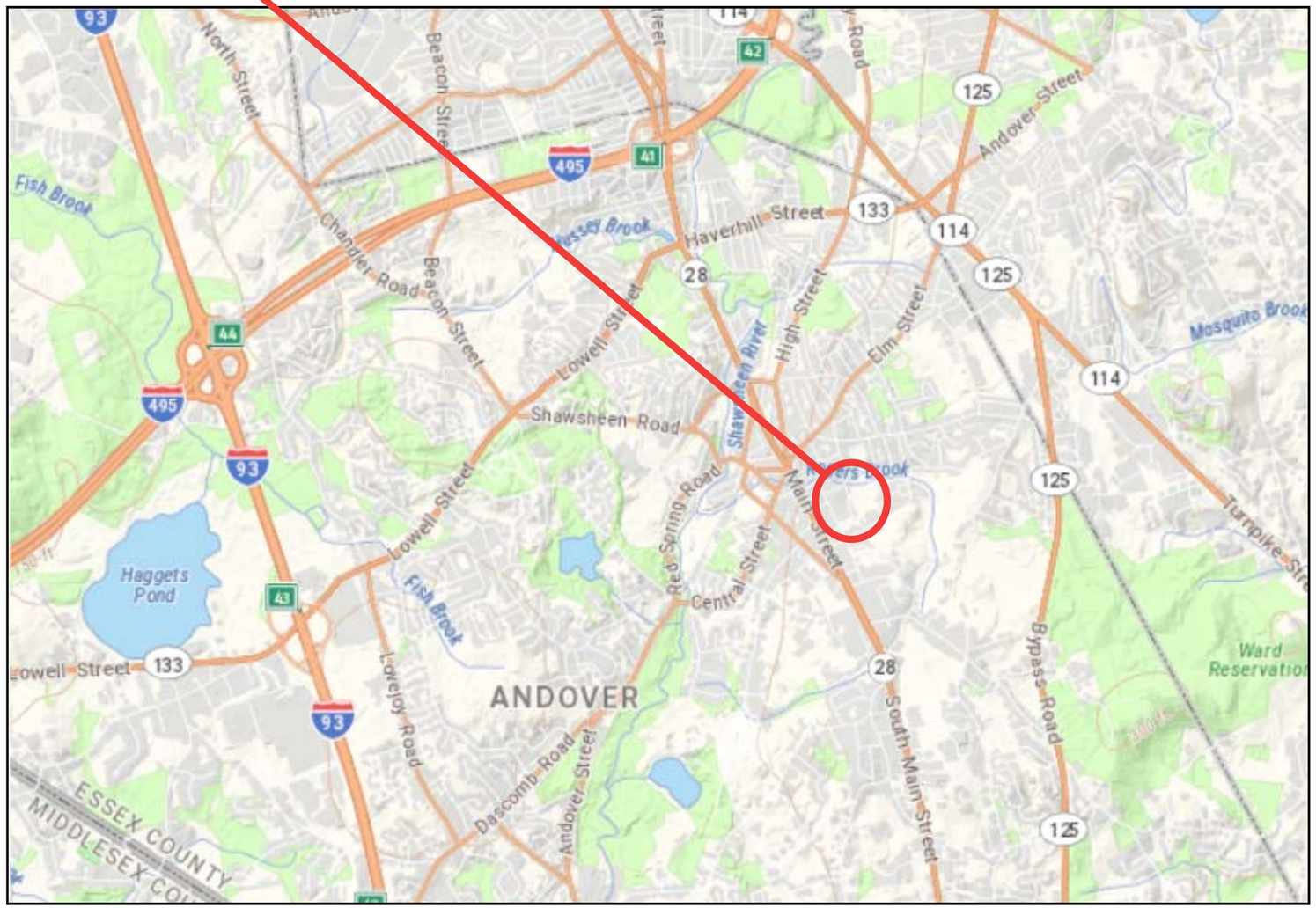
Tyler Ferrick, B.S.
Environmental Scientist

MJD/tcf

Figures

30 Whittier Court, Andover, MA

Figure 1. Topographic Map



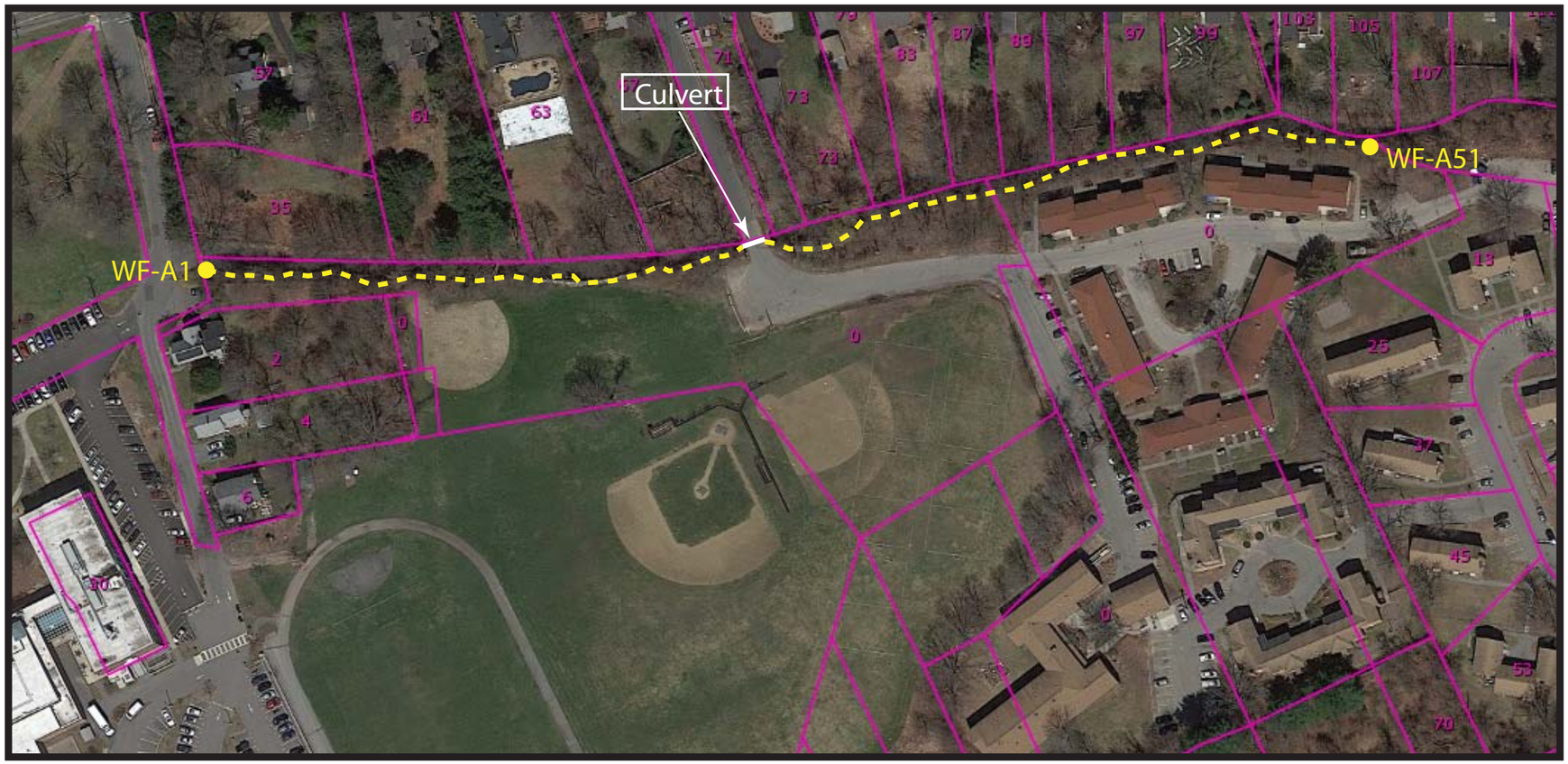
USGS Topographic Maps

DEROSA Environmental CONSULTING, INC.

167 Main Street, PO Box 716, Rowley Massachusetts 01969 USA
978 948-7717 Office - 978 948-7718 Fax

Delineation Sketch

Andover Park, Andover, MA.



Notes:

Contact: Tyler Ferrick
Cell:978-500-9053
Date: 2/28/2020

Series WF-A: WF-A1 to WF-A51
Resource Area: MAHW line
of Perennial Stream (Rogers Brook)
Flagging: Blue

Resource Areas Onsite:

Vegetated Wetlands: No
Riverfront Area: Yes, Rogers Brook
Coastal Bank: No
Coastal Dune: No
Salt Marsh/ACEC: No
NHESP: No
Floodplain: Yes, Zone X

DEROSA Environmental CONSULTING, INC.
167 Main Street, PO Box 716, Rowley Massachusetts 01969 USA
978 948-7717 Office - 978 948-7718 Fax

30 Whittier Court, Andover, MA

Figure 3. Aerial Photograph

DEROSA Environmental CONSULTING, INC.

167 Main Street, PO Box 716, Rowley Massachusetts 01969 USA
978 948-7717 Office - 978 948-7718 Fax

Appendix A

PROFESSIONAL QUALIFICATIONS

REPRESENTATIVE PROJECTS

Ipswich River Watershed Association
Ipswich MA

Miles River Task Force |
Watershed Restoration
Beverly Wenham Hamilton Ipswich MA

Paumier Residence |
Dune Restoration
Manchester MA

Matignon High School Athletic Fields |
Landfill Cap Remediation
Cambridge/Somerville MA

Turner Hill Golf Course |
Wetland Mitigation & Pond Design
Ipswich MA

Saint Aidan's Church |
UST Remediation
Brookline MA

Saint Kevin's School |
AST Remediation
Dorchester MA

Saint Joseph's School |
UST Remediation
Salem MA

Ipswich Country Club |
Wetland Restoration
Ipswich MA

Ould Newbury Golf Club |
LID Runoff Design
Newbury MA

Ferncroft Country Club |
Pond Restoration
Topsfield/Middleton MA

Michael J. DeRosa

Principal, LSP, LEED AP BC&D

Michael J. DeRosa, Principal and project manager specializing in habitat restoration and wetland restoration projects. He has more than 24 years experience working with ecological systems focused on restoration and rehabilitation of damaged landscapes. Ecological principles inform his design and restoration practices.

Mike was the principal wetland permitting leader for the Turner Hill Resort Center in Ipswich Massachusetts. He has consulted with the Archdiocese of Boston since 1989 in all environmental areas. His firm is known for their expertise in wetland and wildlife habitat restoration and rehabilitation and invasive species control and management.

Mike incorporated DeRosa Environmental Consulting, Inc., in May 1994 after spending 8 years working in the environmental consulting industry as technical director and project manager. Prior to his consulting career he was a researcher at the Harvard School of Tropical Public Health working with infectious diseases and tick transmitted Lyme disease, in particular.

