PARE PROJECT NO. 19140.01

SITE FEASIBILITY STUDY – 72 STOW ROAD

TOWN OF BOXBOROUGH
PUBLIC SAFETY FACILITY
BOXBOROUGH, MASSACHUSETTS

PREPARED FOR:

HKT Architects
24 Roland Street, Suite 301
Charlestown, MA 02129

MARCH 2021

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Introduction

The intent of this site feasibility study is to evaluate for the feasibility of developing a new Public Safety Facility in the Town of Boxborough, Massachusetts. As requested by HKT Architects (HKT), the property included with this feasibility level evaluation is 72 Stow Rd, Boxboro MA.

Based on the findings contained herein, a constraints map has been included in Appendix E. This constraints map denotes the various jurisdictional areas, regulatory boundaries, and additional pertinent information reviewed as part of this feasibility study.

The methodology for obtaining the information within this feasibility level site evaluation included the comprehensive review of the following resources:

- Massachusetts Geographic Information System (MassGIS)/Boxborough Geographic Information System (Boxborough GIS) data layers, accessed on March 9, 2021;
- Town of Boxborough Tax Assessor's database, accessed on March 9, 2021;
- MACRIS Maps 2.0 Beta historical inventory, accessed March 9, 2021;
- NRCS Web Soil Survey, accessed on March 9, 2021;
- Boxborough Conservation Commission Regulations for Wetland Bylaw, Revised November 17, 2004;
- Boxborough Planning Board Site Plan Approval Rules and Regulations, Revised April 11, 2011;
- Boxborough Stone Walls Bylaw (No Date);
- Boxborough Significant Aquifers Areas Map, Revised September 1981;
- Boxborough Planning Board Scenic Road, Public Shade Tree, and Stone Wall Removal or Alteration Application (No Date);
- Boxborough Wireless Overlay District Map (No Date);
- Town of Boxborough Zoning Bylaw, Revised September 2018;
- Town of Boxborough Zoning Map, Dated May 2018;
- Flood Insurance Rate Map, Middlesex County MA Panel 331 of 656, Map number 25017C0331F, Revised July 7, 2014;

This feasibility level evaluation excludes the following:

- In-person site reconnaissance;
- Hazardous materials identification and evaluation of any type;
- Capacity analysis for existing utilities;
- Existing conditions of existing utilities (including operability of well pumps, fire pumps, and septic systems);
- Analysis of existing traffic conditions;
- Historic/previous site development; and
- Any information not provided by the resources identified herein.

SITE EVALUATION

Pare evaluated the feasibility of development at the Site provided by HKT. The existing conditions and constraints at the Site are described in this section of the report. No structural review of the existing buildings located on the Site was performed; at this time it is assumed that the existing structures onsite will be demolished during construction.

EXISTING SITE, 72 Stow Rd

The Site at 72 Stow Rd is comprised of a single parcel currently owned by the Town of Boxborough according to the Boxborough Assessor's Database. The 11.05-acre (481,350 square foot) parcel identified as Map 14, Parcel 098 000 in the Boxborough Assessor's Database includes the existing building.

The Boxborough Zoning Map (Revision: May 2018) indicates that the property is located within the Agricultural-Residential District. The Site is currently developed with 1,344 square foot, 2-story house, and several associated accessory structures. The existing residential building is located approximately in the middle of the cleared portion of the Site. The Site is bounded by Stow Road to the West and residential property to the north, south, and east.

The Site is generally flat with a large hill across the middle of the site. The topography slopes down to the east across the site with the large hill resulting in a change in grade of approximately 45 feet.

Based on available MassGIS data, no wetlands, streams, surface water protection areas, vernal pools, or flood plains were identified on the Site. A 100 ft "w-district" buffer shown on previous constraints plans extends onto the northwest corner of the site that will have minimal impact on developing the site. Note that state GIS does not show any wetlands associated with this buffer; further investigation will be required if site development is proposed in this buffer. The Site has wellhead protection zones across much of the area. Aquifer and Boxboro Water District protection zones are present on the Site.

Based on available MassGIS data maps, there are no known Natural Heritage and Endangered Species Program (NHESP) mapped habitat onsite.

According to NRCS Web Soil Survey mapping, the Site contains Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony (307B), Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony (307D), and Hinkley loamy sand, 3 to 8 percent slopes (253B). Paxton fine sandy loam has a hydrologic soil group of C, group C soils have a slow rate of water transmission. Hinkley loamy sand has a hydrologic soil group of A, group A soils have a very fast rate of water transmission. Preliminary test pits for performed by Pare on January 19, 2021 to locate the depth of ledge onsite. Test pit depths ranged from approximately 8 to 10 feet, and at no test pits was ledge located. This indicates a ledge depth lower than 10 feet below surface grade; however, it should be noted that boulders are visible at surface grade and ledge depths may vary throughout the site.
It is anticipated that further geotechnical investigation including test pits and soil borings will be required prior to future development of the Site. Refer to Appendix D of the report for further soils information.

Based on available aerial imagery and street imagery, existing impervious area onsite is limited to an existing driveway and appears to be in poor condition with cracking and settling observed. Existing vehicular access to the Site is limited to the single one lane driveway from Stow Road. At this time it is assumed that the existing impervious area will be demolished during construction. Note that Stow Road itself is a relatively narrow country road, and any fire truck access to and from the Site will need to account for this.

Based on available street imagery, electricity appears to be supplied to the Site by National Grid

Electric via overhead wires along Stow Road. Telecommunications is assumed to be supplied by Verizon to the building from the same overhead wires on Stow Road.

According to previous Dig Safe markings on Stow Road shown via street imagery, a 2" carbon steel (CS) natural gas main line runs under the eastern edge of Stow Road. Sawcutting and patching at the edge of the road at the access drive appears to indicate that a previous gas service to the property has been cut and removed. At this time National Grid Gas has not responded to inquiry about gas services on Stow Rd. Should a service connection to the line be required, further coordination with utility providers will be required to confirm size and location of the main.

According to mapping and aerial imagery, the roadway does not appear to have a water supply line running along Stow Road. According to previous constraints plans prepared by GPR, the surrounding residential properties in the area receive their water supply from wells. The existing building onsite also appears to be served by a well, the condition of which is unknown. A Zone 1 wellhead protection area centered around a well at 688 Massachusetts Avenue covers a small portion of the northwest edge of the Site. An interim wellhead protection area associated with the same well covers a larger portion of the site. Locations of these protection zones are shown on the constraints map. Based on previous studies performed and existing conditions, it is assumed a well will be required for any new construction. Testing to determine the existing well yield should be considered.

Regarding fire protection, there are no fire hydrants located on the Site, and aerial imagery does not show any fire hydrants on Stow Road or in the vicinity of the site. Proposed fire protection measures should be coordinated with the Boxborough Fire Department.

According to arial imagery, there is no sewer main along Stow Road that could be utilized by the proposed public safety building. As such, a septic system and leach field would be required to treat and infiltrate sewer flow from the proposed building. Utilizing the provided 2017 Souhborough Public Safety Building concept plans as a model, a preliminary design flow of 3,546 GPD was calculated. This was calculated using the Title-V system sewage flow design criteria of 75 GPD per 1000 square feet for office applications, and 150 GPD per bed for assisted living facilities. As no design guidance is given for public safety or fire station construction, assisted living was used as a substitution for fire department living quarters, and office space for the remainder of the building. Proposed dimensions

and locations for the leach field and reserve field can be found on the attached constraints map. (See Appendix E)

According to arial imagery, there is no drainage system along Stow Road or on the Site. Runoff in the area is infiltrated through the existing natural woodland. Based on the Site's topography, overland flow from much of the site drains to the East towards a residential neighborhood. Any proposed construction will require drainage improvements to account for water quality and stormwater volume from the increase in impervious area.

Based on MACRIS mapping and data, the Site does not have any historic or cultural resources on or adjacent to the Site.

PERMITTING

Based on the location Site evaluated, there are multiple permits that may be required at the local, state, and federal levels for future development of the Site. Review periods are assumed and may vary. The local permitting information was compiled from the Boxborough Zoning By-laws and Wetland Regulations. The Site is located in the Agricultural-Residential District, as shown on the Town of Boxborough Zoning map. Site dimensional constraints are defined in Table 1.

Per Section 5000

Table 1: Schedule of Dimensional Requirements

	Min Lot Area (Sq. Ft.)	Min Lot Width (Foot)	Min Lot Frontage (Foot)	Minimum Setbacks (foot)			Min Upland Lot area	Max Height (Foot)	Max Stories
				Front	Side	Rear			
Site: 72 Stow Rd	60,000	100	150	40	30	40	20,000	45	3

Per the Zoning Bylaw Section 4003 (3) Use Regulations, municipals uses are permitted within the Agricultural-Residential zone.

Per the Zoning Bylaw Section 6006 Off-Street Parking Requirements table, minimum parking requirements for governmental buildings is “One (1) space for every 250 square feet of gross floor area.” ADA parking should also be considered for the Site.

Per the Zoning Bylaw Section 6007 Off-Street Loading Requirements table, minimum off-street loading requirements for “uses occupying greater than 5,000 sq. ft. not normally handling goods in large quantities including hospitals, office buildings, restaurants, auditoria, hotels, motels, funeral homes and similar uses” is “One space for buildings of 5,000 - 50,000 sq. ft. gross floor area and one bay per each additional 50,000 sq. ft. gross floor area or fraction thereof.” Note that further assessment of parking requirements will be required once the building’s use or uses has been determined.

PLANNING BOARD

Site Plan Approval

Per the Zoning Bylaw Section 8000 Site Plan Approval and Design Review, this project will be subject to a site plan approval by the Boxborough Planning Board based on its requirement for site plan approval for institutional purposes. Further, Section 8002 requires site plan approval for "….municipal…purposes." No permit for construction, exterior alteration, relocation, occupancy, or change in use of any building or lot that results in the substantial alteration of an existing building or lot shall be given and no existing use shall be extended unless site plan approval has been granted by the Planning Board. After a complete application for site plan approval is submitted to the Planning Board, the review process is estimated to take approximately 2 months depending on public notice and additional information requirements. An applicant may also request a pre-application conference with the board. A pre-application conference is not legally binding nor will it alter the legally required schedule for site plan approval.

Special Permits

Stow Road from Route 111 to the Stow Town Line is designated as a Scenic Road by the Boxborough Planning Board per the Boxborough Scenic Road Application. After a road has been designated as a Scenic Road, any repair, maintenance, reconstruction, or paving work done with respect thereto shall not involve or include the cutting or removal of trees, or the tearing down or destruction of stone walls, or portions thereof, except with the prior written consent of the Planning Board.

Per the Boxborough Stone Walls Bylaw, prior written approval must also be given by the Planning Board for the removal, tearing down, or destruction of stone walls or portions thereof within or on the boundary of any Town Way. The Site has stone walls along the frontage with Stow Road.

Per the Boxboro Earth Removal Bylaw, prior written approval must also be given by the Planning Board for the removal of earth from any parcel in the Town.

TOWN MEETING

As part of the Site Plan Approval process, a public hearing will be held within 35 days of the submission of the Site Plan Review application per section 3.5 of the Site Plan Approval Rules and

Regulations. Notice of the time and place as well as the subject matter shall be given by Board in a paper of general circulation in the Town of Boxborough once the first notice being not less than 7 days before the day of such hearing.

CONSERVATION COMMISSION

Based on available MassGIS data, wetland and riverfront resource areas are not present onsite. Wetland delineation should be completed to confirm the absence of wetlands.

If development occurs within jurisdictional resource areas, submission of a Notice of Intent (NOI) to the Boxborough Conservation Commission and Massachusetts Department of Environmental Protection (Mass DEP) will be required. Delineation of jurisdictional resource areas will be required at the site prior to future development.

After a completed NOI is filed with the Commission, the project will be reviewed at a public hearing. Per the Boxborough Wetlands Protection Bylaw Rules and Regulations, Section 3, the public hearing will be held within 21 calendar days of receipt of the NOI. Permitting will likely require attendance at one hearing prior to closing. Written order from the Conservation Commission will be issued within 21 days of the hearing. It is anticipated that the permitting process with the Commission would take approximately 1-2 months.

The Site is outside of FEMA floodplains. A copy of the FEMA Firmette is included in Appendix C.

DEPARTMENT OF PUBLIC WORKS

Future development will likely require trench and street opening permits through the Boxborough Department of Public Works (DPW). Such permits are typically obtained immediately before the start of construction, and obtained by the Selected Contractor.

BUILDING DEPARTMENT

No building permit shall be issued by the Inspector of Buildings without the written approval of a site plan by the Planning Board, where applicable, or unless thirty (30) days lapse from the date of the close of the public hearing without action by the Planning Board. No permit or license shall be granted for a use of a building, structure or land unless such use shall conform in all respects with all

Boxborough Zoning Bylaw Section 9000 provisions.

FIRE DEPARTMENT / POLICE DEPARTMENT

Future development of a public safety facility will require coordination with the Boxborough Fire Department and Police Department. Once a schematic design is developed, a meeting with the Boxborough Fire Chief and Police Chief should be arranged to review emergency vehicle accessibility, hydrant locations, and fire safety.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASS DEP)

Future development of a public safety facility will be required to meet the 2008 Stormwater Management Guidelines. Submissions will be made to the Boxborough Planning Board, Conservation Commission, and Mass DEP, the jurisdictional entities for these guidelines.

Due to the well in vicinity of the Site, the Site contains a Zone I wellhead protection area. Per the 2001 Source Water Assessment Program (SWAP) Report for the Site, systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems. Per 310 CMR 22.21(5), the Department may grant a variance if the Department finds that strict compliance with such requirements would result in an undue hardship and would not serve to further the intent of 310 CMR 22.21.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Development of a public safety facility will likely require filing of a NPDES construction general permit with the EPA, as it is anticipated that more than one acre of land will be disturbed. The Contractor awarded the contract is typically responsible for filing the NPDES General Permit and preparing a project specific Stormwater Pollution Prevention Plan.

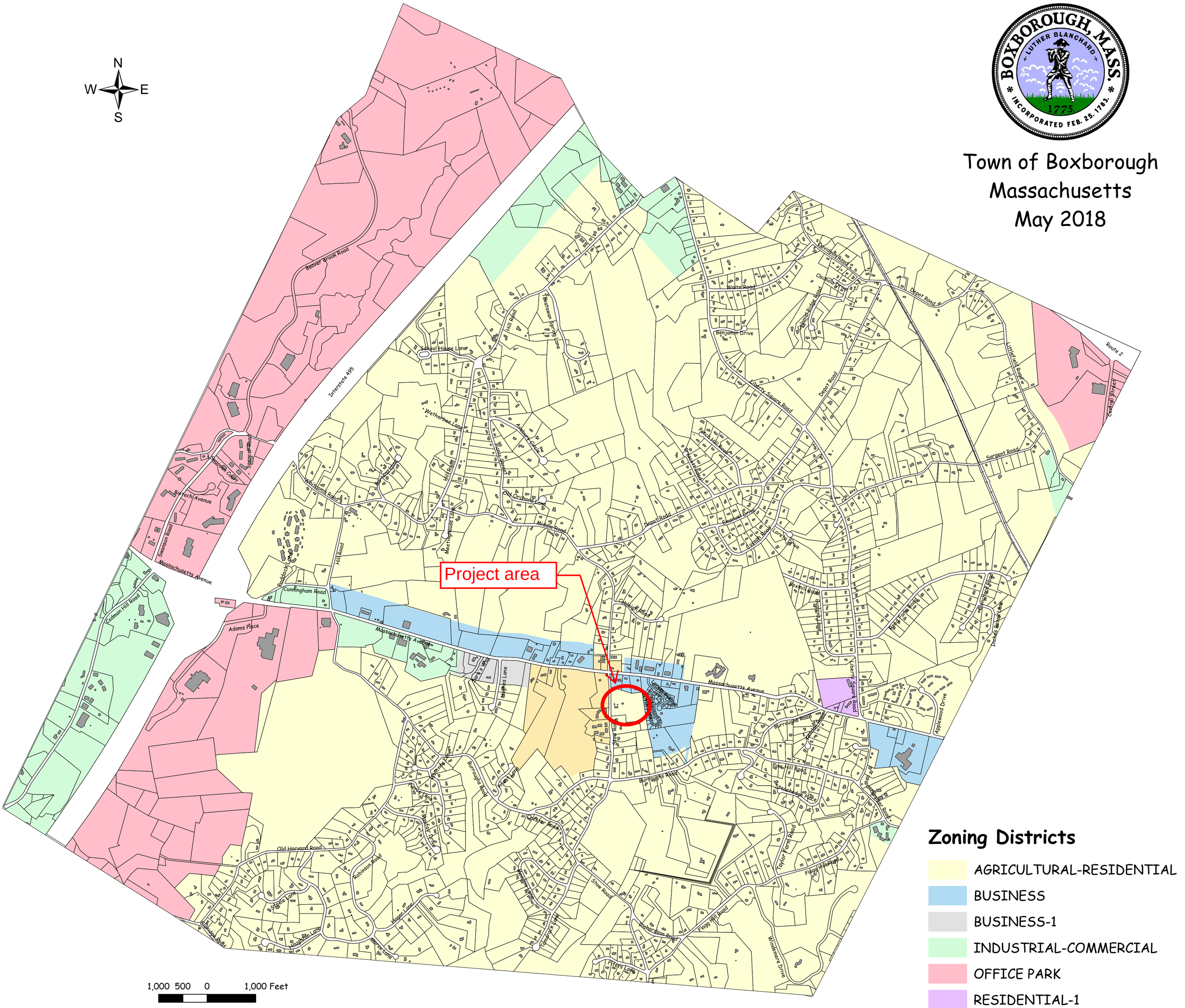
MASSACHUSETTS ENVIRONMENTAL POLICY ACT (MEPA)

It is not anticipated that the future development of a public safety facility will trigger MEPA thresholds; however potential triggers that would require filing of an Environmental Notification Form and Environmental Impact Report will be monitored as the design progresses. If MEPA review is required, MEPA requires applications to be submitted one year prior to construction. MEPA submission will

include approved Schematic Design plans. MEPA review thresholds are detailed in 301 CMR 11.00, section 11.03, and include thresholds for land, state listed species, wetlands, waterways, tidelands, water, wastewater, transportation, energy, solid and hazardous waste, historical and archeological resources, areas of critical environmental concern, and regulations.

Appendix A: Zoning Map

Town of Boxborough
Massachusetts
May 2018



Zoning Districts

- AGRICULTURAL-RESIDENTIAL
- BUSINESS
- BUSINESS-1
- INDUSTRIAL-COMMERCIAL
- OFFICE PARK
- RESIDENTIAL-1
- TOWN CENTER

Appendix B: Property Card

14	098	000	1 of 2	RESIDENTIAL
MAP	LOT	BLOCK	CARD	*Boxborough*

	Total Card	/	Total Parcel
APPRAISED:	509,900	/	565,500
USE VALUE:	509,900	/	565,500
ASSESSED:	509,900	/	565,500

PROPERTY LOCATION

No	Alt No	Direction/Street/City
72		STOW ROAD, BOXBOROUGH

OWNERSHIP

Unit #:

Owner 1:	BOXBOROUGH TOWN OF
Owner 2:	
Owner 3:	
Street 1:	29 MIDDLE ROAD
Street 2:	
Twn/City:	BOXBOROUGH
St/Prov:	MA Cntry: Own Occ:
Postal:	01719 Type:

PREVIOUS OWNER

Owner 1:	LUDOVICO - BEVERLY G, TR
Owner 2:	LYONS FAMILY TRUST -
Street 1:	12 INDEPENDENCE RD
Twn/City:	ACTON
St/Prov:	MA Cntry:
Postal:	01720

NARRATIVE DESCRIPTION

This parcel contains 11.05 ACRES of land mainly classified as MUN/IMP/SELE with a CONVENT`NL Building built about 1930, having primarily WOOD SHING Exterior and 1344 Square Feet, with 1 Unit, 1 Bath, 0 3/4 Bath, 0 HalfBath, 5 Rooms, and 3 Bdrms.

OTHER ASSESSMENTS

Code	Descrip/No	Amount	Com. Int

PROPERTY FACTORS

Item	Code	Description	%	Item	Code	Description
Z	AR	AR	100	water	9	ART WL
o				Sewer	A	SEPTIC
n				Electri		
Census:				Exmpt		
Flood Haz:						
D				Topo		
s				Street	PT	PAVED TW
t				Gas:	2	LIGHT

IN PROCESS APPRAISAL SUMMARY

Use Code	Land Size	Building Value	Yard Items	Land Value	Total Value
931	11.050	163,000	4,600	342,300	509,900
Total Card	11.050	163,000	4,600	342,300	509,900
Total Parcel	11.050	218,600	4,600	342,300	565,500

Source: Market Adj Cost | Total Value per SQ unit /Card: 379.39 | /Parcel: 253.93

Legal Description

town purchased with intention of possible future use for affordable housing project

Entered Lot Size	
Total Land:	11.05
Land Unit Type:	AC

User Acct

GIS Ref

GIS Ref

Insp Date

05/11/06

Patriot Properties Inc.

PREVIOUS ASSESSMENT

Parcel ID: 14-098-000

!1136!

Tax Yr	Use	Cat	Bldg Value	Yrd Items	Land Size	Land Value	Total Value	Asses'd Value	Notes	Date
2019	931	FV	218,600	4600	11.05	342,300	565,500		YER	1/4/2019
2018	931	FV	213,600	4600	11.05	330,300	548,500		Year End Roll	1/5/2018
2017	931	FV	216,200	4600	11.05	330,300	551,100		Year End Roll	12/6/2016
2016	931	FV	215,600	4600	11.05	330,300	550,500		Year end	1/6/2016
2015	931	FV	205,600	4100	11.05	299,800	509,500	509,500	Year End Roll	12/12/2014
2014	931	FV	184,200	4100	11.05	291,100	479,400	479,400	Year End Roll	1/22/2014
2013	931	FV	184,200	4100	11.05	297,100	485,400	485,400		10/22/2012
2012	931	FV	147,600	4000	11.05	327,700	479,300	479,300	Year End	11/30/2011

PRINT

Date	Time
08/06/19	10:53:54

LAST REV

Date	Time
04/20/18	12:34:12
apro	
1136	

USER DEFINED

Prior Id # 1:	06-4-166
Prior Id # 2:	1
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
Prior Id # 1:	
Prior Id # 2:	
Prior Id # 3:	
ASR Map:	
Fact Dist:	
Reval Dist:	
Year:	
LandReason:	
BldReason:	
CivilDistrict:	
Ratio:	

SALES INFORMATION

TAX DISTRICT

PAT ACCT.

Grantor	Legal Ref	Type	Date	Sale Code	Sale Price	V	Tst	Verif	Notes
LUDOVICO,BEVERL	56124-151	Q	12/17/2010	MULTI PARCEL	850,000	No	No		70 STOW, 72 STOW AND 10-4-207-1 (BURROUGHS RD
LYONS,FRANCIS G	48744-98		12/28/2006	FAMILY	1	No	No		
LYONS	22794/187		1/4/1993	CONVENIENCE	1	Yes	No		
	7805/70		9/27/1951	OTHER		No	No		

BUILDING PERMITS

Date	Number	Descrip	Amount	C/O	Last Visit	Fed Code	F. Descrip	Comment
7/5/1988	8834	MISC	1,500		4/20/1989			

ACTIVITY INFORMATION

Date	Result	By	Name
5/11/2006	FIELD REVIEW	999	COLLEEN W
7/12/2005	MEAS&INSPECT	999	COLLEEN W
11/29/2000	EXT INSP	REB	R BALL

Sign: VERIFICATION OF VISIT NOT DATA __/__/__

LAND SECTION (First 7 lines only)

Use Code	Description	LUC Fact	No of Units	Depth / PriceUnits	Unit Type	Land Type	LT Factor	Base Value	Unit Price	Adj	Neigh	Neigh Influ	Neigh Mod	Infl 1	%	Infl 2	%	Infl 3	%	Appraised Value	Alt Class	%	Spec Land	J Code	Fact	Use Value	Notes
931	MUN/IMP/SEL		60000		SQUARE FE	SITE		0	4.27	1.00	R2									256,200						256,200	
931	MUN/IMP/SEL		9.6726		ACRES	EXCESS		0	8,900.	1.00	R2									86,086						86,100	

Total AC/HA:	11.05001	Total SF/SM:	481338	Parcel LUC:	931	MUN/IMP/SELE	Prime NB Desc	R2	Total:	342,286	Spl Credit		Total:	342,300

EXTERIOR INFORMATION

Type:	22 - CONVENT`NL		
Sty Ht:	1H - 1H		
(Liv) Units:	1	Total:	2
Foundation:	3 - MASONRY		
Frame:	1 - WOOD		
Prime Wall:	1 - WOOD SHING		
Sec Wall:			%
Roof Struct:	1 - GABLE		
Roof Cover:	1 - ASPHALT SH		
Color:			
View / Desir:			

GENERAL INFORMATION

Grade:	C - AVERAGE		
Year Blt:	1930	Eff Yr Blt:	
Alt LUC:		Alt %:	
Jurisdict:		Fact:	.
Const Mod:			
Lump Sum Adj:			

INTERIOR INFORMATION

Avg Ht/FL:	STD		
Prim Int Wal	1 - DRYWALL		
Sec Int Wall:			%
Partition:	T - TYPICAL		
Prim Floors:	3 - HARDWOOD		
Sec Floors:	4 - CARPET	40	%
Bsmnt Flr:	12 - CONCRETE		
Subfloor:			
Bsmnt Gar:			
Electric:	3 - TYPICAL		
Insulation:	2 - TYPICAL		
Int vs Ext:	S		
Heat Fuel:	2 - GAS		
Heat Type:	3 - FORCED H/W		
# Heat Sys:	1		
% Heated:	100	% AC:	0
Solar HW:	NO	Central Vac:	NO
% Com Wal		% Sprinkled	

BATH FEATURES

Full Bath	1	Rating:	FAIR
A Bath:		Rating:	
3/4 Bath:		Rating:	
A 3QBth		Rating:	
1/2 Bath:		Rating:	
A HBth:		Rating:	
OthrFix:		Rating:	

OTHER FEATURES

Kits:	1	Rating:	GOOD
A Kits:		Rating:	
Frpl:	1	Rating:	AVERAGE
WSFlue:		Rating:	

CONDO INFORMATION

Location:	
Total Units:	
Floor:	
% Own:	
Name:	

DEPRECIATION

Phys Cond:	AV - Average	38.	%
Functional:			%
Economic:			%
Special:			%
Override:			%
	Total:	38.2	%

CALC SUMMARY

Basic $ / SQ:	86.00
Size Adj.:	1.34404755
Const Adj.:	1.00187993
Adj $ / SQ:	115.805
Other Features:	28525
Grade Factor:	1.12
NBHD Inf:	1.00000000
NBHD Mod:	
LUC Factor:	1.00
Adj Total:	263757
Depreciation:	100755
Depreciated Total:	163002

COMMENTS

CHAPTER 61B ZONING CHNGE FY`2000 - NOW ALL BUSINESS .

RESIDENTIAL GRID

1st Res Grid	Desc:	Line 1							# Units	1		
Level	FY	LR	DR	D	K	FR	RR	BR	FB	HB	L	O
Other												
Upper												
Lvl 2												
Lvl 1												
Lower												
Totals	RMs:	5	BRs:	3	Baths:	1	HB					

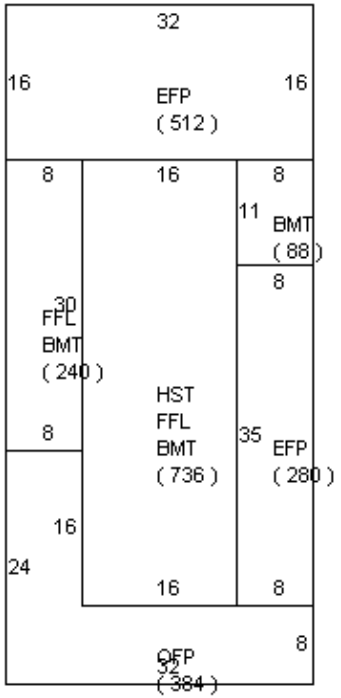
REMODELING

Exterior:	
Interior:	
Additions:	
Kitchen:	
Baths:	
Plumbing:	
Electric:	
Heating:	
General:	

RES BREAKDOWN

No Unit	RMS	BRS	FL
1	5	3	
Totals			
1	5	3	

SKETCH



COMPARABLE SALES

Rate	Parcel ID	Typ	Date	Sale Price

WtAv$/SQ:		AvRate:	
Ind.Val	1681700.000		
Juris. Factor:		Before Depr:	129.70
Special Features:	0	Val/Su Net:	45.48
Final Total:	163000	Val/Su SzAd	121.28

SUB AREA

Code	Description	Area - SQ	Rate - AV	Undepr Value
BMT	BASEMENT	1,064	23.160	24,643
FFL	1ST FLOOR	976	115.810	113,026
EFP	ENCL PORCH	792	25.870	20,491
OFP	OPEN PORCH	384	16.130	6,195
HST	HALF STORY	368	115.810	42,616

Net Sketched Area:	3,584			Total:	206,971
Size Ad	1344	Gross Area	3952	FinArea	1344

SUB AREA DETAIL

Sub Area	% Usbl	Descrip	% Type	Qu	# Ten

IMAGE

AssessPro Patriot Properties, Inc

MOBILE HOME

Make:		Model:		Serial #		Year:		Color:	

SPEC FEATURES/YARD ITEMS

PARCEL ID 14-098-000

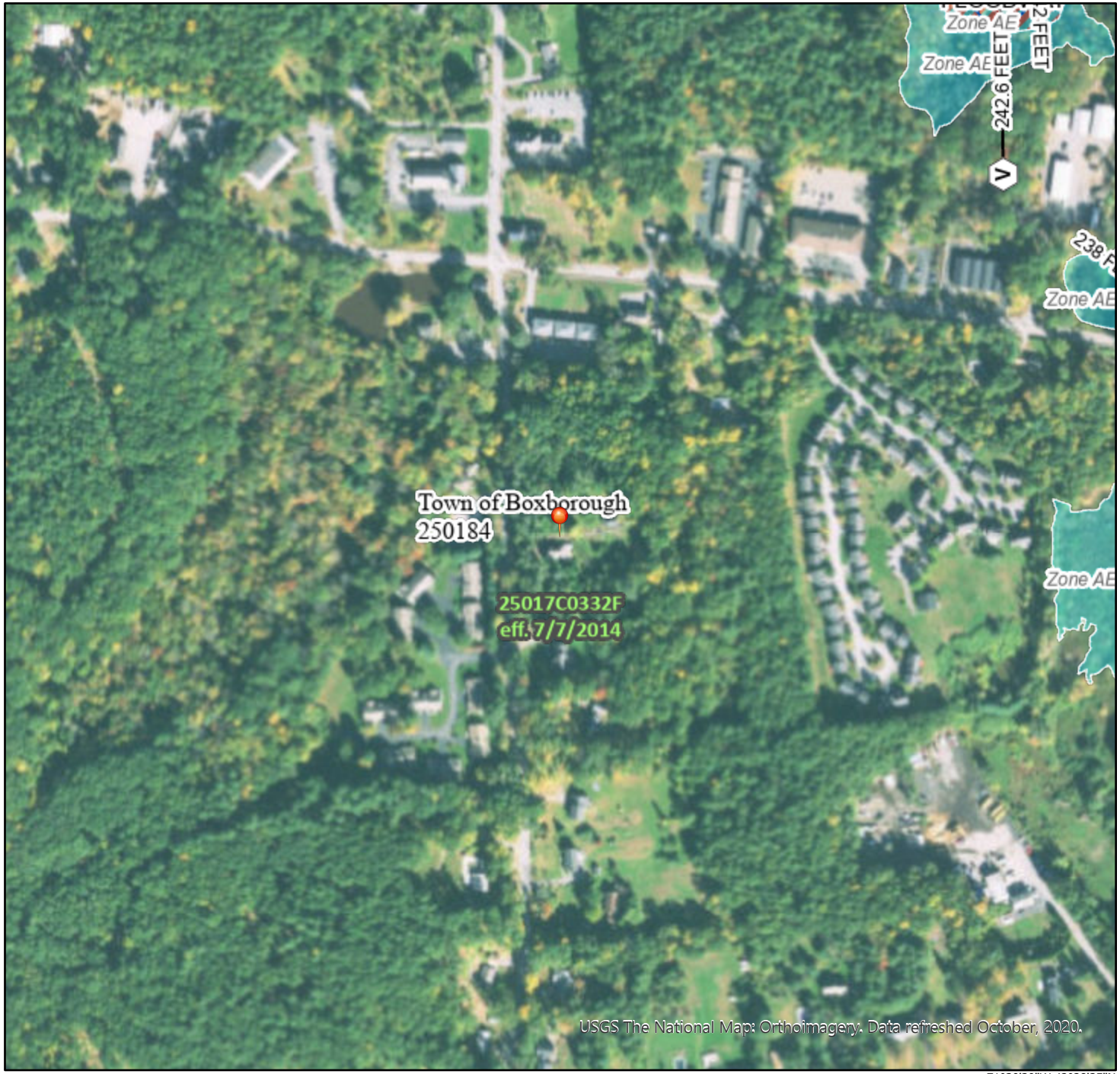
Code	Description	A	Y/S	Qty	Size/Dim	Qual	Con	Year	Unit Price	D/S	Dep	LUC	Fact	NB Fa	Appr Value	JCod	JFact	Juris. Value
2	SHED/FR		Y	1	168	A	FR	1930	15.28	T	55	931			1,200			1,200
4	GARAGE/L	A	Y	1	396	F	PR	1930	24.46	T	65	931			3,400			3,400

More:	N	Total Yard Items:	4,600	Total Special Featues:	Total: 4,600

Appendix C: FEMA Mapping

National Flood Hazard Layer FIRMette

71°31'7"W 42°29'2"N



71°30'30"W 42°28'35"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

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 Cross Sections with 1% Annual Chance
- 17.5 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

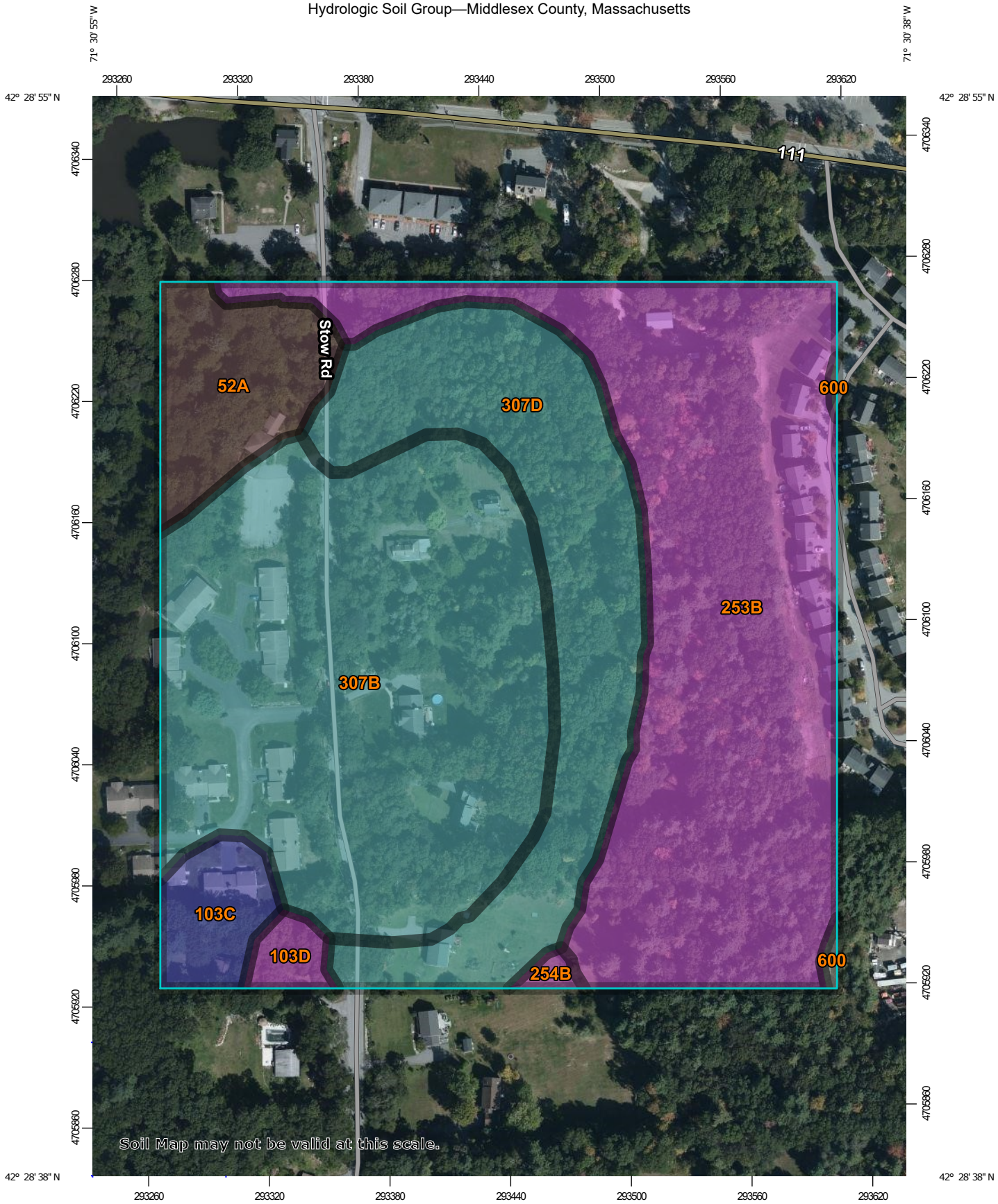
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 1/4/2021 at 3:46 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.

Appendix D: Soil Information



Map Scale: 1:2,610 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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 1:25,000.

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: Middlesex County, Massachusetts
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Aug 9, 2019—Sep 28, 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
52A	Freetown muck, 0 to 1 percent slopes	B/D	1.8	6.2%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	B	0.9	3.1%
103D	Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes	A	0.3	1.1%
253B	Hinckley loamy sand, 3 to 8 percent slopes	A	10.3	35.2%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.1	0.4%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	C	10.1	34.6%
307D	Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony	C	5.6	19.2%
600	Pits, gravel		0.1	0.2%
Totals for Area of Interest			**29.2**	**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

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-1**

SHEET 1 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-9"			10 yr 4/2	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	9-19"			10 yr 5/6	-				Sandy Loam	Massive	Friable	5% Gravel 5% Cobbles 0% Boulders
C	19-96"			10 yr 6/3	-				Loamy Sand	Massive	Friable	15% Gravel 5% Cobbles 5% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 317 Surface Elevation of Test Pit (approximate): 325

COMMENTS:

Roots at 0-15"
Boulders common at 6' and down
No weeping, redox, or ledge found

TEST HOLE NO. **TP-1**

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-2**

SHEET 2 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-9"			10 yr 4/2	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	9-21"			10 yr 5/8	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
C	21-45"			10 yr 6/4	-				Sandy Loam	Massive	Friable	10% Gravel 5% Cobbles 5% Boulders
C2	45-96"			10 yr 6/3	-				Sandy Loam	Massive	Friable	10% Gravel 5% Cobbles 5% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8'

Depth to Groundwater or Seepage: 45" Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 324.25 Surface Elevation of Test Pit (approximate): 328

COMMENTS:

Very saturated, dense material at opposite side of pit, minor weeping at 45"
boulder encountered at 7.5'
No redox or ledge found

TEST HOLE NO. **TP-2**

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-3**

SHEET 3 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-10"			10 yr 4/2	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	10-18"			10 yr 5/6	-				Sandy Loam	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders
C	18-114"			10 yr 6/6	-				Stony Loamy Sand	Massive	Friable	15% Gravel 15% Cobbles 10% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 9.5'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 321.5 Surface Elevation of Test Pit (approximate): 331

COMMENTS:

C layer less stony starting at 5.5'

No weeping, redox, or ledge found

TEST HOLE NO. **TP-3**

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-4**

SHEET 4 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-9"			10 yr 4/3	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	9-26"			10 yr 6/6	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 5% Boulders
C	26-120"			10 yr 7/4	C 10 yr 7/8 D 10 yr 7/2				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 5% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 10'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 325.25 Surface Elevation of Test Pit (approximate): 329

COMMENTS:

Large, occasional boulders starting at surface
Redox features at 45"

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-4**

SHEET 5 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-10"			10 yr 4/2	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	10-20"			10 yr 6/6	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders
C	20-120"			10 yr 6/4	-				Sand	Single Grain	Loose	10% Gravel 10% Cobbles 5% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 10'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 315 Surface Elevation of Test Pit (approximate): 325

COMMENTS:

Large, occasional boulders starting at surface
Redox features at 45"

TEST HOLE NO. **TP-4**

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-8**

SHEET 6 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-14"			10 yr 4/2	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	14-26"			10 yr 4/6	-				Sandy Loam	Massive	Friable	5% Gravel 5% Cobbles 0% Boulders
C	26-96"			10 yr 5/3	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 315 Surface Elevation of Test Pit (approximate): 325

COMMENTS:

Large boulder at 8' at the back of the pit

TEST HOLE NO. **TP-8**

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-9**

SHEET 7 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-12"			10 yr 3/1	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	12-26"			10 yr 6/4	-				Loamy Sand	Massive	Friable	5% Gravel 5% Cobbles 0% Boulders
C	26-78"			10 yr 6/2	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 6.5'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: 6.5' (several large boulders)

Estimated Seasonal High Water Table: 308.5 Surface Elevation of Test Pit (approximate): 315

COMMENTS:

Larger bould at 24", excavator could move, shifted pit slightly uphill to avoid

Several boulderst at 6.5', machine couldn't go deeper (did not appear to be ledge)

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-10**

SHEET 8 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-8"			10 yr 4/1	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	8-14"			10 yr 6/6	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
B/C	14-28"			10 yr 6/3	-				Sandy Loam	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders
C	28-96"			10 yr 6/2	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 302 Surface Elevation of Test Pit (approximate): 310

COMMENTS:

Larger bould at 24", excavator could move, shifted pit slightly uphill to avoid

Several boulderst at 6.5', machine couldn't go deeper (did not appear to be ledge)

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-11**

SHEET 9 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-10"			10 yr 4/2	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	10-25"			10 yr 6/4	-				Loamy Sand	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
C	25-102"			10 yr 6/2	-				Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 0% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8.5'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 299.5 Surface Elevation of Test Pit (approximate): 308

COMMENTS:

PARE CORPORATION

8 BLACKSTONE VALLEY PLACE, LINCOLN, RHODE ISLAND

ENGINEERS *** PLANNERS *** CONSULTANTS

TEST HOLE NO. **TP-12**

SHEET 10 OF 10

Property Owner: Town of Boxborough

Project: Boxborough Public Safety Feasibility Contractor: DPW

Property Location: 72 Stow Rd Boxborough MA Excavator: DPW

Date of Test Hole: January 19, 2021

Soil Evaluator: C. Webber State / Date of Exam: MA

Weather: Cloudy Shaded: Yes ☐ No ☐

SAMPLE DESCRIPTION

Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox Description			Texture	Structure	Consistence	Percent Gravel Cobbles Stone
		Dist	Topo	Matrix	Re-Dox Features	Ab.	S.	Con.				
Ap	0-11"			10 yr 4/1	-				Sandy Loam	Massive	Friable	5% Gravel 0% Cobbles 0% Boulders
Bw	11-21"			10 yr 6/6	-				Sandy Loam	Massive	Friable	5% Gravel 5% Cobbles 0% Boulders
B/C	21-35"			10 yr 6/3	-				Sandy Loam	Massive	Friable	5% Gravel 5% Cobbles 5% Boulders
C	35-96"			10 yr 6/2					Loamy Sand	Massive	Friable	10% Gravel 5% Cobbles 5% Boulders

Soil Class: Lodgment Till 307B/307D Total Depth of Test Hole: 8'

Depth to Groundwater or Seepage: N/A Depth to Impervious or Limiting Layer: N/A

Estimated Seasonal High Water Table: 308 Surface Elevation of Test Pit (approximate): 316

COMMENTS:

Large boulder at 23"

For all test pits - no ledge was located at bottom of pits

TEST HOLE NO. **TP-12**

Appendix E: Constraints Mapping

SOIL EVALUATION SUMMARY

SOIL EVALUATOR: ERIC RUDENAUER, GPR INC.
SOIL EVALUATOR APPROVED ON: OCTOBER 30, 2007
EVALUATION PERFORMED: OCTOBER 9, 2008

Deep Observation Hole Log

Hole # 1008-1 NB 2/70 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-9	A	SL	10YE 3/4		VFR, ABK
9-26	B	SL	10YE 5/6		Bloxs, ABK, vfr
26-112	C	LS	5Y 5/4	@ 33" 5Y6/3 10YR6/4	Massive, firm in place, some cobbles few stones

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Abulation Till Depth to Bedrock: >112"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 33"

Deep Observation Hole Log

Hole # 1008-2 NB 2/71 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-6	A	SL	10YE 3/3		ABK, vfr
6-10	B	SL	2.5Y 6/6		ABK, vfr
10-36	C1	coarse sand	5Y 5/4	@ 30"	very loose, single grain, no stones
36-65	C2	med sand	10YE 4/6		mx, ff, many cobbles/stones
65-124	C3	SiL	5Y 5/2	10YR6/5	mx, vfrm, ff in hand

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Outwash/ Abulation Till Depth to Bedrock: >124"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: 70"
Estimated Seasonal High Groundwater in the Hole 30"
Adtional Notes weppping at northwest corner

Deep Observation Hole Log

Hole # 1008-3 NB 2/71 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-10	A	SL	10YE 3/2		ABK, vfr
10-20	B	SL	10YE 4/6		ABK, vfr
20-48	C1	mec sand	10YE 4/6	@ 28"	mx, ff, many cobbles/stones
48-77	C2	coarse sand	2.5Y 5/4	5Y 6/2	very loose, single grain, no stones
77-123	C3	SiL	5Y 5/2	10YR6/4	mx, vfrm, ff in hand

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Outwash/ Abulation Till Depth to Bedrock: >120"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 28"

Deep Observation Hole Log

Hole # 1008-4 NB 2/72 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-8	A	SL	10YE 3/2		ABK, vfr
8-20	B	LS	10YE 4/6		ABK, vfr
20-72	C1	mec sand	10YE 4/6	@ 45"	mx, ff, many cobbles
72-122	C2	coarse sand	2.5Y 5/4	7.5YR 4/6 2.5Y 6/6	loose, single grain, some cobbles

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Outwash Depth to Bedrock: >122"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 45"
Adtional Notes Sides of C1 & C2 were sloughing into hole

Deep Observation Hole Log

Hole # 1008-5 NB 2/72 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-6	A	SL	10YE 3/3		ABK, vfr
6-22	B	LS	10YE 4/6		ABK, vfr
22-70	C1	mec sand	10YE 4/6	@ 46"	mx, ff, many cobbles
70-116	C2	coarse sand	2.5Y 5/4	7.5YR 4/6 2.5Y 6/6	loose, single grain, some cobbles

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Outwash Depth to Bedrock: >118"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 46"
Adtional Notes C1 has pockets of clean med sand with no stones or cobbles
Sides of C1 & C2 were sloughing into hole

Deep Observation Hole Log

Hole # 1008-6 NB 2/72 Surface El.

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (MUNSELL)	Soil Mottling	Other (Stucture, Stones, Boulders, Consistency, % Gravel)
0-16	A	SL	10YE 3/3		ABK, vfr
16-31	B	FSL	7.5YR 4/4		ABK, vfr
31-70	C1	mel LS	10YE 4/4	@ 46"	mx, firm in place, many cobbles/stones
70-124	C2	coarse sand	2.5Y 5/6	7.5YR 4/6	loose, single grain, some cobbles

*MINIMUM OF 2 HOLES REQUIRED AT EVERY PROPOSED DISPOSAL AREA

Parent Material (geologic) Glacial Outwash Depth to Bedrock: >124"
Depth to Groundwater: Standing Water in the Hole None Weeping from Pit Face: None
Estimated Seasonal High Groundwater in the Hole 46"
Adtional Notes C2 has pockets of fine sandwith so stone or cobbles

PERCOLATION TEST DATA

PERFORMED BY: ERIC RUDENAUER, GPR INC.
TESTING PERFORMED: OCTOBER 9, 2008

1008-A 36 MIN / INCH @ 70"
1008-B < 2 MIN / INCH @ 52"

SOIL EVALUATION SUMMARY

SOIL EVALUATOR: ROBERT ELLOT, R. WILSON ASSOCIATES
WITNESSED BY: JAMIE TERRY, BOXBOROUGH BOH
EVALUATION PERFORMED: FEBRUARY 7, 2006

Hole #206-A

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	Bw	LS	7.5YR 4/6	
18-72	C1	Med. Sand	7.5YR 5/6	
72-108	C2	Coarse Sand	10YR 4/4	>20% @ 72"
108-122	C3	LS	5Y 4/3	>10% @ 108"

Weeping: 92" ESHGW: 72"
Standing Water: 116" Refusal: None

Hole #206-B

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-8	A	SL	10YR 3/3	
8-20	Bw	LS	7.5YR 4/6	
20-120	C	Med. Sand	10YR 5/8	

Weeping: None ESHGW: 120"
Standing Water: None Refusal: None

Hole #206-C

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-8	A	SL	10YR 3/3	
8-20	B	LS	7.5YR 4/6	
20-96	C1	Med. Sand	7.5YR 5/6	
96-132	C2	Coarse Sand	7.5YR 6/2	>20% @ 96"

Weeping: 120" ESHGW: 96"
Standing Water: 120" Refusal: None

Hole #206-D

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	B	LS	7.5YR 4/6	
18-80	C1	Med. Sand	7.5YR 5/6	
80-120	C2	Coarse Sand	7.5YR 6/2	>20% @ 80"
120-144	C3	SiL	5YR 5/2	

Weeping: 84" ESHGW: 80"
Standing Water: 140" Refusal: None

Hole #206-E

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	B	LS	7.5YR 4/6	
18-88	C1	Med. Sand	7.5YR 5/6	
88-144	C2	Coarse Sand	10YR 4/4	@ 88"

Weeping: 132" ESHGW: 88"
Standing Water: 132" Refusal: None

Hole #206-F

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	B	LS	7.5YR 4/6	
18-132	C1	Med. Sand	7.5YR 5/6	
132-138	C2	Coarse Sand	10YR 4/4	@ 132"

Weeping: None ESHGW: 132"
Standing Water: None Refusal: None

Hole #206-G

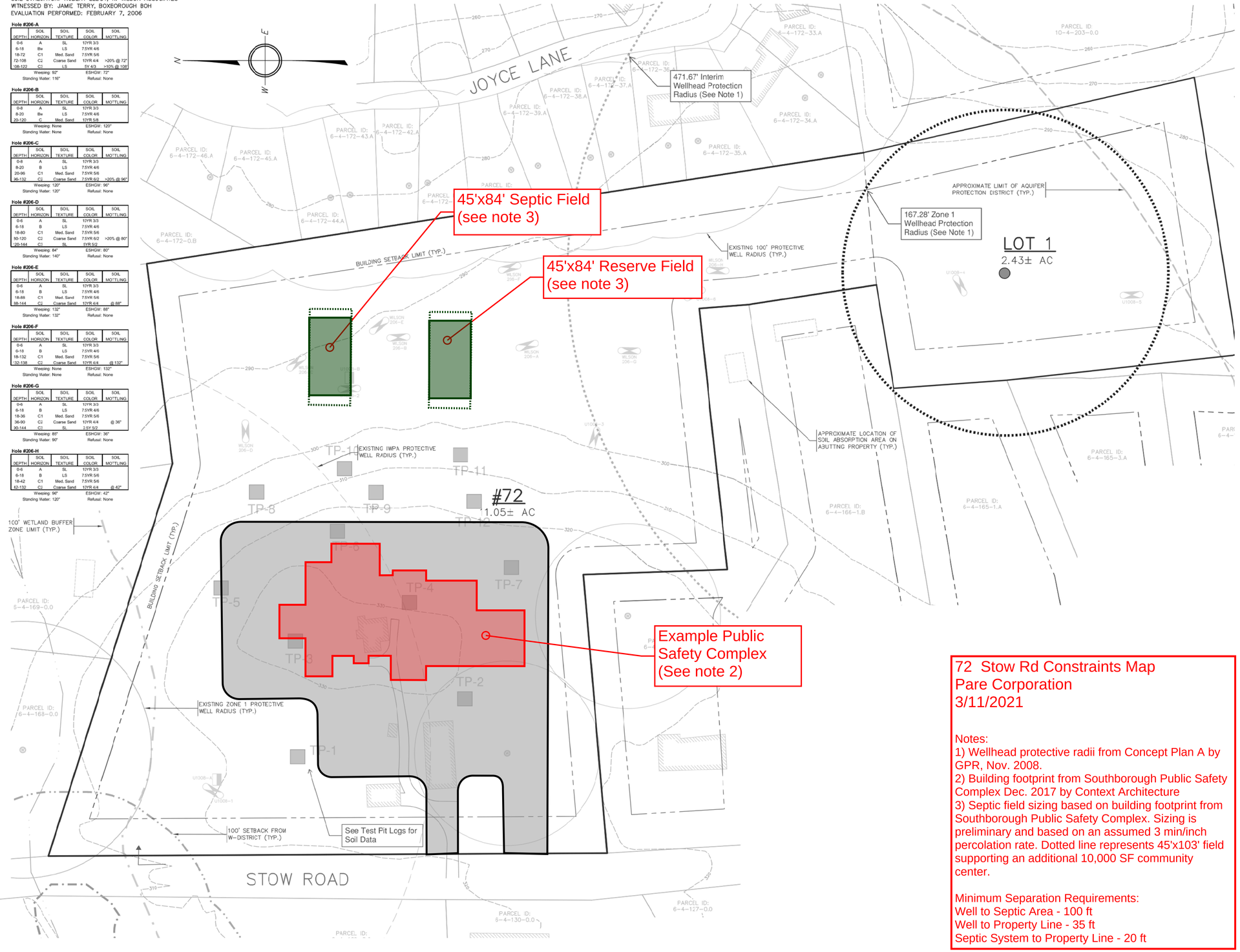
DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	B	LS	7.5YR 4/6	
18-36	C1	Med. Sand	7.5YR 5/6	
36-90	C2	Coarse Sand	10YR 4/4	@ 36"
90-144	C3	SL	2.5Y 5/2	

Weeping: 85" ESHGW: 36"
Standing Water: 90" Refusal: None

Hole #206-H

DEPTH	SOIL HORIZON	SOIL TEXTURE	SOIL COLOR	SOIL MOTTLING
0-6	A	SL	10YR 3/3	
6-18	B	LS	7.5YR 5/6	
18-42	C1	Med. Sand	7.5YR 5/6	
42-132	C2	Coarse Sand	10YR 4/4	@ 42"

Weeping: 96" ESHGW: 42"
Standing Water: 120" Refusal: None



72 Stow Rd Constraints Map
Pare Corporation
3/11/2021

Notes:
1) Wellhead protective radii from Concept Plan A by GPR, Nov. 2008.
2) Building footprint from Southborough Public Safety Complex Dec. 2017 by Context Architecture
3) Septic field sizing based on building footprint from Southborough Public Safety Complex. Sizing is preliminary and based on an assumed 3 min/inch percolation rate. Dotted line represents 45'x103' field supporting an additional 10,000 SF community center.

Minimum Separation Requirements:
Well to Septic Area - 100 ft
Well to Property Line - 35 ft
Septic System to Property Line - 20 ft

Scale: 1"=50'
0 25' 50' 100'

PARE
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

SCALE ADJUSTMENT GUIDE
0" 1"
3AR IS ONE INCH ON ORIGINAL DRAWING

BOXBOROUGH PUBLIC SAFETY
72 STOW ROAD, BOXBOROUGH MA 01719

REVISIONS:

PROJECT NO.:	
DATE:	
SCALE:	1"=50'
DESIGNED BY:	CW
CHECKED BY:	JJ
DRAWN BY:	CW
APPROVED BY:	JJ
DRAWING TITLE:	CONSTRAINTS PLAN
DRAWING NO.:	C1.0
SHEET NO.	1 OF 1