Natural Resources

Bruce Freeman Rail Trail Technical Memorandum

Concord, Massachusetts

Prepared for **Town of Concord**
Concord, Massachusetts

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Watertown, Massachusetts

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Natural Resources

Introduction

Vanasse Hangen Brustlin, Inc. (VHB) was contracted by the Town of Concord to conduct an evaluation of natural resources within a 3.5-mile section of abandoned railroad right-of-way (the Project Area) associated with a proposed regional shared-use trail known as the Bruce Freeman Rail Trail. The evaluation included several tasks, including:

- A review of existing mapping, surveys, aerial photos, and other available sources of data;
- Field surveys for the evaluation of wildlife habitat within the project area;
- Delineation of state- and federally-regulated wetland resources within the project area;
- Identification of significant plant communities (including exotic plant infestations);
- An assessment of rare species habitat potential within the project area;

The purpose of the evaluation was to identify sensitive resources that could be affected by the construction and/or operational use of a shared-use trail. The 25% trail design has incorporated the constraints identified herein. Recommendations for further study should be incorporated into the future 75% design plans.

Existing Data Review

The MassGIS database was used as the initial step in identifying critical areas that would later be examined more closely along the Right-of-Way (ROW). The tables below describe the environmentally critical categories as determined through MassGIS and how they relate to Bruce Freeman Rail Trail.

Table 1. Environmental Resources

Resource (within or immediately adjacent to ROW)	Yes	No
Areas of Critical Environmental Concern		√
Biomap Core Habitat		√
Biomap Supporting Natural Landscape		√
Living Waters Core Habitat	√	
Living Waters Critical Supporting Watershed	√	
NHESP Certified Vernal Pool	√	

Resource (within or immediately adjacent to ROW)	Yes	No
NHESP Potential Vernal Pool	√	
NHESP Established Habitat of Rare Wildlife	√	
NHESP Priority Habitat of Rare Species	√	
NHESP Natural Communities		√
Open Space	√	
Scenic Landscape	√	
Potential Bicycle Trails	√	
Anadromous Fish Population		√
Abandoned Cranberry Bogs		√
High/Medium Yield Aquifers	√	
Sole Source Aquifers		√
Forest Stewardship Program Properties		√
Outstanding Resource Waters		√
Prime Forest Land	√	
Riverine Natural Community Systems		√
Pine Barrens Natural Community Systems		√
Acidic Peatland Community Systems		√
Sandplain Natural Community Systems		√
Upland Forest		√
Public Water Supply Service Territories	√	
Prime Farmland Soils	√	
FEMA Floodzones	√	
DEP 2002 Integrated List of Waters-Lake (Warners Pond, Whites Pond)	√	
DEP 2002 Integrated List of Waters-Rivers (Assabet River, Nashoba Brook)	√	
Surface Water Protection Areas		√
Interim Wellhead Protection Areas		√
Zone II Wellhead Protection Areas	√	

Source: MassGIS

Living Water Core Habitat and Supporting Watershed

The Living Waters Core Habitat and Supporting Watershed within the project area are identified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) as Core Habitat LW192. The Core Habitat is associated with White Pond. The Supporting Watershed extends into the ROW, south of Powder Mill Road. The description of this habitat is as follows:

> *One of only nine known populations of the rare Resupinate Bladderwort in the state inhabits the peaty margin of this kettle pond. This tiny plant is usually submerged*

underwater, and purple flowers are produced only when the habitat is exposed during periods of extremely low water. Bladderworts are carnivorous plants, trapping tiny aquatic animals in their pouch-like "bladders." Native freshwater plants like the Resupinate Bladderwort are an important component of aquatic communities, and warrant conservation attention if we are to maintain healthy freshwater ecosystems.

The Living Waters designation currently has no regulatory authority, but is meant as a planning tool.

NHESP Certified Vernal Pool

Three NHESP certified vernal pools occur proximal to the ROW. Two (CVP 955 and CVP 956) occur just north of Powder Mill Road, one (CVP 944) occurs just south of Powder Mill Road. Further description of the vernal pool habitat is provided later in the report.