Mike has been involved with many projects associated with MGL Ch. 21e and Massachusetts Contingency Plan (MCP) projects. He received his Licensed Site Professional (LSP Lic. 3452) registration in 1993. Mike is uniquely credentialed in hazardous waste site assessment and remediation and has over 24 years experience in wetland permitting, habitat restoration and mitigation. Mike has permitted projects with all federal, state and local environmental agencies. Mike is on the Practice Faculty at The Boston Architectural College. His new passion is the incorporation of urban agriculture and food justice initiatives in mixed use community based projects.

EDUCATION

MA, Boston University, 1993
North Carolina State University, 1986
Harvard University, 1985
BA, University of Denver, 1982

PROFESSIONAL EXPERIENCES

Principal, LSP, LEED AP BC&D
DeRosa Environmental Consulting, Inc. | 1994-Present
Technical director, Environmental Engineering Division
Web Engineering Associates, Inc.| 1990-1994
Project manager/Environmental Scientist,
Dennison Environmental, Inc.| 1988-1989
Population Ecologist & Wetlands Specialist,
Lelito Environmental Consultants, LLC| 1987-1988
Research Assistant,
North Caroline State University| 1985-1987
Air Pollution Analyst
Entropy Environmentalists, Inc.| 1985-1987
Senior Research Assistant
Harvard University| 1983-1985
Naturalist
The Trustees of Reservations| 1983-1985

PROFESSIONAL MEMBERSHIPS/AFFILIATIONS

New England Wildflower Society
USGBC | United States Green Building Council
NGWA | National Ground Water Association
AMWS | Association of Massachusetts Wetland Scientists
LSPA | Licensed Site Professional Association
SWS | Society of Wetland Scientists
MACC | Massachusetts Association of Conversation Commissioners

CERTIFICATIONS AND SPECIAL TRAINING

Licensed Site Professional (LSP), Lic. No. 3452
LEED Accredited Professional | 10342989
Certified Ecologist, The Ecological Society of America |
June 2002 – May 2007
CERCLA 40 Hour Hazardous Materials Safety Training |
OSHA 29 CFR 1910.120
Confined Space Entry Training | OSHA 29 CFR 1910.146
Management Training Workshop | Dun and Bradstreet
Hazardous Materials Chemistry Seminar | University of Toledo

REPRESENTATIVE PROJECTS

Lead Abatement and Wetland Restoration Project
Burlington, MA

Commercial Property | Wetland Restoration
Rowley, MA

Phase 1 ESA
Topsfield, MA

Commercial Property | Phase 2 ESA
Plaistow, NH

MWRA RAM Completion Report
Charlestown Wind Turbine Site

Commercial Property | Wetland Delineation
Ipswich, MA

Wetland Permitting | Notice of Intent
Hamilton, MA

Hazardous Waste Clean-Up | Gasoline and Fuel Oil Remediation
Rowley, MA

Wetland Design | Restoration Project
Beverly, MA

Invasive Species Management | and Wetland Permitting
Gloucester, MA

Wetland Restoration
Braintree, MA

Tyler Ferrick, BS

Project Manager/Environmental Scientist

Tyler graduated with a bachelor's degree in Conservation Law Enforcement from Unity College located in Unity, Maine. Tyler is also a graduate from the Schoodic Point Seasonal Law Enforcement Program for the National Park Service. His study prepares him for issues dealing with the management and protection of wildlife, natural resources, and environmental laws and regulations. He is working towards becoming an Environmental Police Officer in his future.

Tyler began working with DeRosa Environmental Consulting in the fall of 2012. He is currently working at DeRosa Environmental as a Project Manager. Tyler has been involved in a variety of projects at DeRosa related to MGL Ch. 21e and the Massachusetts Contingency Plan (MCP). He has lead remedial action operations, conducted oversight and has prepared MCP documents. Furthermore, Tyler has worked with local and state environmental agencies to permit wetland related projects. He has experience delineating, designing, assessing and restoring wetland resource areas. Tyler is interested in the natural resources that Massachusetts coast has to offer and is driven by the protection and health needed for these resources in order for future generations to experience.

Prior to immersing himself in the world of science, Tyler worked as an intern with the US Environmental Protection Agency in Boston. Here he began to learn about Brownfield's and the extent and severity of soil and groundwater pollution in our local areas. He also learned about stormwater runoff and successful management and treatment methods. During Tyler's summer working for the EPA he helped with the EPA's food bank canned food drive.

Tyler's love for the outdoors started when he was young. He has many hobbies which include fishing, hunting, skiing, hiking, and just being in the woods. He likes to fish for salt and freshwater fish. He even does some commercial fishing for stripers when he gets a chance.

Wetland Restoration |
MassDEP ACOP
Haverhill, MA

Hazardous Waste Clean-Up |
Metals, Gasoline, Fuel Oil
Manchester, MA

Wetland Restoration |
Hopkinton, MA

Phase 2 ESA
Ipswich, MA

Hazardous Waste |
Tank Closure Report
Hamilton, MA

EDUCATION

BS, Conservation Law Enforcement | 2012
Unity College, Unity, Maine

PROFESSIONAL EXPERIENCE

Project Manager/ Environmental Scientist
DeRosa Environmental Consulting Inc | 2012 – Present
Landscaper
Chickadee Hill Farm | 2010, 2012
Intern (Environmental Protection Assistant)
US Environmental Protection Agency |Summer 2011

Professional Memberships/Affiliations

LSPA | Licensed Site Professional Association
ELA | Ecological Landscape Alliance

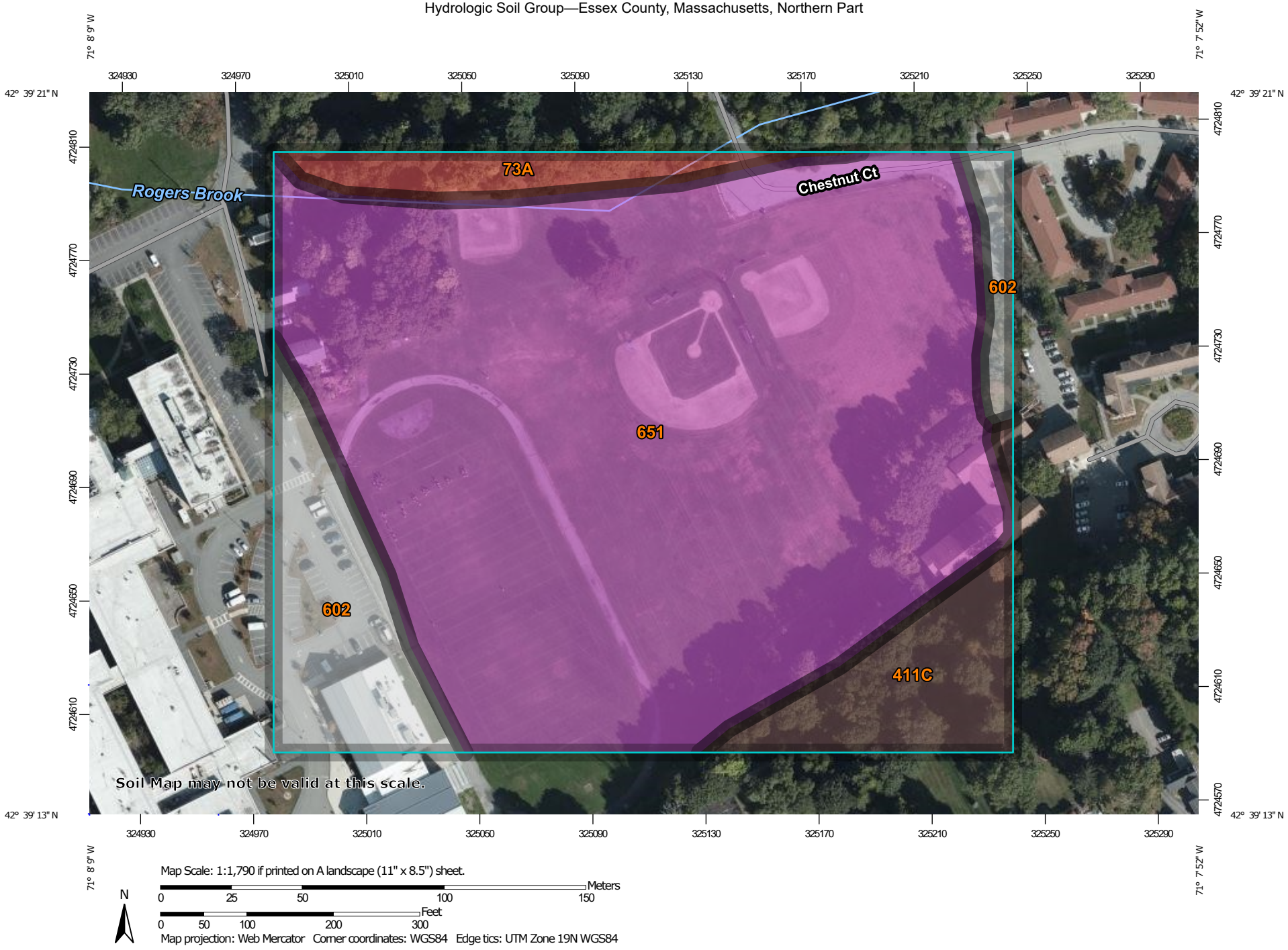
Certification

40 Hour Hazardous Waste Site Worker (OSHA)
Pesticide Applicators License | CORE MDAR
Railway Worker Protection (RWP) | MBCR
BMP's for Wetland Design & Construction | AMWS
Classic River Morphology | AMWS
Historic Fill | LSPA

License

Unmanned Aircraft License | FAA | Exp. 2/28/2019

Figure 6 – NRCS Web Soil Survey & Boring Logs



Map Scale: 1:1,790 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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

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, Northern Part
Survey Area Data: Version 15, Sep 12, 2019

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

Date(s) aerial images were photographed: Sep 13, 2019—Oct 5, 2019

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
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	0.6	4.2%
411C	Sutton fine sandy loam, 8 to 15 percent slopes, very stony	B/D	1.0	7.6%
602	Urban land		1.5	11.2%
651	Udorthents, smoothed	A	10.6	77.0%
Totals for Area of Interest			**13.7**	**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

TEST BORING LOG

SOIL X, Corp.
148 Pioneer Drive
Leominster, MA 01453
(978) 840-0391

Briggs Engineering & Testing
Site location: 50 Bartlett St
Andover, MA

BORING B-1

DMCC2

Date Started: 4/1/2020
Date Finished: 4/1/2020
Driller: PG
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS			
DATE	DEPTH	CASING AT	STABILIZATION

Depth Ft.	AASHTO Classification	Sample No.	Sample Pen/Rec	Sample Depth	Sample Blows/6"	Strata Break	Visual Identification of Soil and / or Rock Sample
1	A4	1	18"	0'0"-2'0"	1-1-1-3	1'0"	GRASS and TOPSOIL: black, medium to fine, little gravel, Some silt.
						1'7"	SILTY SAND FILL: grey brown, medium to fine, little silt.
	A2	2	18"	2'0"-4'0"	4-5-5-8		SILTY SAND: wet, course to fine, little silt, trace clay, mottled at 6'0"
5	A2	3	12"	5'0"-7'0"	3-7-8-9		GRAVELLY SILTY SAND: wet, grey, course to fine, little gravel, little silt
10	A2	4	12"	10'0"-12'0"	14-9-11-12		GRAVELLY SILTY SAND: wet, grey, course to fine, little gravel, little silt
15	A2	5	3"	15'0"-15'6"	100		GRAVELLY SILTY SAND: wet, grey, course to fine, little gravel, little silt
20							Well installed Moved 4' to East Refusal at 15.7'
25							Water at 2.7' at 3.5 hours Ground water at 2.6' at 5 days
30							
35							

Notes:

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense.
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard.

Trace 0 to 10%
Little 10 to 20%
Some 20 to 35%
And 35% to 50%

	CASING	SAMPLE	CORE TYPE
ID SIZE (IN)			
HAMMER WGT (LB)			
HAMMER FALL (IN)			

TEST BORING LOG

SOIL X, Corp.
148 Pioneer Drive
Leominster, MA 01453
(978) 840-0391

Briggs Engineering & Testing
Site location: 50 Bartlett St
Andover, MA

BORING B-2

DMCC2

Date Started: 4/1/2020
Date Finished: 4/1/2020
Driller: PG
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION

Depth Ft.	AASHTO Classifi-cation	Sample No.	Pen/ Rec	Depth	Blows/6"	Strata Break	Visual Identification of Soil and / or Rock Sample
							GRASS & TOPSOIL: black, medium to fine, little silt, trace organic.
1	A2	1	18"	0'0"-2'0"	0-1-3-5	1'0"	URBAN FILL: dark brown to black, course to fine, little ash, some silt, trace organic
	A4					2'0"	
		2	10"	2'0"-4'0"	4-6-6-10		SILTY SAND: wet, grey, course to fine, little gravel, little silt.
5	A2	3	5"	5'0"-7'0"	8-10-9-9		SILTY SAND: wet, brown, course to fine, trace gravel, little silt
10	A2	4	8"	10'0"-12'0"	7-7-7-8		SILTY SAND: wet, grey, course to fine, little gravel, little silt
15	A2	5	12"	15'0"-17'0"	28-21-18-23		SILTY SAND: wet, grey, course to fine, little gravel, little silt
20	A4	6	14"	20'0"-22'0"	26-28-31-53		GRAVELLY SILTY SAND: wet, olive grey, course to fine, little gravel, some silt
25							Well installed Ground water at 2.7' at 5 days
30							
35							

Notes:

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense.
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard.

Trace 0 to 10%
Little 10 to 20%
Some 20 to 35%
And 35% to 50%

	CASING	SAMPLE	CORE TYPE
ID SIZE (IN)			
HAMMER WGT (LB)			
HAMMER FALL (IN)			

Briggs Engineering & Testing
A Division of PK Associates, Inc.

April 27, 2020
Briggs Project No. 31167

Greenman Pedersen, Inc (GPI)
c/o Mr. Ronald Headrick, RLA
181 Ballardville Street, Suite 202
Wilmington, MA 01887

RE: Summary Report
Proposed Drainage Investigation Borings
DMCC-2 Field at Doherty Middle School Borings, Andover, MA

Briggs Engineering & Testing, *A Division of PK Associates* (Briggs) has completed our investigation of the subsurface conditions at the above referenced location and completed this Geotechnical Report. These services were accomplished in accordance with the authorization of Proposal No. MA. 02.1799.1 dated February 3, 2020.

1.0 Investigation Scope and Project Location

This investigation consists of advancing two test borings and installing groundwater observation wells in both borings, providing soil descriptions of soil from borings and measuring groundwater depths in both wells.

The site is located in he northeast-central part of Andover. Route 28 is located about 1/3 mile west of the site. The intersection of Route 28 and Elm Street is about 0.4 mile northwest of the site. Rogers Brook runs across the north edge of the site, about 100 feet north of the test borings investigation area. The brook connects to the Sanctuary Ponds located about 0.5 miles east of the site.

The site is located along the north edge of existing Doherty Field. The field is a grassy open space with two baseball/softball fields and a running track. The Doherty Middle School and adjoined Town Hall are located about 500 feet west of the investigation area. Rogers Brook is located along the north edge of Doherty Field as discussed above.

Design and configuration of DMCC-2 drainage was not provided to Briggs and is not shown on the attached sketch.

2.0 Subsurface Explorations

Two test borings were advanced along the north part of the site as shown on attached Figure 1. The borings were explored under the full-time supervision of the undersigned Briggs' Geotechnical Department Manager.

Soil Exploration Corp. of Leominster, MA advanced the borings on April 1, 2020. A tracked Geoprobe drill rig with geotechnical hammer was used drill the borings. Borings were advanced in accordance with ASTM D1586, "Penetration Test and Split Barrel Sampling of Soils". Standard Penetration Tests (SPT) were performed every 5 feet of drilling as noted on the attached test boring logs. An additional sample was collected at 2 to 4 feet for each boring to explore the fill/virgin transition. Boring B-1 terminated in refusal at 15.5 and B-2 extended to 22 feet Below Ground Surface (BGS).

Soil samples were field classified by David Geisser, Geotechnical Department Manager on a full-time basis using the American Association of State Highway and Transportation Officials (AASHTO) Soil Classification System. Soil descriptions by Briggs are presented in the attached test boring logs.

3.0 Subsurface Conditions

Soils stratigraphy consists of silty sand fill and urban fill over undisturbed silty sands and gravelly silty sands to refusal and bottom of boring depths of 15.5 and 22 feet, respectively.

AASHTO soil descriptions are presented in the attached test boring logs and summarized as follows:

1. Silty Sand and Urban Fills – Class A2 and A4 fills with trace to little (up to 20%) gravel, little to some (10 to 35%) non-plastic fines (silt), and trace (less than 10%) organic content was encountered in B-1 from ground surface to 1.7 feet and in B-2 from ground surface to 2 feet below ground surface (BGS). This layer is loose with an SPT N-Values[1] ranging from 2 to 4.

2. Silty Sand – Class A2 undisturbed silty sands with little gravel and little silt was encountered in B-1 from 1.7 feet to about 8 feet BGS and in B-2 from 2 to about 18 feet BGS. This layer is medium dense to dense with SPT N-Values ranging from 10 to 39.

3. Gravelly Silty Sand – Class A2 and A4 undisturbed silty sands with little gravel and little to some (10 to 35%) silt was encountered in B-1 from about 8 feet to refusal at 15.5 feet BGS and in B-2 from about 18 to 22 feet BGS where that boring terminated. This layer is medium dense to very dense with SPT N-Values ranging from 20 to 59.

Refusal – Refusal was encountered in B-1 at 15.5 feet. The rig was repositioned 4 feet east of original proposed boring location and encountered refusal a 15.7 feet. No rock sample was collected, just pulverized rock dust in final samplers.

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[1] SPT N-Value is the number of blows for a 140 lb. hammer falling freely through 30 inches, required to advance the standard split spoon sampler the last 12 inches of an 18 inch sampling interval.

Groundwater observation wells were installed at each boring. The wells consisted of 10 feet of slotted 2-inch diameter pipe and 5 feet of solid riser pipe. A conical shaped plug was inserted at he base of well. An expansion plug was provided at top of well. Concrete surface seal and a steel roadway box were installed flush with grass grade for each well. The annular space between the borehole and well pipes was filled with filter sand to allow flow of water into the well pipe and reduce siltation. Groundwater was measured a both wells with the following data recorded by Briggs.

Well	Elapsed Time	Water Depth BGS
B-1	3.5 hours	2.7 ft
	5 days	2.6 ft
B-2	5 days	2.7 ft

4.0 Limitations and Exclusions

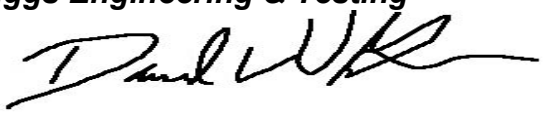
All the professional opinions presented in this report are based solely on the scope of work conducted and sources referred to in our report. The data presented by Briggs in this report were collected and analyzed using generally accepted industry methods and practices at the time the report was generated. This report represents the conditions, locations, and materials that were observed at the time the field-work was conducted. No inferences regarding other conditions, locations, or materials, at a later or earlier time may be made based on the contents of the report. No other warranty, express or implied is made.

This report was prepared for the sole use of our client. The use of this report by anyone other than our client or Briggs is strictly prohibited without the express prior written consent of Briggs. Portions of the report may not be used independently of the entire report.

The above recommendations and conclusions are based on our evaluation of the obtained data presented in the text. We would welcome the opportunity to monitor the pertinent phases of the foundation construction; thus, if differences are found between the field conditions described herein and those encountered during construction, we can modify our recommendations in a timely and professional manner.

Thank you for engaging our services to undertake this project. If you have any questions, please do not hesitate to contact us at your convenience.

Very truly yours,
Briggs Engineering & Testing



David W. Geisser
Geotechnical Dept. Manager

DWG:dg
Enclosures: Figure 1 - Location Plan and Test Boring Logs

Figure 7 – Abutters List

Parcel	Owner	Street Address
39-173	Town of Andover - Cormier Youth Center	0 Bartlet Street
39-168	Michael & Jessica Digiorgio	57 Chestnut Street
39-166	Mark & Maureen Zytkovicz	61 Chestnut Streeet
39-177	Andover Housing Authority	0 Grandview Terrace
39-178	Andover Housing Authority	0 Morton Street
39-163	Town of Andover	67 Chestnut Court
39-175	Andover Housing Authority	0 Chestnut Street
39-179	Town of Andover	0 Chestnut Street
39-172	Town of Andover Park & Bandstand	34 Bartlet Street
39-170	Frederick & Nancy McCormack	4 Whittier Court
39-170A	Town of Andover, Inhabitants of	0 Whittier Court
39-168A	Michael & Jessica Digiorgio	35 Whittier Street
39-164	Matthew & Alexandra D'Alessio	67 Chestnut Street
39-169	Charles & Heidi Leinbach	2 Whittier Court
39-169A	Town of Andover, Inhabitants of	0 Whittier Court
39-180	Town of Andover	0 Chestnut Street
39-162	Lisa Stevenson	71 Chestnut Steet
39-161	73-75 Chestnut Street Condominium	73-75 Chestnut Street
39-160	Marina Melnikova	79 Chestnut Street
39-159	Jon & Bridget Fletcher	83 Chestnut Street
39-158	Delores Zimmer	87 Chestnut Street
39-157	Lyle & Elizabeth Morgan	89 Chesnut Street
39-156	Stephen & Kara Norris	95 Chestnut Street
39-174	Town of Andover Park	0 Chestnut Street
39-165	Brian & Jane Kobleski	63 Chestnut Street
39-181	Town of Andover	0 Chestnut Street

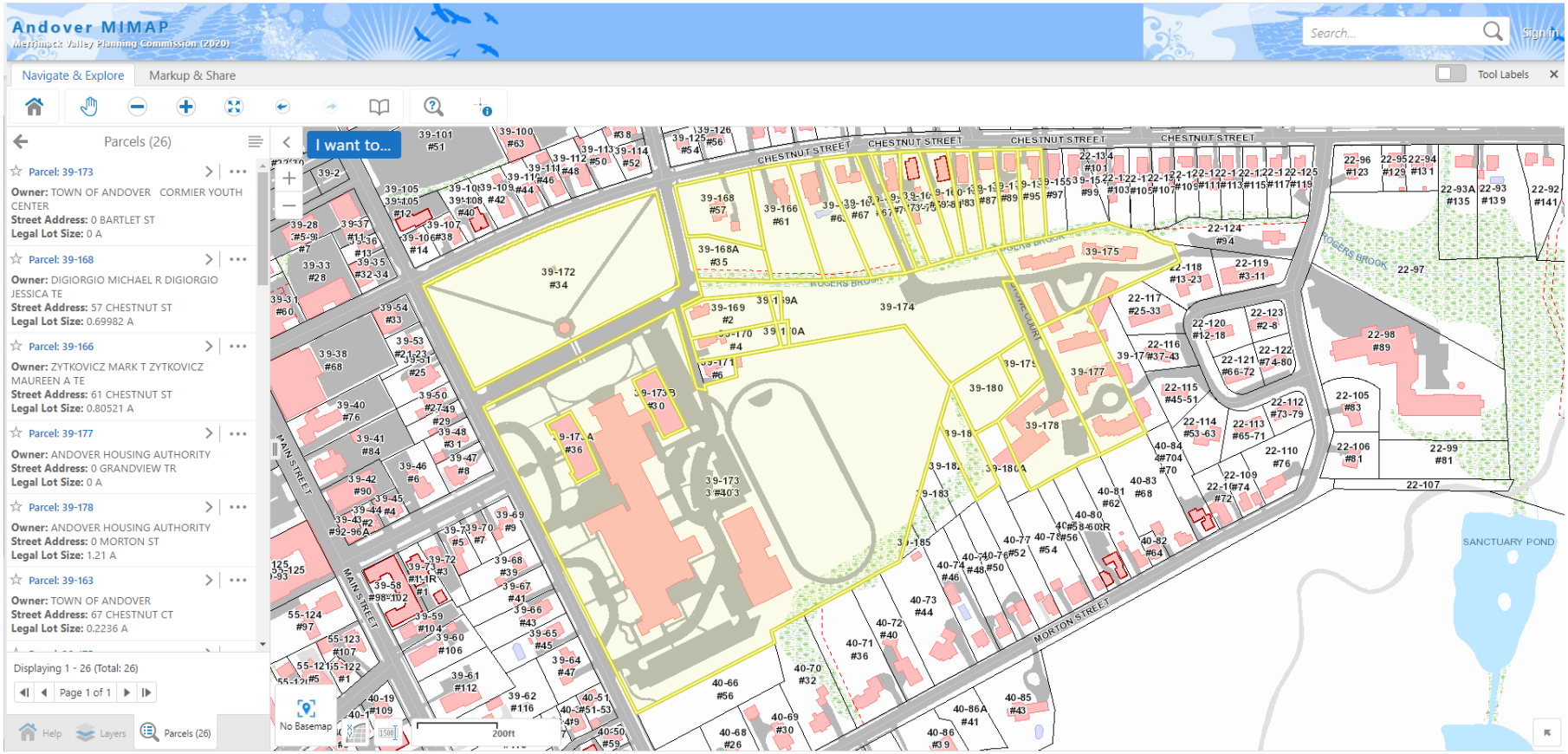
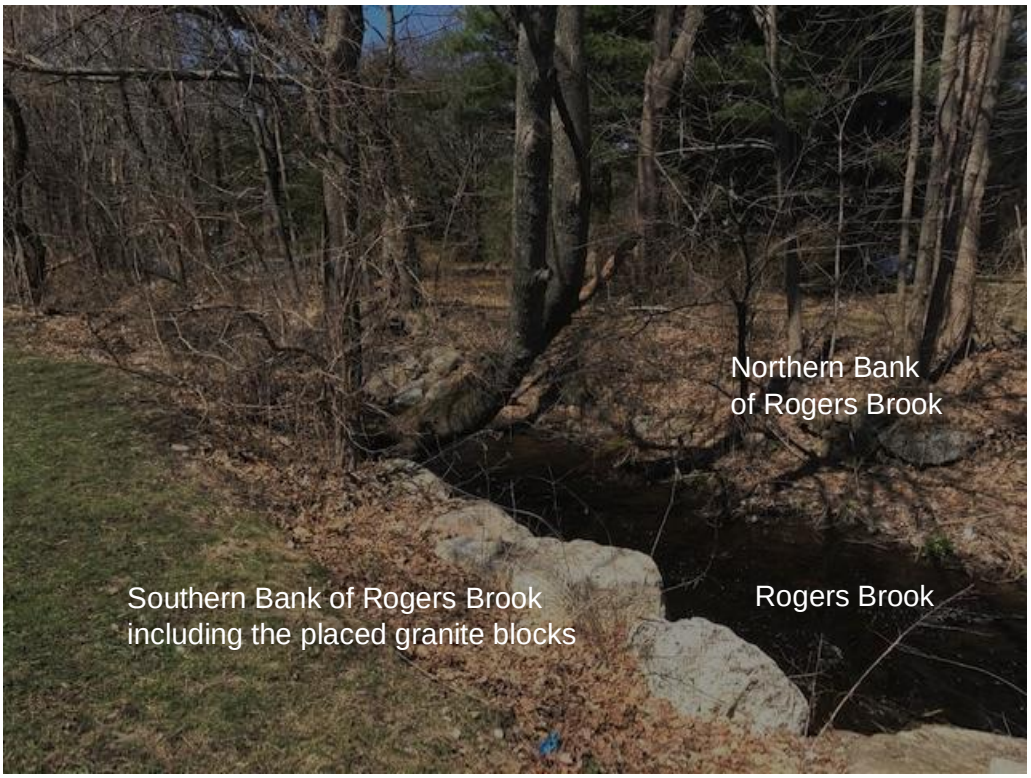

