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October 11, 2023

Via Email

Susan Chapnick, Chair
Arlington Conservation Commission
Robbins Memorial Town Hall
730 Massachusetts Avenue
Arlington, MA 02476

RE: Thorndike Place, Arlington, MA
NOI Public Hearing

Dear Chair Chapnick and Members of the Commission,

On behalf of the Applicant, Arlington Land Realty, LLC ("ALR"), I am enclosing information and materials responsive to those inquiries/matters raised during the Conservation Commission's initial public hearing held on September 21, 2023. Items (1)-(5) were items requested through the Commission's agent, David Morgan, at the public hearing; Item (6) responds to an additional request identified in Mr. Morgan's email to Dom Rinaldi, BSC Group, dated October 5, 2023; and Item (7) is responsive to a verbal request by Commissioner Tirone during the September 21, 2023 public hearing.

(1) Wetlands Delineation Forms – Attached at Tab 1 are the set of DEP Wetland Delineation Forms (5) prepared by the BSC Group. These are the same set of delineation forms submitted to the Zoning Board of Appeals ("ZBA") together with the BSC Group's correspondence to the ZBA dated October 22, 2020 and memorandum dated October 19, 2020, through which BSC detailed its field delineation. Contemporaneously, the Commission and its former agent, Emily Sullivan, were provided complete copies of BSC Group's submittal. For your convenience, another copy of that submittal is provided at Tab 1.

As additional background, the ZBA's peer reviewers at BETA Group reviewed and confirmed that the BVW line was field delineated in accordance with approved definition and methods as set forth in its letter to the ZBA on November 20, 2020. The BETA peer review states in relevant part "[d]uring the site visit BETA confirmed the wetland boundaries were field delineated in accordance with the definition and methods approved in the MA DEP Delineating Bordering Vegetated Wetlands Handbook (March 1995)." Likewise, within the December 8, 2020 memorandum prepared by the Commission and submitted to the ZBA titled "Comments Summarized from the Arlington Conservation Commission as Given by Susan Chapnick," the Commission similarly confirmed the BVW delineation ("ACC understands that BETA Group has performed a review of BSC's wetland boundary delineations and has agreed with the updated delineation.").

(2) Calculations of the Compensatory Flood Storage – the calculations are contained within Section 2.12 of BSC Group's Stormwater Report, revised September 2023, submitted as Attachment E of the previously filed Notice of Intent application

materials. For the Commission's convenience, Section 2.12 of the Stormwater Report is provided at Tab 2.

(3) Consideration of including the northwest corner of the site within the conservation restriction area – As indicated within the initial session of the public hearing, the Applicant will give consideration as to permanent protections with respect to the northwest corner of its property once the Applicant has a more complete opportunity to review voluntary measures that it may take without impacting the size of the development parcel or setbacks as relevant to its existing comprehensive permit. During the construction phase, as shown on Sheet C-101 of the submitted plan set, a portion of this area may be used during construction for temporary stockpile with a perimeter fence.

(4) Number of trees to be removed – Please refer to the NOI Application, Attachment A (Project Narrative), at Table 3.2. Table 3.2 sets out the number and type of trees to be removed as well as the replacement number of trees. For the Commission's convenience, another copy of Table 3.2 is provided at Tab 3 to this correspondence.

(5) Construction Schedule – In part, the specifics of a construction schedule protocol are typically worked out with the general contractor. At this time, the Project has not yet determined whom it will employ to serve that role. The Commission members may not be aware, however, that within the conditions of the Comprehensive Permit (a copy of which has been submitted previously as Attachment F to the NOI Application), the Zoning Board has already imposed conditions to ensure that the Town staff, the Developer's contractors and the community are informed of the sequencing of construction activities in advance of the issuance of building permit. For the Commission's reference, Condition D.2 details the contents of a comprehensive Construction Management Plan ("CMP") to include, *inter alia*, an outline of the primary construction task, the project schedule, logistics (e.g., stockpiles, traffic coordination), site management, public safety measures and coordination with the Town. The CMP will be submitted in advance of the preconstruction meeting with Town staff, as required under Condition D.1.

(6) Soil Logs – Per David Morgan's email of October 5, 2023, the Engineering Division has requested that soil logs be added to the plan detail sheets. Such information (i.e., test pit depth, finished grade, bottom elevation, groundwater elevation, estimated seasonal high groundwater) previously were submitted to the Commission. Should the Commission typically request that plan sets subject to the Commission's review under the WPA include this information within a plan detail sheet, please advise and BSC will make such included detail sheet as may be consistent with the Commission's practice.

(7) Investigations of possible vernal pools/date of field investigation – BSC Group's November 2020 Wildlife Habitat Study and Vegetation Evaluation Report was included as Attachment G of the submitted NOI application materials. Please refer to Attachment G of the NOI Application package for the full report. The date of the field investigations, October 27, 2020, is stated in Section I of the Report ("*This report presents the findings and analysis of a field investigation of the wildlife habitat and vegetation of the Thorndike Place project site conducted on October 27, 2020 by BSC Senior Ecologist Matt Burne, PWS*.") In the event the Commission members are

not familiar with Mr. Burne's credentials, Matt holds a Master of Science degree from the University of Massachusetts Amherst in Fisheries & Wildlife Conservation and previously was employed by the Massachusetts Natural Heritage & Endangered Species Program as a Vernal Pool Ecologist and Rare Species Environmental Review Biologist for almost ten years. Matt is the co-author of *A Field Guide to the Animals of Vernal Pools*, a publication sold by the Massachusetts Association of Conservation Commissions to its members. A copy of Matt Burne's CV is attached as Tab 4 for completeness of his credentials in this field.

Section 2 of the Wildlife Habitat Study and Vegetation Evaluation report details the methodology, inclusive of the pre-field analysis review and the field review undertaken by Mr. Burne. Further, kindly refer to Section 4.1.2 of the Wildlife Habit Study and Vegetation Evaluation report which concludes in relevant part, "[t]here are no depressions that appear to provide likely vernal pool habitat on the site."

We look forward to continuing the public hearing process on the NOI at the October 19, 2023 public hearing.

Sincerely,

/s/ *Stephanie A. Kiefer*

Stephanie A. Kiefer

Encl.

cc: David Morgan, Conservation Agent

TAB 1

BSC GROUP
Transportation ▪ Energy ▪ Land Development

803 Summer Street
Boston, MA 02127

Tel: 617-896-4300

www.bscgroup.com

Sent Via Email

October 22, 2020

Christian Klein, Chair
Arlington Zoning Board of Appeals
51 Grove Street
Arlington, MA 02476

RE: Thorndike Place
Wetland Delineation

Chairman Klein:

In response to comments provided by the Arlington Conservation Commission and BETA Group, BSC Group wetland scientists have conducted a site visit on October 15, 2020 to re-evaluate the wetland delineation initially completed in January 2020. With the initial delineation completed in winter conditions, a few wetland flags were adjusted based on growing season conditions. The following information is included as attachments to this letter:

- Wetland Delineation Memorandum dated October 19, 2020
- MassDEP Bordering Vegetated Wetland Delineation Field Data Forms (5)
- Existing Environmental Resources Plan revised October 22, 2020

This information is also being transmitted electronically to the Conservation Commission and BETA Group. We also want to extend our offer to walk the site with BETA Group when the review the delineation. Please me call at 781-710-7280 or email me at jhession@bscgroup.com if you have any questions or require additional information.

Very truly yours,

BSC Group, Inc.

John Hession, P.E.
Director of Land Development

cc: zba@town.arlington.ma.us
Richard Vallarelli, ZBA
Emily Sullivan, Conservation
Susan Chapnick, Conservation Commission
Jenny Raitt, Planning and Community Development
Marta Nover and Todd Undzis, BETA
Stephanie Kiefer, Smolak & Vaughan
Gwen Noyes and Arthur Klipfel, Arlington Land Realty

BSC GROUP

MEMORANDUM

33 WALDO STREET, WORCESTER, MA 01608 - www.bscgroup.com

TEL 508-792-4500 - 800-288-8123

To:	John Hession, BSC Group, Inc.	**Date:**	October 19, 2020
From:	Gillian Davies and Susan McArthur, BSC Group, Inc.	**Proj. No.**	23407.00
Re:	Wetland Delineation, Thorndike Place, Arlington, MA		

INTRODUCTION

On January 15 and on October 15 2020, BSC Group, Inc. (BSC) conducted a field delineation of wetland resource areas regulated under the *Massachusetts Wetlands Protection Act* (*WPA*) and associated *regulations* (*310 CMR 10.00 et al*) and the Town of Arlington *Wetlands Protection Bylaw (Article 8)* (*Bylaw*) and associated *regulations* (*Sections 1 through 34*) dated June 4, 2015, at the Thorndike Place/Mugar Property located off of Dorothy and Parker Roads. This primarily forested property is located between Route 2, a single-family residential neighborhood, and a local park. Site topography is relatively flat. Trash piles and debris, as well as a homeless encampment occur on the property.

ENVIRONMENTAL RESOURCE AREA MAPPING

BSC reviewed existing mapping of environmental resources for the project site. The majority of the property is located within the FEMA 100-year floodplain and part of the site appears to be located within the floodway associated with the Little River (a Letter of Map Revision (LOMR) may be needed), as indicated on the attached Environmental Resources Map. NRCS soils maps (Web Soil Survey) indicate that Udorthents, wet substratum, Urban land, wet substratum, and Swansea muck occur on the site. According to the Massachusetts Natural Heritage and Endangered Species Program (NHESP) and the MassGIS data layer for the Massachusetts Natural Heritage Atlas, no areas of Estimated or Priority Habitat for Rare Wildlife or Certified or Potential Vernal Pools exist on the project site. BSC also reviewed the USGS topographic map.

WETLAND RESOURCE AREA FIELD DELINEATION

In addition to reviewing relevant resource area mapping for the project site, BSC conducted an initial wetland field delineation on January 15, 2020. This wetland delineation was conducted in accordance with the MA *WPA regulations*, the Massachusetts Department of Environmental Protection handbook on *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act* (March 1995), the *Bylaw regulations,* the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (January 2012), and the *Field Indicators for Identifying Hydric Soils in New England* (May, 2018). BSC evaluated onsite vegetation to determine areas where 50% or more of the vegetation qualify as wetland species according to the above-mentioned regulatory documents and according to wetland indicator status as described in the *State of Massachusetts 2016 Wetland Plant List* (http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2016/States/pdf/MA_2016v1.pdf). In accordance with the above-mentioned soils guidance documents, BSC examined soils to determine where hydric soils occur, by auguring or digging a soil pit to evaluate the top 20 inches of soil for soil texture, color, horizon thickness and depth, and presence/absence of redoximorphic features. BSC also observed the site for evidence of wetland hydrology. Due to winter conditions (lack of growing season hydrology, lack of full suite of vegetation) a decision was made to re-evaluate the wetlands at the site during the growing season. Following the same methodology, the wetland delineation was re-evaluated on October 15, 2020 and a few of the wetland flags were readjusted to accommodate growing season conditions. Wetland flags C-10, C-15 through C-17, C-17A, were moved upgradient to include a pocket of spotted touch-me-not (*Impatiens capensis*), silver maple (*Acer saccharinum*), and green ash (*Fraxinus pennsylvanica*). In addition, wetland flag D-10 was removed and the wetland line was revised to connect D-9 to D-11 based on the presence of cinnamon fern and hydric soils. Wetland data sheets were also prepared (attached).

BSC marked the boundaries of four Bordering Vegetated Wetland (BVW) areas (Series A, B, C and D) with sequentially numbered pink surveyor's tape. Additionally, BSC reviewed conditions at two potential Isolated Vegetated Wetlands (IVW) (H and I Series) that had been identified and flagged during a previous delineation on the site. Two

other IVWs (F and G Series) had also been identified during the previous wetland delineation. BSC did not observe a predominance of wetland vegetation in the previously identified IVW areas on January 15th, 2020. The data plots performed on October 15, 2020 confirm this finding (attached). One isolated area just west of the previously flagged isolated Wetland I on the north side of the property did demonstrate hydric soils (0 – 14" 10YR 2/2, then 14 – 20 10YR 4/3 with high chroma redox and loamy sand texture), but was vegetated with predominantly upland species (multiflora rose (*Rosa multiflora*), Japanese knotweed (*Fallopia japonica*), and garlic mustard (*Alliaria petiolate*).

Overall, BVW boundaries flagged on January 15, 2020 and readjusted on October 15, 2020 are similar to the boundaries flagged when wetlands were delineated previously in 2009. In some areas, the 2009 delineation extends upgradient of the BSC delineation, and in some areas the BSC delineation extends upgradient of the 2009 delineation. As the BSC delineation is the most recent, and wetland conditions can shift over time, BSC is of the opinion that this most recent delineation most accurately reflects conditions as they exist in the present .

BVW Series A and D are predominantly forested areas. BVW Series B is primarily forested with an area of herbaceous cover (predominantly common reed [*Phragmites australis*]), and BVW Series C is largely herbaceous common reed, with some forested area. Throughout the site, wetlands include the following tree species: red maple (*Acer rubrum*), box elder (*Acer negundo*), American elm (*Ulmus Americana*), white pine (*Pinus strobus*), ash (*Fraxinus sp*.), American Sycamore (*Plantanus occidentalis*), and black willow (*Salix nigra*). Shrub and sapling species include silky dogwood (*Swida amomum*), and box elder saplings. Herbaceous species include common reed, cinnamon fern (*Osmundastrum cinnamomeum*), sensitive fern (*Onoclea sensibilis*), and goldenrod (*Solidago sp*.), and vines include poison ivy (*Toxicodendron radicans*), bittersweet (*Celastrus sp*.), greenbriar (*Smilax sp*.) and wild grape (*Vitis sp*.). In upland locations, tree species include red oak (*Quercus rubra*), white pine, cottonwood (*Populus deltoides*), box elder, and red maple. Shrubs and saplings include white pine, barberry (*Berberis sp*.), brambles (*Rubus sp*.), and multiflora rose. Herbaceous species include upland grasses and goldenrod (*Solidago sp*.), and vines include bittersweet, wild grape, and greenbriar, and poison ivy.

REGULATORY REVIEW

The project site contains state and locally regulated BVW and associated 100-foot buffer zones. BSC notes that the local *Bylaw regulations* identify the 100-foot buffer zone as a regulated resource area, the Adjacent Upland Resource Area (AURA). Further, the *Bylaw regulations* establish a 25-foot "No-Disturbance Zone" where no activities or work is permitted. The *Bylaw regulations* also establish a 75-foot "Restricted Zone" where impacts should be avoided and reasonable alternatives pursued.

The Bylaw regulations define Land Subject to Flooding (LSTF), as noted in *Bylaw Section 4.B. Definition number 35* and *Section 23*. Section 23 specifies that, "Compensatory flood storage shall be at a 2:1 ratio, minimum, for each unit volume of flood storage lost at each elevation.

SUMMARY

BSC has conducted a wetland delineation at the Thorndike Place/Mugar Property that is similar in extent to the previous delineation conducted in 2009. BSC notes that the site is largely within floodplain or floodway.

cc: Marleigh Sullivan, BSC Group, Inc.
Ethan Sneesby, BSC Group, Inc.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: Thorndike Place Prepared by: BSC Group, Inc. (SMM & EPS) Project location: Isolated Area, behind houses DEP File #:

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ❑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: 1 (Wetland)		Transect Number: 1	Date of Delineation: 10/15/2020
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Ailanthus altissima / Tree of Heaven	63%	52%	Yes	NI
**Acer rubrum*/ Red maple	38%	31%	Yes	FACW+
**Acer negundo*/ Box elder	10.5%	9%	No	FAC+
**Ulmus rubra*/ Slippery elm	10.5%	9%	No	FAC
Total Percent Cover: 122%				
Shrubs/ Saplings				
**Acer negundo*/ Box elder	10.5%	100%	Yes	FAC+
Total Percent Cover: 10.5%				
Herbaceous				
Fallopia japonica/ Japanese knotweed	63%	86%	Yes	FACU-
Alliaria petiolata/ Garlic mustard	10.5%	14%	No	FACU-
Total Percent Cover: 73.5%				
Vines				
Celastrus orbiculatus/ Asian bittersweet	10.5%	50.00%	Yes	FACU
Vitis labrusca/ Fox grape	10.5%	50.00%	Yes	FACU
Total Percent Cover: 21%				

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 Number of dominant non-wetland indicator plants: 3

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes (no)

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? (yes) no
title/date: WebSoil Survey/ 2020
map number: 655
soil type mapped: Udorthents, wet substratum
hydric soil inclusions: Yes

Are field observations consistent with soil survey? (yes) no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color	Texture
Ap	0-14”	10YR 2/1 (60%)	-	Sandy loam
		10YR 2/2 (40%)	-	
B	14”+	2.5YR 8/4 (90%)	-	Sandy loam
		10YR 7/8 (10%)	-	

Remarks: Area previously disturbed

3. Other:

Conclusion: Is soil hydric? (yes) no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drain lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
- (❑) Other: _Buttressing of *Ailanthus altissima*

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants		X
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X____	
Sample location is in a BVW		X

____ _____

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: Thorndike Place Prepared by: BSC Group, Inc. (SMM & EPS) Project location: Isolated Area, behind houses DEP File #:_____

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ❑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: 2 (Upland)		Transect Number: 1	Date of Delineation: 10/15/2020
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
**Acer negundo/* Box elder	85.5%	64%	Yes	FAC+
Ailanthus altissima/ Tree of Heaven	38%	28%	No	NI
Quercus alba/ Northern white oak	10.5%	8%	No	FACU-
Total Percent Cover: 134 %				
Shrubs/ Saplings				
**Acer negundo/* Box elder	63%	52%	Yes	FAC+
Rosa multiflora/ Multiflora rose	38%	31%	No	FACU
**Ulmus rubra/* Slippery elm	20.5%	17%	No	FAC
Total Percent Cover: 121.5%				
Herbaceous				
Alliaria petiolate/ Garlic mustard	85.5%	100%	Yes	FACU-
Total Percent Cover: 85.5%				
Vines				
Absent				
Total Percent Cover: 0%				

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 Number of dominant non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? (yes) no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? (yes) no
title/date: WebSoil Survey/ 2020
map number: 655
soil type mapped: Udorthents, wet substratum
hydric soil inclusions: Yes

Are field observations consistent with soil survey? (yes) no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color	Texture
O	1-0”			
A	0-3”	10YR 2/2	-	Sandy loam
B	3-9”	10YR 3/3	-	Sandy loam

Remarks: Area previously disturbed

3. Other:

Conclusion: Is soil hydric? yes (no)

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
- ❑ Other: _

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present		X
Other indicators of hydrology present	____	X
Sample location is in a BVW		X no

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: Thorndike Place Prepared by: BSC Group, Inc. (SMM & EPS) Project location: Arlington- Near flag D-18 DEP File #:

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ❑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: 1 (Wetland)		Transect Number: 2	Date of Delineation: 10/15/2020
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
**Acer negundo/* Boxelder	20.5%	32%	Yes	FAC+
**Acer saccharinum/* Silver maple	20.5%	32%	Yes	FACW
Populus tremulas/ Quaking aspen	20.5%	32%	No	FACU
Prunus serotina/ Black cherry	3%	5%	No	FACU
Total Percent Cover: 64.5%				
Shrubs/ Saplings				
**Rhamnus frangula/* Glossy buckthorn	20.5%	55%	Yes	FAC
**Acer saccharinum/* Silver maple	10.5%	28%	Yes	FACW
**Fraxinus pennsylvanica/* Green ash	3%	8%	No	FACW
Rubus strigosus/ Common red raspberry	3%	8%	No	FAC-
Total Percent Cover: 37%				
Herbaceous				
*Onoclea sensibilis/ Sensitive fern	85.5%	100%	Yes	FACW
Total Percent Cover: 89%				
Vines				
Absent				
Total Percent Cover: 0%				