NHESP Potential Vernal Pool

Four NHESP potential vernal pools (PVP) occur proximal to the ROW within the Town of Concord. Two appear to be coincident with the certified vernal pools located within Wetlands 2 and 3. One is shown on the west side of Old Marlborough Road, approximately 550 feet north of the ROW crossing of Williams Road. Due to the presence of Old Marlborough Road between this PVP and the ROW, it is not anticipated to present a constraint to the future development of the trail. One is located on the eastern side of the ROW, just north of the Assabet River. This area was inspected and no confined basin depressions were observed that would appear to provide vernal pool habitat. In addition to these areas, the pond located just south of the Concord/Sudbury town boundary is shown as a PVP. During an inspection of this pond, fish were observed. The presence of fish would negate the presence of vernal pool habitat.

NHESP Estimated Habitat of Rare Wildlife

An Estimated Habitat of Rare Wildlife (EH 770) occurs immediately to the east of the ROW (north of active commuter rail), associated with the Assabet River (see Figure 1). Any work that occurs within the identified limits of the habitat polygon is subject to review by NHESP under both the Massachusetts Wetlands Protection Act and the Massachusetts Endangered Species Act. A further discussion of rare species is provided later in the report.

NHESP Priority Habitat of Rare Species

Three Priority Habitats of Rare Species polygons occur within or immediately adjacent to the ROW (see Figure 1). Polygon PH 79 is coincident with EH 770. PH 405 occurs north of the Williams Road/Old Marlborough Road intersection. PH 339 occurs in association with White Pond. Any work that occurs within the identified limits of the habitat polygon is subject to review by NHESP under the Massachusetts Endangered Species Act. A further discussion of rare species is provided later in the report.

Open Space

Numerous parcels of town- and state-owned open space occur immediately adjacent to the ROW. This datalayer includes both conservation lands and outdoor recreational lands. These areas of open space have a variety of levels of protection. Open space does present a regulatory constraint for the project. The trail would likely serve to connect the varying parcels of open space through the subject corridor.

Scenic Landscape

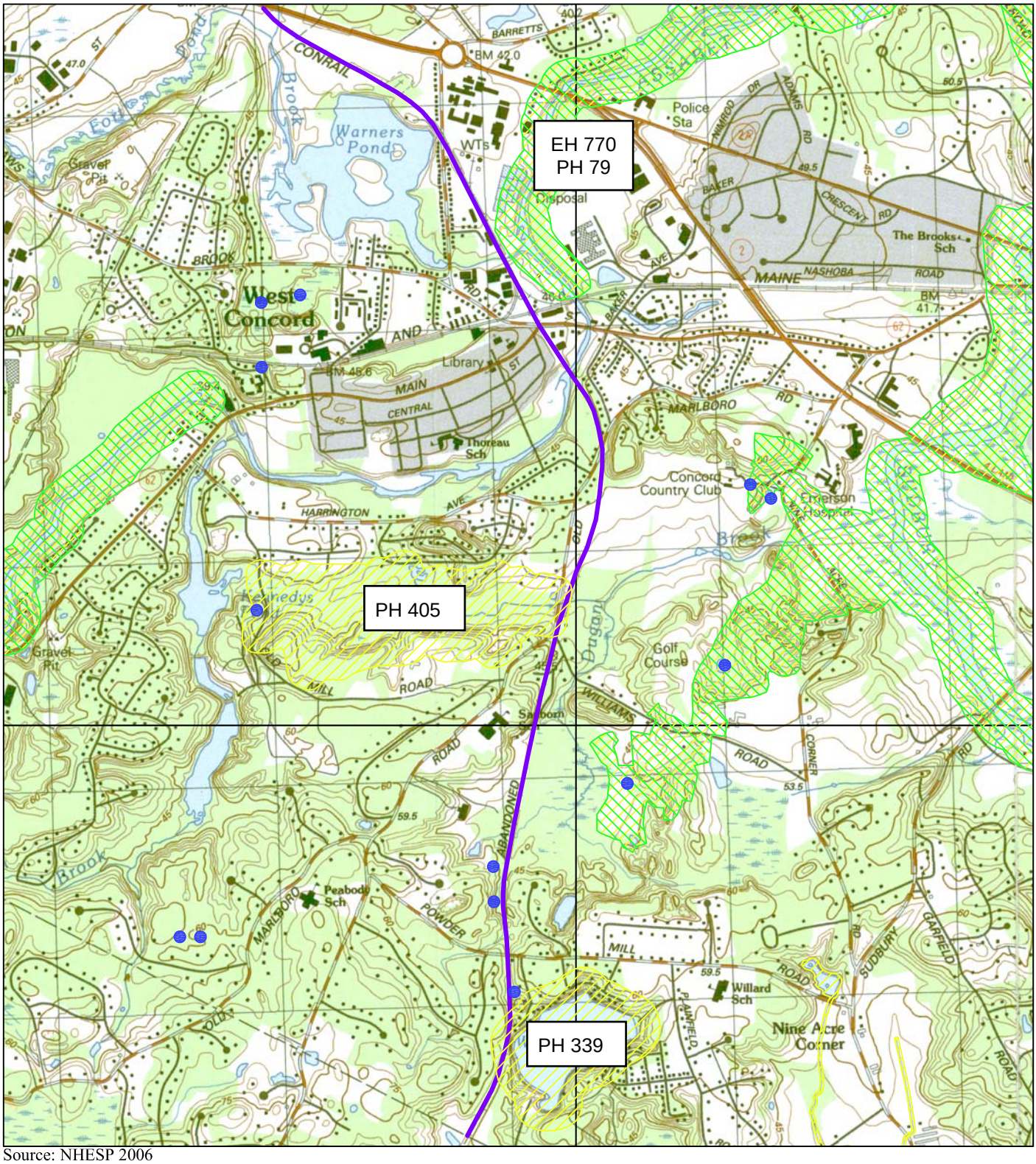
Generally, portions of the ROW south of the crossing of Old Marlborough Road are within or adjacent to areas identified as Scenic Landscape. The Scenic Landscapes datalayer depicts areas identified as part of the Massachusetts Landscape Inventory Project, prepared by the Massachusetts Department of Conservation and Recreation (MDCR). This layer was developed for planning purposes and does not have any regulatory authority.