Andover MIMAP
Merrimack Valley Planning Commission (2020)
Search...
Sign In
Navigate & Explore
Markup & Share
Tool Labels
Parcels (26)
I want to...
Parcel: 39-173
Owner: TOWN OF ANDOVER CORMIER YOUTH CENTER
Street Address: 0 BARTLET ST
Legal Lot Size: 0 A
Parcel: 39-168
Owner: DIGIORGIO MICHAEL R DIGIORGIO JESSICA TE
Street Address: 57 CHESTNUT ST
Legal Lot Size: 0.69982 A
Parcel: 39-166
Owner: ZYTKOVICZ MARK T ZYTKOVICZ MAUREEN A TE
Street Address: 61 CHESTNUT ST
Legal Lot Size: 0.80521 A
Parcel: 39-177
Owner: ANDOVER HOUSING AUTHORITY
Street Address: 0 GRANDVIEW TR
Legal Lot Size: 0 A
Parcel: 39-178
Owner: ANDOVER HOUSING AUTHORITY
Street Address: 0 MORTON ST
Legal Lot Size: 1.21 A
Parcel: 39-163
Owner: TOWN OF ANDOVER
Street Address: 67 CHESTNUT CT
Legal Lot Size: 0.2236 A
Displaying 1 - 26 (Total: 26)
Page 1 of 1
Help
Layers
Parcels (26)
No Basemap
200ft
CHESTNUT STREET
MAIN STREET
MORTON STREET
ROGERS BROOK
SANCTUARY POND

Figure 8 – Site Photographs

1. Panorama view of the proposed project site from Chestnut Court



2. View of Roger's Brook at Chestnut Court

3. View of Roger's Brook towards Chestnut Court

4. View of Athletic fields

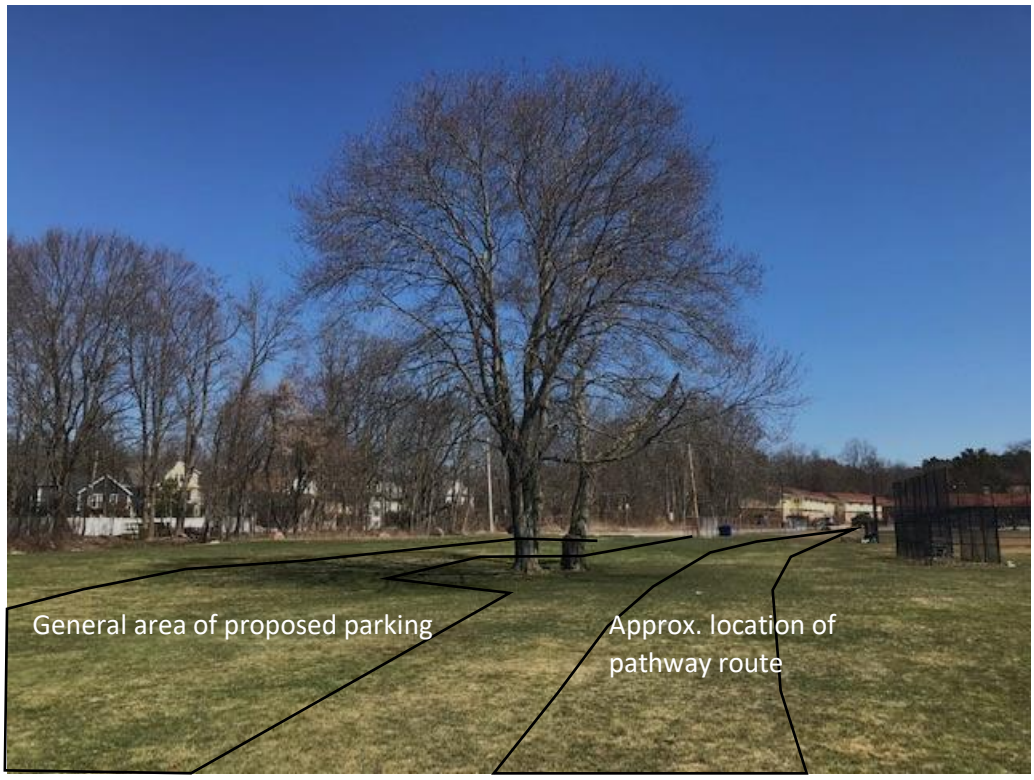
5. View of stone embankment on Roger's Brook

6. View of Landmark Trees

7. View towards Senior Center and Recreation Center

8. View from Senior Center crosswalk

9. View of ballfield in buffer area



10. View towards Chestnut Court past playfields

Attachment A – Stormwater Management Checklist & Report

Attachment B – Notice of Intent Plans