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 Number of dominant non-wetland indicator plants: 0

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? (yes) no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? (yes) no
title/date: WebSoil Survey/ 2020
map number: 51A
soil type mapped: Swansea muck
hydric soil inclusions: Yes

Are field observations consistent with soil survey? (yes) no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color	Texture
Oe	0-0.5”			
A	0-1”	10YR2/1	-	Mucky modified SL
Ae	1-4”	10YR 4/2	5YR3/4 (5%)	Mucky modified sandy loam
Bg	4-14”	2.5YR 6/3	7.5YR 4/6 (12%)	sandy loam

Remarks:

3. Other:

Conclusion: Is soil hydric? (yes) no

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
- ❑ Other: _

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present		X____
Sample location is in a BVW	X	

Submit this form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: Thorndike Place Prepared by: BSC Group, Inc. (SMM & EPS) Project location: Arlington- Near flag D-18 DEP File #:

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ● Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: 2 (Upland)		Transect Number: 2	Date of Delineation: 10/15/2020
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
Prunus serotina/ Black cherry	63%	75%	Yes	FACU
Ailanthus altissima/ Tree of Heaven	20.5%	25%	No	NI
Total Percent Cover: 83.5%				
Shrubs/ Saplings				
Rhus hirta/ Staghorn sumac	20.5%	49%	Yes	NI
Prunus serotina/ Black cherry	10.5%	25%	Yes	FACU
Rubus strigosus/ Common red raspberry	10.5%	25%	No	FAC-
Total Percent Cover: 41.5%				
Herbaceous				
Solidago canadensis/ Canada goldenrod	38%	65%	Yes	FACU
Phytolacca americana/ American pokeweed	20.5%	35%	No	FACU+
Total Percent Cover: 58.8%				
Vines				
Absent				
Total Percent Cover: 0%				

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 Number of dominant non-wetland indicator plants: 4

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? yes (no)

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? (yes) no
title/date: WebSoil Survey/ 2020
map number: 51A
soil type mapped: Swansea muck
hydric soil inclusions: Yes

Are field observations consistent with soil survey? (yes) no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color	Texture
A	0-1”	10YR 2/2		
Bw_1	1-6”	10YR 3/3	-	Sandy loam
Bw_2	6-12+”	10YR 4/4	-	Sandy loam

Remarks:

3. Other:

Conclusion: Is soil hydric? yes (no)

Other Indicators of Hydrology: (check all that apply & describe)

- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: _____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
- ❑ Other: _

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants		X
Wetland hydrology present:		
Hydric soil present		X
Other indicators of hydrology present		X____
Sample location is in a BVW		X

form with the Request for Determination of Applicability or Notice of Intent.

MassDEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: Thorndike Place Prepared by: BSC Group, Inc. (SMM & EPS) Project location: Arlington- Near flag C-14 DEP File #:

Check all that apply:

- ❑ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ❑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ❑ Method other than dominance test used (attach additional information)

Section I.

Vegetation	Observation Plot Number: 1 (Wetland)		Transect Number: 3	Date of Delineation: 10/15/2020
A. Sample Layer & Plant Species (by common/scientific name)	B. Percent Cover (or basal Area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees				
**Populus deltoides/* Eastern cottonwood	20.5%	40%	Yes	FAC
Ailanthus altissima/ Tree of Heaven	20.5%	40%	Yes	NI
**Fraxinus pennsylvanica/* Green ash	10.5%	20%	Yes	FACW
Total Percent Cover: 51.5 %				
Shrubs/ Saplings				
Rhus hirta/ Staghorn sumac	20.5%	60%	Yes	NI
**Populus deltoides/* Eastern cottonwood	10.5%	31%	Yes	FAC
Rosa multiflora/ Multiflora rose	3%	9%	No	FACU
Total Percent Cover: 34%				
Herbaceous				
**Solidago patula/* Rough stem goldenrod	38%	53%	Yes	OBL
Phytolacca americana/ American pokeweed	20.5%	28%	Yes	FACU+
**Rubus hispidus/* Creeping dewberry	10.5%	15%	No	FACW
**Phragmites australis/* Common reed	3%	4%	No	FACW
Total Percent Cover: 72%				
Vines				
Absent				
Total Percent Cover: 0%				

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 Number of dominant non-wetland indicator plants: 1

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? (yes) no

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? (yes) no
title/date: WebSoil Survey/ 2020
map number: 655
soil type mapped: Udorthents, wet substratum
hydric soil inclusions: Yes

Are field observations consistent with soil survey? (yes) no
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color	Texture
A	0-1”	10YR 2/1	-	Sandy loam
Bc	1-14”+	10YR 4/2	Depletion: 7.5YR 4/6 (12%) 10YR 6/2 (10%)	Sandy loam

Remarks:

3. Other:

Conclusion: Is soil hydric? (yes) no

Other Indicators of Hydrology: (check all that apply & describe)

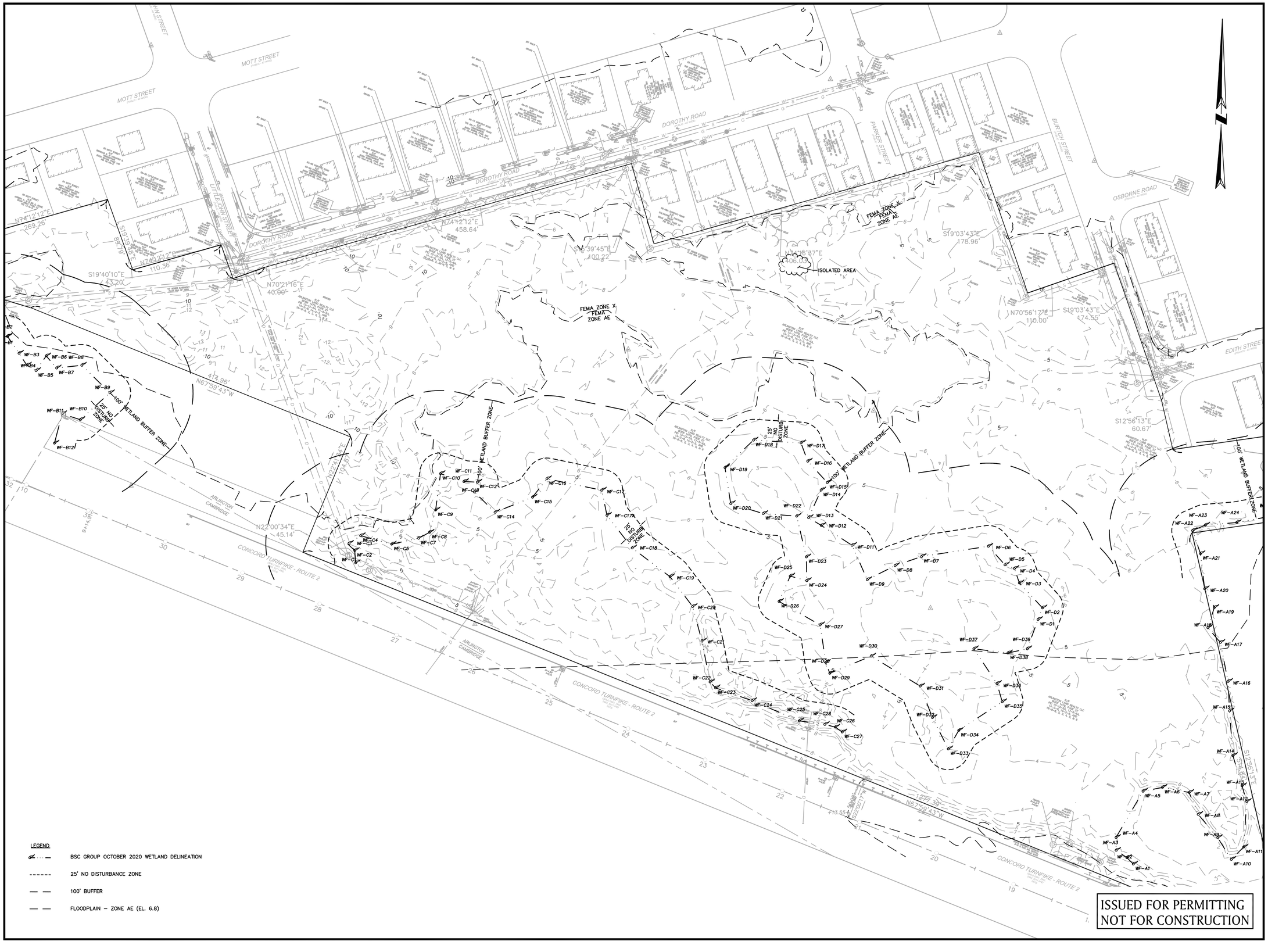
- ❑ Site Inundated: _____
- ❑ Depth to free water in observation hole: _____
- ❑ Depth to soil saturation in observation hole: _____
- ❑ Water marks: _____
- ❑ Drift lines: _____
- ❑ Sediment Deposits: _____
- ❑ Drainage patterns in BVW: __Present_____
- ❑ Oxidized rhizospheres: _____
- ❑ Water-stained leaves: _____
- ❑ Recorded Data (streams, lake, or tidal gauge; aerial photo; other):
- ❑ Other: _

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ # of non-wetland indicator plants	X	
Wetland hydrology present:		
Hydric soil present	X	
Other indicators of hydrology present	X	
Sample location is in a BVW	X	

____ _____

Submit this form with the Request for Determination of Applicability or Notice of Intent.



LEGEND

- BSC GROUP OCTOBER 2020 WETLAND DELINEATION
- 25' NO DISTURBANCE ZONE
- 100' BUFFER
- FLOODPLAIN – ZONE AE (EL. 6.8)

ISSUED FOR PERMITTING
NOT FOR CONSTRUCTION

DATE

PROFESSIONAL ENGINEER

THORNDIKE PLACE

DOROTHY ROAD
IN
ARLINGTON
MASSACHUSETTS
(MIDDLESEX COUNTY)

EXISTING ENVIRONMENTAL RESOURCES PLAN

MARCH 13, 2020

REVISIONS:

NO.	DATE	DESC.
1	10/22/20	WETLAND DELINEATION

PREPARED FOR:
ARLINGTON LAND REALTY, LLC
84 SHERMAN STREET, 2ND FLOOR
CAMBRIDGE, MA 02140

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 50'
0 25 50 100 FEET

FILE: 2340700\C\D\2340700–CONSTRAINTS

DWG.:

JOB. NO: 23407.00

SHEET C–100

TAB 2

2.12 Compensatory Flood Storage

A portion of the project site is located within the 1% Chance Annual Flood as defined by FEMA, which is regulated under the Wetlands Protection Act as Bordering Land Subject to Flooding (BLSF). In order to protect the values provided by BLSF and prevent downstream flooding impacts, the project is required to provide compensatory flood storage on a 1-foot incremental basis to match whatever is lost due to the project's development. In order to provide this compensatory flood storage, the project will minimize the area of BLSF impacted and regrade a portion of the project property southeast of the proposed building as shown on the Plans. This regraded area will provide compensatory flood storage at a 2 to 1 ratio for any flood storage lost. A breakdown of the flood storage impacts and compensatory storage provided is shown below:

Elevations	Existing Incremental Available Flood Storage (CU.FT.)	Incremental Available Flood Storage with No Compensatory Storage (CU.FT.)	Incremental Flood Storage Change w/No Compensatory Storage (CU.FT.)	Proposed Incremental Compensatory Storage (CU.FT.)	Ratio of Compensatory Storage to Storage Lost
5.0 - 6.0	**136.0**	**67.5**	**-68.5**	**146.0**	**2.1**
6.0 - 6.8	**9,327.6**	**5,003.2**	**-4,324.4**	**9,014.8**	**2.1**

As shown above, the project will exceed the 2 to 1 ratio of compensatory flood storage for all flood storage lost due to the project development. In addition, as shown on the Plans, the proposed compensatory storage is hydrologically connected to the flood plain impacted by the project. Therefore, the project as proposed meets the applicable requirements for BLSF in the Wetlands Protection Act.

TAB 3

Table 3-2: Tree removal and replacement details

Species	1.5”-6” Decid dbh 4’-6’ Evergreen	6”-10” Decid dbh 6’-10’ Evergreen	>10” Decid dbh >10’ Evergreen	Replacement Quantity Required
American Elm	2	1	3	19
Black Cherry	21	16	13	142
Yellow Birch	1	0	3	14
Box Elder	12	10	2	62
Chinese Crabtree	4	0	0	8
White Ash	2	3	0	13
Common Buckthorn	2	1	0	7
Chinese Sumac	2	0	3	16
Staghorn Sumac	1	0	0	2
Amur Honeysuckle	1	0	0	2
Black Locust	0	2	0	6
Paradise Apple	1	2	0	8
Honey Locust	0	1	0	3
Silver Maple	0	0	5	20
Red Elm	0	0	1	4
Red Maple	0	0	1	4
Norway Maple	12	3	5	53
Black Alder	1	0	0	2
Butternut Hickory	1	0	1	6
Common Hackberry	0	1	0	3
Field Elm	0	1	1	7
Green Ash	0	1	1	7
Sweet Cherry	1	0	0	2
Carolina Buckthorn	1	0	0	2
American Hornbeam	1	0	0	2
Black Ash	1	0	0	2
Mexican Plum	0	1	0	3
Sweet Birch	0	0	2	8
TOTAL	**67**	**43**	**41**	**427**

Due to the extensive local requirements for revegetation, the Project has made every effort to replant the required “in-kind” replacement per Section 25 of the Arlington bylaw. However, as the impacted jurisdictional resource areas are already heavily vegetated, planting almost 300 more trees in the same area will result in crowded conditions that will reduce the success of plantings. As such, the project is maximizing the replacement tree plantings (see Planting Plan included in **Attachment B**) and is willing to seek alternate methods to full compliance with Section 25 in coordination with the Conservation Commission.

All “in-kind” replacement plantings will be in accordance with the requirements of Section 25 and will be monitored on an annual basis for three years by a Professional Landscape Architect and Wetland Ecologist (as appropriate). This three-year period shall begin in the first planting year, if plantings occur in the Spring, or the year after planting, if the plantings occur in the Fall. A report on the status of all plantings will be prepared and submitted annually in June to the Conservation Commission and ZBA (or their designees) in accordance with Condition C.1.e. of the Comprehensive Permit. The report will include photo documentation, the health of new

TAB 4

BSC GROUP

Matt
Burne, PWS

Senior Ecologist

YEARS OF EXPERIENCE

29

EDUCATION

MS, Wildlife and Fisheries Conservation
University of Massachusetts Amherst

BS, Environmental Science/Wetland Ecology, Botany
University of Massachusetts Amherst

CERTIFICATIONS

- Professional Wetland Scientist
- Invasive Plant Management - Massachusetts

AFFILIATIONS

- Vernal Pool Association Founder, Vice President
- Society of Wetland Scientists
- Association of Massachusetts Wetland Scientists

GOVERNMENT SERVICE

- MA Department of Conservation and Recreation Forest Futures Visioning Process Technical Steering Committee (2009–2010)
- City of Malden Conservation Commission (2020–present)

MEET MATT

Matt has expertise in wildlife biology, conservation science, management, and policy. He has extensive field experience conducting wildlife and rare species surveys, vernal pool evaluations as well as in wetland permitting review. Throughout his career, Matt has developed skills in several areas, including conservation planning, land protection, land management, facilitation, and communication. He applies these skills in educating the public, conservation professionals, and natural resource agency personnel on wildlife habitats and protection strategies.

Matt spent 10 years as an ecologist with the Massachusetts Division of Fisheries and Wildlife's Natural Heritage & Endangered Species Program as a Wetland Environmental Reviewer and Vernal Pool Ecologist focused on vernal pools, state-listed reptiles, amphibians, and invertebrates. During that time, he oversaw the state's Vernal Pool Certification Program and created the Massachusetts Potential Vernal Pool Survey, a state-wide aerial photographic interpretation of potential vernal pools. He also spent 15 years as the Conservation Director for a non-profit land trust in Lincoln, MA. He is the author of several publications and conducts public outreach and education on a regular basis.

PROJECT EXPERIENCE HIGHLIGHTS

Conservation and Management Permit, National Grid, 315/327/303/3520 Line Refurbishment, Southeast MA

Senior Ecologist

Responsible for preparation of project permit under Massachusetts Endangered Species Act (MESA). Matt conducted extensive negotiation for successfully mitigating project impacts through land transfer to municipal conservation agency and designed and produced the Rare Species Field Issue to provide contractors with detailed information needed for impact avoidance during construction. Matt also prepared rare turtle and salamander protection plans for the project.

Matt has provided regular rare species EFI training to National Grid and contractors working under the MESA Conservation and Management Permit (CMP). He is the named permittee on the annual Scientific Collection Permit and is responsible for training and oversight of sub-permittees comprising BSC ecologists supporting the on-going oversight of work conducted under the CMP.

Wildlife Habitat Evaluations, National Grid, A1/B2 ACR, Central MA
Senior Ecologist

Responsible for planning and implementing Wildlife Habitat Evaluations on the Project Right-of-Way for compliance with Massachusetts Wetlands Protection Act. Conducted desktop analysis and field data collection planning, conducted surveys and analysis, and managed ecological staff contributing to data collection and analysis.

Wildlife Tracking Survey, Concord, MA
Senior Ecologist

Contributed to long-term wildlife tracking and road mortality survey for Massachusetts Department of Transportation Route 2 Wildlife Underpass project. Surveys provide data on wildlife species utilizing built mitigation infrastructure.

Preliminary Wildlife Habitat Evaluation, National Grid 394/397 ACR, Tewksbury and West Newbury, MA
Senior Ecologist

Responsible for conducting a comprehensive survey of important wildlife habitat features for state listed turtle and amphibian species along a 35-mile electric powerline right of way. Matt developed parameters for ArcView Dashboard project to share field observations and evaluation results with state regulators.

PRIOR TO JOINING BSC, MATT CONTRIBUTED TO THE FOLLOWING PROJECTS:

Wildlife Habitat Assessment, Private Client, Wayland, MA
Ecologist

Responsible for wildlife habitat assessment and StreamStats review of wetland resources on development site. Matt conducted independent StreamStats analysis of intermittent stream and provided expert opinion concerning wildlife habitat values of wetlands on project site for consideration by the Conservation Commission.

PROFESSIONAL DEVELOPMENT WORKSHOPS

Throughout his career, Matt has developed and delivered hundreds of training sessions, workshops and field trips relating to amphibians, reptiles, vernal pools and wetlands for colleagues, the general public, local, state, and federal regulators. Matt is a skilled educator and was named the Educator of the Year by the Massachusetts Association of Conservation Commissions in 2021.

Vernal Pools – what they are and how we protect them. Massachusetts Association of Conservation Commissions Annual Environmental Conference. 2001–2023. Conference workshop focused on vernal pool functions and values and regulatory protection under state and federal wetlands protection laws.

Turtles of Massachusetts. 2022. Produced and delivered day-long professional development training session to BSC Ecological Staff with Sarah Barnum, Ph.D. Training included species identification, habitat requirements and safe handling practices to prepare staff for supporting turtle protection plan implementation under Conservation and Management Permits, wildlife surveys, wildlife habitat evaluations under state wetland regulations, rare species surveys, and to encourage contributions to the state of the science.

THROUGHOUT HIS CAREER, MATT HAS PUBLISHED A VARIETY OF BOOKS AND PEER REVIEWED PUBLICATIONS AS WELL AS CONTRIBUTING TO THE DESIGN AND PRE-PRESS PREPARATION OF SEVERAL WORKS.