Potential Bicycle Trails

This datalayer identifies the entire length of the subject area as a potential bicycle trails. The layer was created by the MDCR to identify existing trails or corridors with conversion potential. It was developed for regional planning and mapping purposes.

High/Medium Yield Aquifers

Portions of the ROW south of Williams Road occur within the High/Medium Yield Aquifer datalayer. According to the datalayer attributes, medium yield aquifers are estimated to provide 100-300 gallons per minute (GPM) of productivity. High yield aquifers are estimated to provide >300 GPM. As the trail should have no significant impact on water use or the recharge to groundwater, the presence of aquifers is not anticipated to provide a constraint to the development of the trail.



Source: NHESP 2006

Vanasse Hangen Brustlin, Inc.

NHESP Map
Bruce Freeman Rail Trail
Concord, Massachusetts

Figure 1
December, 2007

0 1000 2000 Feet

Site

Estimated Habitats of Rare Wildlife

Priority Habitats of Rare Species

Certified Vernal Pools

Prime Forest Land

This layer occurs in various locations throughout the ROW. The datalayer classifies forested land into nine different categories based on potential average timber productivity of white pine and red oak per acre per year. This presence of prime forest land proximal to the ROW does not provide a constraint to the development of the trail.

Public Water Supply Service Territories

The entire ROW occurs within a public water supply service territory. This datalayer delineates areas potentially served by larger public water suppliers, as of January 2004. This data does not provide any constraint to the development of the trail.

Prime Farmland Soils

Areas identified as Prime Farmland Soils are scattered throughout the length of the ROW. The Prime Farmland Soils datalayer is based on published soil surveys from the United States Department of Agriculture Natural Resources Conservation Service. This data does not provide any constraint to the development of the trail.

FEMA Floodzones

FEMA Floodzones occur within the subject area associated with the major river crossings of the ROW (Wetlands 10, 11, and 12). These flood zones are further discussed and identified in the wetland resources section of this report.

DEP 2002 Integrated List of Waters-Lake and Rivers

Both Warner's Pond and White Pond are identified as 303d impaired waters. This designation establishes the water bodies as needing a plan to bring them in compliance with the Massachusetts Surface Water Quality Standards. White Pond is listed as a Category 2 water body, meaning it is attaining some of the designated uses and insufficient or no data and information is available to determine if the remaining uses are attained. Warner's Pond is listed as a Category 5 water body, meaning it is impaired for one or more designated uses, and requires the development "pollution budget" (also referred to as a Total Maximum Daily Load (TMDL)). The impairment is caused by the presence of metals and noxious aquatic plants.

Both the Assabet River and Nashoba Brook are also identified as 303d impaired waters. The Assabet River is listed as a Category 5 waterway, impaired for total phosphorus. Nashoba Brook is a Category 3 waterway, meaning it insufficient or no data and information exist to determine if any designated uses are attained.

Due to the existence of impaired waters proximal to the ROW, the final design of the trail should ensure that the trail does not exacerbate any pollution issues associated with these waterways and water bodies.

Zone II Wellhead Protection Areas

A Zone II Wellhead Protection Area exists within the ROW south of Old Marlboro to the Sudbury town line. According to the datalayer, wellhead protection areas are important for protecting the recharge area around public water supply groundwater sources. Certain land uses may be prohibited or restricted within wellhead protection areas. The development of the trail is not believed to be a use that would be restricted or prohibited within the wellhead projection area.

Wetland Delineation

Wetland resources were delineated along the ROW in May of 2007. An Abbreviated Notice of Resource Area Delineation was filed the Concord Natural Resources Commission in September of 2007. Fourteen distinct wetland resource areas were delineated along the ROW characterized by a wide range of resource and cover types. The table below briefly describes the wetlands identified. A complete description of each wetland resource area is provided in the narrative portion of the ANRAD application.

ID #	WPA Resource Types	Cover Type
1	Bank	White Pond
2	ILSF	Kettle Hole Forested Wetland; Certified Vernal Pool
3	BVW, Bank	Certified Vernal Pools, Forested Wetland, Intermittent Stream
3A	Bank	Intermittent Stream
4	BVW	Jennie Dugan Swamp
5	BVW	Emergent Marsh; Forested Wetland/Shrub Swamp Fringe
6	ILSF	Forested Drainage Ditch
7	BVW	Intermittent Stream; Forested Wetland
8	BVW	Intermittent Stream; Forested Wetland
9	BVW	Shrub Swamp

ID #	WPA Resource Types	Cover Type
10	BVW, Bank, LUWW, BLSF, RA	Assabet River; Forested Wetland
11	BVW, Bank, LUWW, BLSF, RA	River; Forested Wetland
12	BVW, Bank, LUWW, BLSF, RA	Nashoba Brook; Forested Wetland; Emergent Marsh
13	BVW, Bank, LUWW	Warner's Pond

Source: VHB, Inc.

Wildlife Habitat Evaluation

The subject corridor was evaluated for the presence of wildlife habitat using a variety of methods. The corridor was inspected multiple times during varying seasons to inspect the ROW for evidence of wildlife habitat use and direct observations of wildlife species.

Mass DEP Guidance (Appendix B)

After identifying regulated wetland resources along the ROW, a wildlife habitat survey of all resource areas and areas within 200 feet of the resource was completed. In order to standardize the review of each wetland area, the Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands *Appendix B* forms (created by the Massachusetts Department of Environmental Protection, March 2006) were used as a guide to identify, describe, and quantify important characteristics that were observed within each area. It should be noted that the Appendix B form was developed for use to evaluate specific wetland impact areas. Although the forms provide a general overview of wildlife habitat, the forms do have limitations in the description of large wetland systems, such as found within the subject corridor. The forms also include fields for evaluation of direct impacts. Until the trail design is advanced, a final evaluation of impacts cannot be completed. The components of this survey concentrated on the following areas:

- Classification of wetlands;
- Description of dominant vegetation and soils;
- Important wildlife features including food sources, snags, tree cavities, and standing or flowing water;
- Streambed characteristics such as exposed soil for turtle nesting, type of bank, and mud flats; and
- Landscape context and the areas relation to surrounding areas with reference to connectivity, continuity, and evidence of degradation;

The data collected through the Appendix B process did not identify any high value habitat features within the ROW that would appear to be at risk from construction of

the trail (based upon the preliminary design). The majority of the former railbed is intact, including the presence of railroad ties and rails. As expected, certain wetland resource areas were determined to provide higher wildlife habitat value than others. Generally, areas of higher wildlife habitat were located adjacent to, but not within the former railbed. No evidence of species that would be especially sensitive to the presence of the trail was identified. Completed Appendix B forms are provided as Attachment A to this report.

Point Count Bird Surveys

As part of the overall wildlife habitat evaluation of the corridor, two point count bird surveys were completed. Counting and monitoring the activity of forest birds can be difficult because they are often hard to detect in thick foliage and some species are secretive during the breeding season. The point count protocol to follow is derived from techniques used by professional field biologists to obtain a sample of the avian community over a fixed period of time.

Point count monitoring is a quantitative assessment, involving repeated measures at regular intervals at fixed locations to reveal change. Bird point count monitoring, carried out in its most basic form, is a tally of all birds seen or heard for a given time at a given location. Point counts are used extensively for monitoring in the Northeast and elsewhere. They are used to develop relative indices of abundance

Red-tailed Hawk in Jennie Dugan Swamp

and inferences about bird-habitat relations. The primary advantages of point counts are that the relative abundance of many species can be determined over broad areas at a moderately low cost and that species-habitat relations can be evaluated effectively compared to other methods. Point counts are not a census from which density can be estimated (unless distance estimation sampling techniques are used), and they are not used to gauge the relative fitness of a population, as can be done

with demographic information on birth, death, and dispersal rates. An integrated monitoring program that supplements point counts with demographic methods, such as nest searches and constant-effort mist netting, is vital to effectively interpret trends from point counts.

Point count monitoring is a common way to monitor bird populations. Consistency with established monitoring protocols is essential for local-scale point count monitoring, because small efforts are unlikely to have sufficient sample sizes to perform one of the key functions of monitoring: detecting changes in bird abundance. Such work can be meaningful when pooled with a larger body of compatible data.

Two general approaches have been used in broad-scale point count monitoring. The widely used population-based method disperses point count stations at random across a geographic area or along roadways, usually without specific consideration for habitat at each point. The results represent the geographic area, but without additional design considerations they do not distinctly represent any specific habitat type.

In contrast, the habitat-based approach stratifies points by habitat. The geographical extent of such monitoring can be large, as similar habitats can be separated by great distances. The results apply clearly, but also exclusively, to the habitats selected. For the purpose of associating bird species with habitat characteristics, the habitat-based approach likely will require a smaller sample size than dispersed counts—though each count may be more laborious if multiple stations are used at each site and stations are placed away from roads.

The bird survey was conducted in two phases: early season and late season. The early season survey was conducted to assess the presence of breeding bird species, while the late season survey was conducted to observe any migratory or wintering birds. The early season surveys were conducted on June 1st and June 19th, 2007. The late season survey was conducted on October 3rd, 2007. The late season survey was conducted to observe any migratory or wintering birds. Bird species were identified at 19 points along the ROW. Counts began at dawn, when most birds are the most active and vocal. All field observations were coordinated with the Concord Natural Resources Administrator. In addition to the bird survey results presented below, an observation of a great horned owl was made just south of Williams Road in April of 2007. Several observations of red-tailed hawks and great blue herons were also made in Jennie Dugan Swamp over the course of the investigation.

Early Season (Spring)

Breeding bird surveys conducted in June 2007 (June 1 and June 19) revealed a total of 49 species using habitat within the vicinity of the ROW. While habitat generalists with relatively stable populations such as American Robin, Gray Catbird, and Northern Cardinal were observed at the greatest number of survey points, many

forest-breeding species were scattered throughout the survey transect as well, including Red-eyed Vireo, Black-capped Chickadee, Tufted Titmouse, and four species of woodpeckers (Hairy, Downy, Red-bellied Woodpeckers, and Northern Flicker). Less commonly observed forest breeders included Scarlet Tanager, two species of flycatchers (Eastern Wood Pewee and Great Crested Flycatcher), and two species of thrushes (Veery and Wood Thrush). Wood Thrushes have declined significantly over much of their range since the 1970s, in part due to increased fragmentation of woodland habitat as well as nest parasitism from Brown-headed Cowbirds. It is worth noting that Brown-headed Cowbird was observed at a total of four different points along the survey transect. Two species anticipated to occur within the survey area that were notably absent include Hermit Thrush and Eastern Towhee.

Black-billed Cuckoo, a forest edge specialist, was observed on the trail in an area west of Jennie Dugan Road during the June 1 survey. This species was formerly more common throughout much of North America. Although causes of their population decline have not been quantified, it is believed that the increase in use of pesticide has drastically reduced the availability of caterpillars, the cuckoos' primary food source.

The ROW crosses several areas of open field, which were readily used by a variety of early successional specialists like American Goldfinch, Common Yellowthroat and Yellow Warbler. Song Sparrow, which will use a wide range of habitats but frequently favors early successional habitat, was one of the most frequently observed species overall. The species is a strong and frequent vocalizer, which may account for some of the high level of detection compared to other species. Song Sparrows were observed at 12 of 18 points during the first survey, and 11 of 19 during the second survey. This species, although seemingly ubiquitous, has shown sensitivity to loss of habitat. Indigo Bunting, an early successional specialist declining in the Northeast, was observed in a large field east of the intersection of Old Marlboro Road and Harrington Avenue during the June 19 survey. This limited sighting makes it difficult to determine if this species is breeding in the area. