

## DECISION

### 100 HEMLOCK ROAD

Northeast Metropolitan Regional Vocational School

DEP FILE NUMBER 313-620

Date of issuance: June 6, 2023

### Location of Property

100 Hemlock Road, Wakefield, MA (Site)

*identified in the Wakefield Assessor's Database as Map 40A Lot ORS*

### Name and Address of Applicant, Owner, and Representative

Applicant: David DiBarri, Northeast Metropolitan Regional Vocational School  
Owner: Northeast Metropolitan Regional Vocational School  
Representative: David Conway, Nitsch Engineering (and others)

### Name of Conservation Commissioners

F. James Luciani, Jr., Robert Romano, Kenneth Alepidis, Teresa Belmonte, Peter Miller, Paul Wendelgass, Haley McHatton

### Procedural History

The Notice of Intent (NOI) for the Northeast Metropolitan Regional Vocational School (NEMT) was filed on September 21, 2022. The Wakefield Conservation Commission (Commission) reviewed the NEMT Notice of Intent (NOI)(Project) during the following hearing dates:

#### 2022

October 2 and October 16  
November 1 and November 15  
December 6 and December 20

#### 2023

January 3 and January 17  
February 7 and February 21  
March 7  
April 4 and April 18  
May 2 and May 16 (public hearing closed)

May 23 (Special Meeting for deliberation)  
May 30 (Special Meeting for deliberation)

## Documents of Record

The Commission reviewed the following documents/plans/ information concerning the Project.

Document Title	Date (revised, if applicable)	Prepared By
Notice of Intent ( <i>includes ORAD</i> )	January 12, 2023	Nitsch Engineering
Stormwater Report	May 9, 2023	Nitsch Engineering
Buffer Zone and Resource Area Impact Evaluation	January 9, 2023	LEC Environmental Consultants
Regulatory Compliance Report	January 12, 2023	LEC Environmental Consultants
Invasive Species Management Plan	March 28, 2023	LEC Environmental Consultants
Letter from MD Drilling and Blasting to Gilbane Building Company	April 25, 2023	MD Drilling and Blasting
Response to Comments	April 27, 2023	Nitsch Engineering
Wildlife Barrier Management and Monitoring Plan	January 24, 2023	LEC Environmental Consultants
Notice of Intent Peer Review	November 4, 2022	BSC Group
Notice of Intent Supplemental Peer Review	February 24, 2023	BSC Group
<b>Plans</b>		
NEMT NOI Plans Set	May 9, 2023	Drummey Rosane Anderson, Inc. and Nitsch Engineering
Survey Sheets: Ex-1 through EX-14		Drummey Rosane Anderson, Inc. and Nitsch Engineering
Civil Sheets: C-000, C-100, C-200 through C-205, C-300 through C-305, C-400 through C-406, C-500 through C-506, C-600 through C-605, C-700 through C-705		Drummey Rosane Anderson, Inc. and Nitsch Engineering
Landscape Architecture Sheets: L000, L101 through L105, L201 through L205, L301 through L305, L401 through L405, L501 through L505, L601 through L607, L701 and L702, L801		Drummey Rosane Anderson, Inc., Nitsch Engineering, and Warner Larson Landscape Architects
Photometric Sheets: LT101 and LT 102		Drummey Rosane Anderson, Inc., Nitsch Engineering, and Warner Larson Landscape Architects

## Relevant Authority

The following statutes and regulations are applicable to this decision:

- The Massachusetts Wetland Protection Act, M.G.L. c.131 §40
- The Massachusetts Wetland Protection Act regulations, 310 CMR 10.00 *et seq.*

## Regulatory Framework

The purpose of the Wetlands Protection Act (Act) and the Wetlands Regulations (Regulations) is to protect wetlands and to regulate activities affecting wetlands areas in a manner that promotes the following eight statutory interests (Interests):

- (1) protection of public and private water supply;
- (2) protection of ground water supply;
- (3) flood control;
- (4) storm damage prevention;
- (5) prevention of pollution;
- (6) protection of land containing shellfish;
- (7) protection of fisheries; and
- (8) protection of wildlife habitat.

The Act and Regulations provide that “[n]o person shall remove, fill, dredge or alter any area subject to protection under [the Act] without the required authorization, or cause, suffer or allow such activity,” (M.G.L. c 131 § 40). “Alter means to change the condition of any Area Subject to Protection under the [Act],” (310 CMR 10.04). Examples of alterations include, but are not limited to, the following:

- (a) the changing of pre-existing drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns and flood retention areas;
- (b) the lowering of the water level or water table;
- (c) the destruction of vegetation;
- (d) the changing of water temperature, biochemical oxygen demand (BOD), and other physical, biological or chemical characteristics of the receiving water.

“Any activity...proposed or undertaken within 100 feet of any [protected wetland] (hereinafter called the Buffer Zone), which, in the judgment of the [Commission], will alter an Area Subject to Protection under [the Act] is subject to regulation under the [Act] and requires the filing of a Notice of Intent, (310 CMR 10.02(2)(b)).” When reviewing Buffer Zone work for compliance with the Act and Regulations, the Commission must determine if the proposed work will alter a wetland **and** whether the alteration will adversely affect the ability of the wetland to contribute to the protection of one or more of the Interests (310 CMR 10.53(1)).

For work in the Buffer zone, the Commission must impose conditions to avoid wetland alterations that will adversely affect the ability of the areas to contribute to the protection of one or more of the Interests of the Act. The Regulations (310 CMR 10.53(1)) provide that:

The potential for adverse impacts to resource areas from work in the Buffer Zone may increase with the extent of the work and the proximity to the Resource Area. The [Commission] may consider the characteristics of the Buffer Zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on resource areas. Conditions may include limitations on the scope and location of work in the Buffer Zone as necessary to avoid alteration of resource areas. The issuing authority may require erosion and sedimentation controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the resource area and/or other measures commensurate with the scope and location of the work within the Buffer Zone to protect the [I]nterests of the Act.

## Summary of Decision

The Applicant seeks an Order of Conditions to construct a new school building along with the installation of driveways, utilities, parking lots, stormwater management and site grading, on a parcel of land ("Property") comprising approximately 60 acres.

In the existing condition, no developed areas (no buildings, pavement, impervious) are present on the Project site south of Hemlock Road. The Property contains regulated Land Under Waterbodies and Water Ways, Inland Bank, Bordering Vegetated Wetland, and associated Buffer Zone, and Riverfront Area.

The Wakefield Conservation Commission received guidance of a third-party peer reviewer, BSC Group, Inc (BSC) in the review and evaluation of the Project for compliance with the Act and Regulations and Stormwater Management Standards.

For the reasons set forth during the Commission's review, discussion, and deliberation at the aforementioned hearings, and for the reasons set forth below, that Commission finds that the Project does not satisfy the requirements of the WPA and the Regulations and cannot be conditioned to protect the Interests of the Act, thus, the Commission unanimously voted to **DENY** the Project under the Act and Regulations.

## Project Description

The proposed Project includes the construction of a new 210,000 square foot school, parking areas, pedestrian walkways, utilities, landscape areas, and a stormwater management system. The portions of the Project within the jurisdiction of the Conservation Commission include, but may not be limited to, a portion of the driveway, portion of the paved access around the proposed building, a portion of the athletic track, stormwater management structures, landscaping, retaining walls, slope stabilization, and related construction activities.

## Wetland Resource Areas

*Land Under Water* (Wetland 3; also Wetland 1, Wetland 6, Wetland 7, Wetland 9 - although the limits of which were not delineated or approved under ORAD)

*Inland Bank* (Wetland 3; also Wetland 1, Wetland 6, Wetland 7, Wetland 9, Wetland 10 - although the limits of which were not delineated or approved under ORAD)

*Bordering Vegetated Wetlands* (Wetland 1, Wetland 3, Wetland 6, Wetland 7, Wetland 8, Wetland 9, and Wetland 10)

*Riverfront Area* (Wetland 8)

*Buffer Zone associated with BVW (outer most resource area)*

## Other Resource Areas (non-jurisdictional)

*Isolated Wetland Areas* (Wetland 2, Wetland 3a, Wetland 4, Wetland 5 (CVP))

*Vernal Pools - Certified* (Wetland 5, Wetland 6 offsite)

## Other Considerations

*BioMap* - The MA Division of Fisheries and Wildlife, along with the Nature Conservancy, produced the BioMap “as an important tool to guide strategic protection and stewardship of lands and waters that are most important for conserving biological diversity in Massachusetts”. A copy of the BioMap is included in Appendix A. The BioMap<sup>1</sup> indicates that the majority of the Project Site is designated as Core Habitat and/or Critical Natural Landscape. The portions of the Site closest to the Saugus River is designated as Aquatic Core. Both the Forest Core and the Rare Species Core encompasses most of the Site south of Hemlock Road. The Forest Core represents the “most intact forests of Massachusetts least impacted by roads and development. These forests provide unique forest interior habitat - representing just 14% of the state's forests - important for animals and plants that depend on these remote sanctuaries. The Rare Species Core “[c]aptures areas critical to long-term conservation of our most vulnerable species and their habitats. It includes habitat for more than 400 state-listed animals and plants protected pursuant to the Massachusetts Endangered Species Act (MESA), based on information contained in the Natural Heritage and Endangered Species Program (NHESP) database.”

*Habitat of Potential Regional and Statewide Importance* – In November 2011 (and updated in November 2020), the Landscape Ecology Program at the University of Massachusetts conducted a statewide assessment of ecological integrity and produced community-specific maps to identify and prioritize land for habitat and biodiversity conservation. “The habitat maps provided ... were specially created to

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<sup>1</sup> The BioMap can also be viewed here:

<https://gis.eea.mass.gov/portal/apps/webappviewer/index.html?id=e2b6c291e0294c3281488621aaa095bf>

meet Massachusetts Department of Environmental Protections (MADEP) specifications to support regulatory review under the [Act]”.<sup>2</sup>The map specific to Wakefield identifies the majority of area south of Hemlock Road as Habitat of Potential Regional and Statewide Importance. A copy of the map is included in Appendix A.

*NHESP* - According to the 15th edition of the NHESP mapping (effective 2021), the Project site is located within a Priority Habitat of Rare Species (PH1550). The species identified within the Project area is the Hentz’s Red-bellied Tiger Beetle. The NHESP has determined that the Project will not impact the beetle.<sup>3</sup>In addition to the beetle, evidence has been submitted to the Division of Fish and Wildlife documenting the presence of the Eastern Whip-poor-will at the Project Site. A copy of the correspondence from NHESP is in Appendix A.

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<sup>2</sup> The Habitat of Potential Regional and Statewide Importance can also be viewed here: [https://umasscaps.org/data\\_maps/massdep-maps.html](https://umasscaps.org/data_maps/massdep-maps.html)

<sup>3</sup> The Conservation Commission disagrees with the interpretation that the Project was not in Priority Habitat when “proposed” in 2019. The ANRAD was submitted in January 2021 and an ORAD issued in July 2021. The ORAD confirmed the boundaries of the resource areas specifically identified in the ANRAD. The issuance of an ORAD for specific resource areas does not categorically preclude the presence of other regulated areas, it simply confirms the boundaries of the specific resource areas listed for a period of 3 years. Furthermore, the NOI was submitted on September 2022, more than one year after the ORAD was issued and more than one year after the NHESP map revision. The NOI should contain the most recent information available at the time the application was submitted, not outdated information that existing during the project’s conceptualization.

## Statement of Facts and Findings

### Reviewing Work in the Buffer Zone

According to the Regulations<sup>4</sup>, as well as stated in scientific literature<sup>5</sup>, the Buffer Zone contributes to the protection of the functions of the adjacent wetland. The potential for adverse impacts to wetlands from work in the Buffer Zone increases with the extent of work, proximity to the resource area, and the presence of steep slopes<sup>6</sup>. Buffer Zones function to protect and contribute to the ecosystem services and functions (Interests) provided by the adjacent resource areas<sup>7</sup>.

As stated in BSC's letter<sup>8</sup>, "[t]he importance of Buffer Zones for protecting wetland resource areas, and the interests of the [Act], is recognized by both federal ... and state agencies". "As such, there are now several Buffer Zone guides and manuals available, providing detailed information on the function and values of buffer zones, their protection, and their designs". For example, the MACC Buffer Zone Guidebook, "which was written specifically to provide guidance for Conservation Commissions within Massachusetts, is a key resource for ensuring that permits support the protection of the Interests of the Act".

When determining the role of the Buffer Zone for a specific wetland, the Commission should evaluate the condition of the existing wetland and its existing capacity to provide a function, the condition of the existing Buffer Zone and its capacity to protect the adjacent wetland and associated Interests, the nature and intensity of the work or activity being proposed, the location of the work in relation to the wetland<sup>9</sup>, slope, soil texture, climate and weather, construction phase erosion and sedimentation controls, season, and monitoring.

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<sup>4</sup> 310 CMR 10.02 Commentary; 310 CMR 10.24(1)

<sup>5</sup> Notice of Intent Peer Review letter from BSC Group to the Wakefield Conservation Commission dated November 4, 2022, References.

<sup>6</sup> *Planner's Guide to Wetland Buffers for Local Governments*. Environmental Law Institute. (2008); also 310 CMR 10.53(1)

<sup>7</sup> *MACC Wetlands Buffer Zone Guidebook* (Vol.288).2019.

<sup>8</sup> Notice of Intent Peer Review. BSC Group. November 4, 2022

<sup>9</sup> Activities located closer to a wetland are likely to have greater impacts than the same activities if they were located farther away. The Environmental Law Institute's *Planner's Guide to Wetland Buffers for Local Governments* (2008) states that buffers of less than 50 feet were susceptible to degradation by human disturbance, and that buffers of less than 25 feet do not function to reduce disturbance to the adjacent wetland.

## Reviewing Stormwater Management and Effects on Wetlands

The Stormwater Management Standards address water quality (pollutants) and water quantity (flooding, low base flow and recharge) by establishing standards that require the implementation of a wide variety of stormwater management strategies. These strategies include environmentally sensitive site design and LID techniques to minimize impervious surface and land disturbance, source control and pollution prevention, structural BMPs, construction period erosion and sedimentation control, and the long-term operation and maintenance of stormwater management systems.<sup>10</sup> The Regulations define environmentally-sensitive site design to mean design that incorporates low impact development techniques to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat (310 CMR 10.04) (Environmentally Sensitive Design).

Similar to the Buffer Zone Guidebook, a Hydrology Handbook<sup>11</sup> was “developed to assist Conservation Commissioners in evaluating the hydrologic impacts of proposed activities on wetland function and statutory interests, as well as in evaluating the adequacy and accuracy of hydrologic analysis” submitted with a NOI. According to the Hydrology Handbook, development resulting in “alterations in soils, surface covering, and topography can result in changes in the quantities [of runoff (volume)] and rates of runoff entering a wetland. Such alterations can change the water budget of a wetland, with resulting changes in wetland functions”. Such changes may include a decrease in the total volume of water reaching a wetland over a period of time thereby effecting the function of the wetland. Alterations also include increases in flow volumes during storm events that result in increased flooding of upland or wetland areas. The Commission should compare pre- and post-development watersheds and drainage patterns to determine if substantial hydrologic alterations are proposed as a result of the Project. Applicants should provide adequate information to allow Commissioners to evaluate the impacts to the drainage patterns on site, the water regime of a resource area, and groundwater recharge.

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<sup>10</sup> *Massachusetts Stormwater Handbook*. Volume 1.

<sup>11</sup> *Hydrology Handbook for Conservation Commissions*. March 2002



## WETLAND 1 – Bordering Vegetated Wetland (BVW-1)

### Statement of Facts – BVW-1

BVW-1 is significant<sup>12</sup> to the following Interests: protecting or providing public or private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, and fisheries and wildlife habitat (310 CMR 10.55(1)).

BVW- 1 is characterized as forested, red maple swamp. The majority of the Buffer Zone is undeveloped, forested upland characterized as white pine and oak forest with a mixed cover (trees, shrubs, herbaceous). A portion of the Buffer Zone includes Farm Street which is located offsite to the west. Steep slopes and ledge outcrops are located within the Buffer Zone south of BVW-1.

The proposed work in the Buffer Zone will include both temporary (construction related) and permanent activities associated with the construction of 1,300 linear feet of 20-foot wide driveway (average width) from Farm Street to Main Entrance, installation of utilities, construction of 5-foot wide sidewalk, installation of stormwater management system(s), and invasive species management. A new round-about will be constructed at the intersection of Farm Street and the new school driveway. This will be permitted under a separate project. The entire site will be enclosed within an 8-foot, chain link fence with a fabric liner for the duration of construction activities. The “roughed in” driveway will be the primary access for all construction vehicles during the duration of construction to limit disruption to existing schools. Clearing and grubbing, including the removal of approximately 200 mature trees and understory will occur within the entire limit-of-work (LOW) adjacent to wetland flags 1-1 to 1-24 (greater than 350 linear feet). Bedrock removal (potential blasting), including above-ground knob and below existing grades, will be located near the intersection of Farm Street as close as 40 feet from wetland flag 1-10. Under permanent conditions, it is estimated that approximately 3,248 daily trips<sup>13</sup> will occur on the driveway. Grading and riprap is proposed along the driveway edge, as close as 10 feet to wetland flag 1-10 and 20 feet to wetland flag 1-10. Two subsurface stormwater systems (one infiltration, one detention) will be installed under the permanent driveway. A rock-lined stormwater swale and discharge pipe will also be installed under the driveway. Three level spreaders are proposed within or at 25 feet from BVW-1.

Approximately 42,874 square foot (sf) of the Buffer Zone<sup>14</sup> to BVW-1 will be permanently altered due to the construction of the driveway and associated activities. Approximately 2,172 sf will be permanently altered within 25 feet of BVW-1, of which 28 sf is a portion of the paved driveway itself. The total new impervious area within the Buffer Zone is 18,092 sf.

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<sup>12</sup> Significant means plays a role. A resource area is significant to an Interest when it plays a role in the provision or protection, as appropriate, of that Interest. 310 CMR 10.04 (Significant).

<sup>13</sup> *Traffic Impact Study*, Northeast Metropolitan Regional Vocational High School, Prepared by Nitsch Engineering. June 29, 2021.

<sup>14</sup> Buffer Zone Area Take Offs Table, 01/12/2023, table in NOI

## Findings Under the Act and Regulations – BVW-1

The proposed work will include the complete removal of 42,874 sf (or 30%) of vegetation, within all three strata (trees, shrubs, herbaceous), in the Buffer Zone along the south, south-east edge of BVW-1. As stated in the NOI, the Buffer Zone (oak-pine forest) includes numerous large trees as well as saplings, shrubs, and herbaceous vegetation<sup>15</sup>. The presence of mature trees, both deciduous and evergreen, as well as the understory vegetation, creates a dense canopy which currently provides shade and temperature regulation to BVW-1. Although the Project identifies several trees between the LOW and the wetland boundary to remain<sup>16</sup> (all other trees in the Buffer Zone will be removed), the few remaining trees will not provide the same canopy cover and moreover, it is unlikely they will survive long-term due to damage to the root systems activities (cut root system, compaction of soil within root zone, suffocation due to fill)<sup>17</sup> during the construction. The increase in sunlight penetration due to the loss of shading vegetation along the southern edge of BVW, as well as the additional die-off due to root damage, will result in a change to the plant community composition and structure (“edge effect”) by exacerbating the die-off of shade tolerant species and replacing with more sun tolerant species and by exacerbating die-off of BVW vegetation with root systems within the LOW.

In addition, the removal of 42,874 sf of vegetation along 350 linear feet of BVW/Buffer Zone edge, will increase exposure to nearby invasive species, thereby further altering the plant community and structure of the existing BVW. An area of invasive species has been identified on the Plans at the intersection of Farm Street and the proposed driveway. According to the Invasive Species Management Plan, this invasive species area, approximately 15 feet from wetland flags 1-4 to 1-7, contains Norway maple, oriental bittersweet, winged euonymus, glossy buckthorn, common buckthorn, and multiflora rose. Many of these species thrive in full-sun conditions and can outcompete native species. For example, Norway maples is able to shade out native understory vegetation and eventually out-compete natives tree species in the forest canopy. Thus, it can reduce native species diversity and change the

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<sup>15</sup> The specific vegetation on the Project site is listed in the NOI, in the Wetland Resource Area Analysis Report prepared by LEC.

<sup>16</sup> According to the Demo and Site Preparation Plan - (Plan L101), the width of clearing is approximately 100 feet (variable). Plan L101 indicates that 2 trees will remain in the Buffer Zone approximately 25 feet from wetland flag 1-7, clearing will extend to wetland flag 1-10, approximately 11 trees will remain within 25 feet of the BVW between wetland flags 1-12 and 1-16, and 7 trees will remain between 1-17 and 1-18. Everything between 25 feet and 100 feet will be removed.

<sup>17</sup> *Preserving Trees During Construction*. Building and Construction Technology, UMass Amherst, Department of Environmental Conservation. 2002.; *Working with Builders to Save Trees*, Tree Care Industry, March 2002.

structure of forest habitat<sup>18</sup>. In addition, according to the US Department of Agriculture<sup>19</sup>, glossy buckthorn is commonly found in recently disturbed habitats and can colonize almost immediately. This invasive can change the tree species found in the forest canopy<sup>20</sup>. Similarly, multiflora rose thrives in sunny areas and frequently colonizes roadside. Multiflora rose also invades dense forests where disturbances provide canopy gaps<sup>21</sup>. The close proximity of the invasive species, the removal of Buffer Zone vegetation, and the anticipated activity along the driveway, will result in an alteration of BVW-1 due to changes in plant community and structure.

**Based upon the evidence, the Conservation Commission has determined that proposed work in the Buffer Zone will alter Bordering Vegetated Wetlands. The Project does not meet the performance standards for work resulting in a loss of BVW (310 CMR 10.55(4)(b)), as no replacement has been proposed.**

Wetlands play a crucial role in preventing pollution through physical, biological, and chemical processes. The vegetation and soils of wetlands filter runoff and trap sediments, nutrients, and other pollutants thereby improving water quality of both groundwater and surface water. Vegetated Buffer Zones are a protective area filtering sediment and debris prior to reaching the BVW. The plants and soils of the Buffer Zone physically slow overland flow through interception and absorption prior to entering the BVW<sup>22</sup>.

The removal of 30% of Buffer Zone vegetation adjacent to the proposed driveway at the intersection with Farm Street will reduce the interception and absorption capacity of the Buffer Zone in that area. The loss of tree canopy will result in a change of plant community of the BVW. The anticipated high traffic volume (3,248 daily trips) will exacerbate exposure and transport of invasive species.

**The Conservation Commission has determined that the Applicant has not demonstrated that the proposed work in the Buffer Zone will contribute to the protection of the wetland's capacity to prevent pollution (Interest).**

**Furthermore, based upon the evidence, the Commission has determined that the proposed work in the Buffer Zone will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to contribute to the prevention of pollution (Interest).**

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<sup>18</sup> *Early Detection and Distribution Mapping*, University of Georgia, Center for Invasive Species and Ecosystem Health.

<sup>19</sup> <https://www.fs.usda.gov/database/feis/plants/shrub/fraaln/all.html>

<sup>20</sup> Research results suggest that "the increasing dominance of glossy buckthorn in New England pine forest is likely to change the relative abundance of tree species in the forest canopy, and may delay the filling of canopy gaps." M. Fagan and D.R. Peart. "Impact of the invasive shrub glossy buckthorn (*Rhamnus frangula* L.) on juvenile recruitment by canopy trees." *Forest Ecology and Management* 194:95-107. 2004.

<sup>21</sup> <https://www.fs.usda.gov/database/feis/plants/shrub/rosmul/all.html>

<sup>22</sup> *The Massachusetts Buffer Manual*. MA DEP. 2003

According to the BioMap, BVW-1 is partially located with the Forest Core Habitat. The designation of Forest Core is given to forest interior habitats that are least impacted by roads, development, and other fragmenting features. "The small subset of Massachusetts forest that meet the criteria of BioMap Forest Core (14%) capture the best and largest examples of intact interior habitat, maintain ecological conditions found only in unfragmented forests, and are critically important for species sensitive to forest fragmentation". In addition to the Forest Core, BVW-1 is designated as Critical Natural Landscape, Landscape Block. This designation includes "large areas of intact lands and waters that provide habitat for wide-ranging species and support dynamic and resilient ecosystems". "As natural areas are encroached upon by roads, ... and other land use changes, these intact areas will only grow in importance for the ... habitat values they provide".

According to the MADEP Wildlife Habitat Protection Guidance<sup>23</sup>, "Extensive work in the inner fifty (50)-foot portion of the buffer zone, particularly clearing of natural vegetation and soil disturbance is likely to alter the physical characteristics of resource areas by changing their soil composition, topography, hydrology, temperature, and the amount of light received. Alterations to biological conditions in adjacent resource areas may include changes in plant community composition and structure, invertebrate and vertebrate biomass and species composition, and nutrient cycling. These alterations from extensive work in the buffer zone can occur through the disruption and erosion of soil, loss of shading, reduction in nutrient inputs, and changes in litter and soil composition that filters runoff, serving to attenuate pollutants and sustain important wildlife habitat within resource areas."

The vegetation present in both BVW-1 and the Buffer Zone are contributing to the ability of the wetland to provide wildlife habitat. For example, red maple provides food, shade, and nesting habitat for many species as well as cover for species like the screech owl, pileated woodpecker, and others. It is also an early blooming native tree thereby proving an early source of nectar and pollen for a variety of pollinators and wildlife. Highbush blueberry is a food source for many songbirds as well as small mammals. Even the cinnamon fern provides cover for a variety of small mammals and frogs.

The designation of BVW-1 within the Forest Core Habitat by the Mass Division of Wildlife, as well as the presence of high value vegetation in both BVW-1 and Buffer Zone indicate the importance of BVW-1 providing wildlife habitat (Interest).

**The Conservation Commission has determined that Applicant has not demonstrated that the proposed work in the Buffer Zone will contribute to the protection of the wetland's capacity to protect wildlife habitat (Interest).**

**Based upon the above evidence, the Commission has determined that proposed work in the Buffer Zone will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to contribute to the protection of wildlife habitat (Interest).**

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<sup>23</sup> *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*, MA DEP. March 2006.

## Statement of Facts - Stormwater Management – BVW-1

Three stormwater discharges will be located within the Buffer Zone to BVW -1. A stormwater conveyance swale is located on the southern side of the proposed driveway. A pipe will convey flow from the swale under the driveway and discharge to a level spreader approximately 5 feet from wetland flag 1-10. Two, subsurface systems, SS-1 and SS-2, will collect runoff from the driveway and discharge to level spreaders. SS-1 is a detention system consisting of StormTech SC-740 chambers, crushed stone, and an impermeable liner (due to the presence of groundwater) and will discharge to a level spreader approximately 10 feet from wetland flags 1-16 through 1-18. SS-2 is an infiltration system fitted with StormTechSC-740 that will discharge to a level spreader approximately 27 feet from wetland flags 1-23 and 1-24. This system will recharge 1,972 cf of stormwater. According to the elevations on the Civil Plans, a portion of Farm Street will contribute street runoff to SS-1 (subsurface detention) as it flows from Saugus, along Farm St, toward the proposed roundabout, and then enters the new driveway.

According to the Snow Management Plan (Stormwater Report - Long-Term Pollution Prevention Plan (LTPPP), Figure 3), sanding of the driveway is prohibited from Farm Street up to the building and parking areas. Deicing along the driveway could include the use of blended brine, magnesium chloride, and calcium chloride and will be done in accordance with MassDOT's Reduced Salt Policy. The LTPPP states that pre-mix (rock salt and calcium chloride) shall be used for deicing, other environmentally friendly deicers may be used, the use of sand is permitted only for impervious roadways and parking areas. In addition, the LTPPP also states that during typical snow plowing operations, snow shall be pushed along the driveway and along parking areas to designated snow storage areas. These areas are designated on the Snow Storage Map (LTPPP -Figure 2).

Standard 3 of the Stormwater Management Standards provides that the loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally site design<sup>24</sup>, low impact development, and best management practices. For sites comprised solely of C & D soils and bedrock, applicants are only required to infiltrate to the maximum extent practicable<sup>25</sup>. The Stormwater Report states that the stormwater management was designed

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<sup>24</sup> design that incorporates low impact development techniques to prevent the generation of stormwater and non-point source pollution by reducing impervious surfaces, disconnecting flow paths, treating stormwater at its source, maximizing open space, minimizing disturbance, protecting natural features and processes, and/or enhancing wildlife habitat.

<sup>25</sup> For the purposes of Standard 3, the maximum extent practicable means that the applicant has made all reasonable efforts to meet the standard, the applicant has made a complete evaluation of all possible applicable infiltration measures including environmentally sensitive design that minimizes land disturbance and impervious surfaces low impact development techniques and structural BMP's, and if the post recharge does not at least approximate the pre discharge, the applicant has demonstrated that they are implementing the highest practical method for infiltrating stormwater.

“using environmentally-sensitive site design” and storm water treatment trains to minimize the loss of annual recharge but “[d]ue to the increase of impervious area and infeasibility of infiltration for the majority of the project site, matching volumes is a significant challenge. [W]e were not able to match all volumes at all design points for all storm events.” Therefore, Standard 3 is “being met to the maximum extent practicable as less than 65% of the total impervious area is being sent to recharge systems”. Therefore, 35% of the runoff from new impervious surfaces will be collected in detention systems and discharged to wetlands.

Infiltration is proposed in only three areas throughout the site - subsurface infiltration systems SS-2, SS-3, and SS-4. Both SS-2 and SS-3 are located within the Buffer Zone to BVW-1. SS-4 discharges within the Buffer Zone to Wetland 3 (which eventually flows to Wetland 1).

### Findings Under the Act and Regulations– Stormwater Management- BVW-1

The stormwater management systems discharging to BVW-1 are designed to remove the required 80 percent TSS removal. This treatment is accomplished primarily within the StormTech devices. According to StormTech, the devices remove TSS and various other pollutants, but do not provide any treatment for road salt<sup>26</sup>. The proposed deicing chemicals (salts) will not be captured in that system and will discharge less than 10 feet (swale and SS-1) or less than 30 feet (SS-2) from the BVW. In addition, salt will be transported via street runoff from Farm Street down the driveway and into the stormwater swale and/or SS-1. The stormwater conveyance swale provides no treatment and discharges 5 feet from wetland flag 1-10. Any street runoff from Farm St that bypasses the swale will enter SS-1.

The use of road salt during winter storms releases high concentrations of chloride into water bodies and results in changes to water chemistry<sup>27</sup>, as chloride is not readily filtered by soils or plants<sup>28</sup>. Salt present in soils can slow tree growth and vigor by interfering with nutrient availability and uptake. Higher levels can cause plant tissue to dryout and die. For deciduous trees, research suggests significant damage comes from salt being taken up by roots and by soil structure collapse<sup>29</sup>. The NOI indicates that dominant tree in Wetland 1 is red maple. According to UMass, red maples are intolerant of elevated salt in soils<sup>30</sup>.

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<sup>26</sup> *Final Report on Field Verification Testing of the StormTech Isolator Row Treatment Unit*, University of New Hampshire, June 2008.

<sup>27</sup> <https://archive.epa.gov/owow/NPS/roads.html>

<sup>28</sup> *Comparisons of Contributions to Chloride in Urban Stormwater from Winter Brine and Rock Salt Application*, Environmental Science Technology. 2019.

<sup>29</sup> <https://ag.umass.edu/landscape/fact-sheets/impact-of-salts-on-plants-how-to-reduce-plant-injury-from-winter-salt>

<sup>30</sup> <https://www.umass.edu/urbantree/factsheets/18roadsaltpines.html>

In addition to the release of road salt, or similar deicing chemicals, the Stormwater Report states that volume of runoff discharging to Wetland 1 increases under the proposed conditions. Wetland 1 or BVW-1 receives flow mostly from upland areas located offsite, as well as from Wetland 2, Wetland 3, Wetland 4, and Wetland 5. The estimated increases volume to Wetland 1 are 31,756 cubic feet (cf) to 41,896 cf, 48,534 cf to 61,513 cf, and 106,943 cf to 134,627 cf during the 1-year, 2-year, and 10-year storm events, respectively.

The discharge of road salt/deicing chemicals within close proximity to the BVW will alter the wetland through changes to salinity distribution (definition of Alter - 310 CMR 10.04 (a)) and by changing the chemical characteristics of the receiving water (definition of Alter - 310 CMR 10.04 (d)). In addition, the increased volume of runoff discharging to BVW-1 will result in a change to flood retention area of the wetland (definition of Alter – 310 CMR 10.04(a)).

**The Conservation Commission has determined that Applicant has not demonstrated that the work, including the stormwater management system(s), proposed in the Buffer Zone will contribute to the protection of the wetland’s capacity to protect the Interests of the Act.**

**Based upon the evidence, the Commission has determined that proposed work in the Buffer Zone, including the stormwater management system(s), will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to protect ground water supply, flood control, prevent storm damage, prevent pollution, and protect wildlife habitat (Interests).**

### **WETLAND 3 – Inland Bank and Bordering Vegetated Wetland (BVW-3)**

#### Statement of Facts –Inland Bank-3 and BVW -3

Inland Bank -3 is significant to the following Interests: protecting or providing public or private water supply, ground water supply, flood control, storm damage prevention, the prevention of pollution and to the protection of fisheries and wildlife habitat (310 CMR 10.54(1)).

BVW-3 is significant to the following Interests: protecting or providing public or private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, and fisheries and wildlife habitat (310 CMR 10.55(1)).

Wetland 3 is characterized as a forested, red maple swamp with an intermittent stream to the south. The surrounding upland is a white pine and oak forest. Steep slopes are located with the Buffer Zone to the north and to the east. The entire 100-foot Buffer Zone of Wetland 3 is undeveloped, forested upland.

The proposed work within Buffer Zone will include both temporary and permanent activities associated with the construction of the access road, sidewalk, retaining wall, and stream crossing. Clearing and grubbing (vegetation removal) will occur within the entire LOW. Ledge removal (potential blasting) may be located at the outer limit of the Buffer Zone. Erosion control will be installed, area will be cleared, temporary road “roughed” in. This road will be the primary access during the construction of

the site to limit disruption to existing schools. Under permanent conditions, it is estimated that approximately 3,248 daily trips will occur on that access road. There will be grading along road edge as well as the installation of riprap slopes and retaining walls. The level spreader for subsurface system #4 discharges within the Buffer Zone. A 12-inch pipe was included in the design to maintain the flow pattern from Wetland 4 (non-jurisdictional isolated wetland) to Wetland 3.

In addition, the construction of the driveway will require a stream crossing. The stream crossing includes the installation of a precast concrete, 3-sided box culvert installed over channel. The culvert will measure 15 ft wide, 5-7 ft tall, and 60 ft long. "Wing walls" will be constructed near the stream crossing. Both temporary (during construction) and permanent impacts will result from this stream crossing.

Approximately 31,144 sf of Buffer Zone (to BVW-3) will be cleared due to the implementation of this project. Approximately 6,888 sf will be altered within 25 feet of BVW-3, of which 2,996 sf is the driveway. The remaining 3,893 sf within 25 feet of BVW-3 includes grading, riprap, and invasive species management. An additional 11,476 sf of driveway is located within the Buffer Zone, for a total of 14,472 sf of impervious area in Buffer Zone.

According to the Stormwater Report, Wetland 3 receives from runoff from upland areas and from Wetlands 4 and 5. The subsurface infiltration system, SS-4, discharges to a level spreader within the Buffer Zone and atop a slope approximately 16 feet above Wetland 3a. This level spreader is proposed approximately 50 feet from BVW-3. SS-4 will discharge treated stormwater collected from a portion of the parking lot for the school as well as some landscaped areas.

### Findings Under the Act and Regulations– Inland Bank – 3

The construction of the driveway, utilities, sidewalk, and appurtenances will require a stream crossing at Wetland 3. The Regulations set forth general performance standards for work within Inland Bank<sup>31</sup>. Work on a stream crossing shall be presumed to meet the performance standards for Inland Bank (310 CMR 10.54(4)(a)) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards<sup>32</sup>.

According to the Massachusetts Stream Crossing Handbook, "[t]he choice for a crossing design will depend in part on whether a stream has statewide or regional significance for landscape-level connectedness or provides critical habitat for rare or endangered species." A map for each town in Massachusetts showing areas of "Habitat of Potential Regional and Statewide Importance" was produced by UMass Amherst (with funds from MA DEP and EPA)<sup>33</sup>. A copy of the map is included in Appendix A. The intermittent stream at Wetland 3 is within an area identified as Habitat of Potential or Regional Significance. In addition to that map, the BioMap (see previous description) also indicates the area has landscape significance. Therefore, the stream crossing should meet the **Optimum** Standards for design.

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<sup>31</sup> 310 CMR 10.54(4)(a)

<sup>32</sup> 310 CMR 10.54(4)(a)(6)

<sup>33</sup> As referenced in the stream crossing handbook



According to the narrative in the Regulatory Compliance Report, as well as on the Project Plans, the proposed stream crossing does not meet the Optimum Standards for design. Specifically, the proposed crossing does not meet Standard 1, which requires a bridge for the stream crossing and the Project includes a 3-sided box culvert; Standard 3 which requires a minimum of 1.2 times the stream bankfull width and the Project provides 1.2 times the average bankfull width of 6 feet however the stream width varies from 3 feet to 9 feet; and Standard 4 which requires a minimum height of 8 feet and an openness ratio of 2.46 feet when the Project has steep embankments, high traffic volumes<sup>34</sup>, and physical barriers. The height of the proposed box culvert is between 5-7 feet and the culvert does not meet the openness ratio.

**The Conservation Commission has determined that the Applicant has not demonstrated that the work proposed in Inland Bank will contribute to the protection of the wetland's capacity to protect the Interest. Furthermore, the Conservation Commission has determined that the proposed stream crossing does not meet the Stream Crossing Standards (310 CMR 10.54(4)(a)(6)).**

### Findings Under the Act and Regulations– BVW-3

The proposed work in the Buffer Zone that will result in alterations to BVW-3 includes the vegetation removal of 29,267 sf<sup>35</sup> of forested Buffer Zone. 6,888 sf of Buffer Zone alterations will be within 25 feet of the edge of BVW-3. 2,996 sf of that is impervious with an additional 11,476 sf of driveway (impervious) within the Buffer Zone. Currently, the edge of the BVW is protected by numerous mature trees and a well-developed understory that provides shade and temperature regulation to the wetland. According to the Plans, no trees to be save were identified between the LOW and BVW-3. Therefore, it can be assumed that the entire canopy will be removed. Furthermore, the LOW extends up to wetland flag 3-4. The complete removal of vegetation along the edge of BVW-3 (essentially eliminating the vegetated Buffer Zone) will result in a change the plant community composition and structure ("edge effect") by replacing existing vegetation with more sun tolerant vegetation, as well as exacerbating the encroachment of invasive species into BVW-3 and the Buffer Zone. An area of invasive species has been identified on the Plans adjacent to wetland flags 3-9 to 3-10. Please see previous discussion of tree canopy loss/shading and invasive species under Findings Under the Act and Regulations – BVW-1.

**Based upon the evidence, the Conservation Commission has determined that proposed work in the Buffer Zone will alter Bordering Vegetated Wetlands. The Project does not meet the performance standards for work resulting in a loss of BVW (310 CMR 10.55(4)(b)), as no replacement has been proposed.**

Wetlands play a crucial role in preventing pollution through physical, biological, and chemical processes. The vegetation and soils of wetlands filter runoff and trap sediments, nutrients, and other pollutants thereby improving water quality of both groundwater and surface water. Vegetated Buffer Zones are a protective area filtering sediment and debris prior to reaching the BVW. The plants and

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<sup>34</sup> *Traffic Impact Study*, Northeast Metropolitan Regional Vocational High School, Prepared by Nitsch Engineering. June 29, 2021

<sup>35</sup> This is 52% of the entire Buffer Zone

soils of the Buffer Zone physically slow overland flow through interception and absorption prior to entering the BVW.

The removal of 52% of Buffer Zone vegetation adjacent to the proposed driveway will reduce the interception and absorption capacity of the Buffer Zone in that area. The loss of tree canopy will result in a change of plant community of the BVW. The anticipated high traffic volume (3,248 daily trips) will exacerbate exposure and transport of invasive species.

**The Conservation Commission has determined that the Applicant has not demonstrated that the proposed work in the Buffer Zone will contribute to the protection of the wetland's capacity to prevent pollution (Interest).**

**Furthermore, based upon the evidence, the Commission has determined that the proposed work in the Buffer Zone will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to contribute to the prevention of pollution (Interest).**

According to the BioMap, BVW-3 is located not only within the Forest Core Habitat but also the Rare Species Core Habitat. The Rare Species Core Habitat includes areas critical to long-term conservation of vulnerable species and their habitat. See similar habitat discussions under Findings Under the Act and Regulations – BVW-1.

**Based upon the evidence, the Conservation Commission has determined that Applicant has not demonstrated that the work proposed in the Buffer Zone will contribute to the protection of the wetland's capacity to protect the Interest of the Act.**

**Furthermore, the Commission has determined that proposed work in the Buffer Zone will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to protect wildlife habitat (Interest).**

#### Statement of Facts – Stormwater Management – BVW-3

According to the Stormwater Report, one stormwater discharge will be located within the Buffer Zone to BVW- 3. A subsurface infiltration system (SS-4) will collect and detain runoff from the southern portion of the school parking lot and the adjacent landscape area and discharge to a level spreader. This system will include StormTech SC-310 chambers and will recharge 887 cf of stormwater. The level spreader is located atop a steep slope, approximately 65 feet from BVW-3 (and 30 feet from IVW-3a, which is non-jurisdictional). A 12-inch pipe will be located under the driveway to maintain the drainage patterns from Wetland 4 to Wetland 3. See discussions of salt and snow under Statement of Facts – Stormwater Management - BVW-1.

#### Findings Under the Act and Regulations– Stormwater Management - BVW-3

See discussions of salt/deicing chemicals under Findings Under the Act and Regulations – Stormwater Management – BVW-1.

BVW-3 will receive runoff from the discharge of SS-4, which will drain 30,783 sf of the proposed parking area. The estimated runoff to Wetland 3 in the existing condition is 4,958 cf, 7,204 cf, and 14,676 cf during the 1-year, 2-year, and 10-year storm events, respectively. Under the proposed conditions, the volumes to BVW-3 will be reduced to 3,613 cf, 5,892 cf, 13,303 cf. The volume reductions do not take into account the reductions in both Wetland 4 and Wetland 5 (which is a certified vernal pool, although non-jurisdictional under Act) which contribute to Wetland 3, which ultimately contributes to Wetland 1. When the volume of runoff decreases and the volume of water passing through the wetlands is reduced, water quality is simultaneously reduced. A reduction in contributing volume to a wetland is considered an alteration<sup>36</sup> (310 CMR 10.04 definition of Alter).

**The Conservation Commission has determined that the Applicant has not demonstrated that the work, including the stormwater management system, proposed in the Buffer Zone will contribute to the protection of the wetland's capacity to protect Interests.**

**Based upon the evidence, the Commission has determined that the proposed work in the Buffer Zone, including the stormwater management system, will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to contribute to protect groundwater supply, flood control, prevent storm damage, prevent pollution, and protect wildlife habitat.**

## **WETLAND 9 –Bordering Vegetated Wetland (BVW-9)**

### Statement of Facts –BVW -9

BVW-9 is significant to the following Interests: protecting or providing public or private water supply, ground water supply, flood control, storm damage prevention, prevention of pollution, and fisheries and wildlife habitat (310 CMR 10.55(1)).

Wetland 9 is primarily a forested, red maple swamp associated with the intermittent stream that flows to the northwest. The stream originates from an upgradient culvert and follows the toe of slope along the western edge of the existing baseball field.

The proposed work within the Buffer Zone includes a portion of the underground stormwater management system, the discharge to a level spreader, and clearing and grading. Some grading will direct overland flow toward the headwall.

Minimal vegetation will be removed up to the BVW to install the level spreader, which will be located mid-slope approximately 10-15 feet from wetland flag 9-5.

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<sup>36</sup> "Examples of alterations include, but are not limited to, ... (b) the lowering of the water level or water table..."  
310 CMR 10.04 (Alter)

### Statement of Facts – Stormwater Management -BVW- 9

BVW- 9 will receive stormwater collected from the baseball field, sloped driveway, and parking areas. This subsurface detention system, SS-7, will discharge to a level spreader located approximately 10 feet upslope of wetland flag 9-5. The Snow Management Plan indicates that the sloped driveway may be treated with sand, blended brine, magnesium chloride, and/or calcium chloride. The application rates will be the same as MassDOT's application in the Cambridge Reservoir Watershed. The stormwater will be treated through a StormTech MC-3500 prior to discharge; however, that system does not remove road salts/deicing products. See similar discussions under Findings – Stormwater Management – BVW-1.

### Findings Under the Act and Regulations – Stormwater Management - BVW-10

Under the proposed conditions, BVW- 9 volume of runoff will significantly increase from 8,399 cf to 15,338 cf, from 15,630 cf to 28,145 cf and from 45,125 to 79,694 during the 2-, 5- and 10- year storms, respectively.

The discharge of road salt/deicing chemicals within close proximity to BVW-9 will alter the wetland through changes to salinity distribution (definition of Alter - 310 CMR 10.04 (a)) and by changing the chemical characteristics of the receiving water (definition of Alter - 310 CMR 10.04 (d)). In addition, the increased volume of runoff discharging to BVW-1 will result in a change to flood retention area of the wetland (definition of Alter – 310 CMR 10.04(a)).

**The Conservation Commission has determined that the Applicant has not demonstrated that the work, including the stormwater management system, proposed in the Buffer Zone will contribute to the protection of the wetland's capacity to protect the Interests.**

**Based upon the evidence, the Commission has determined that proposed work in the Buffer Zone, including the stormwater management system, will not only alter the adjacent BVW, but also will adversely affect the ability of the wetland to protect ground water supply, flood control, prevent storm damage, and prevent pollution (Interests).**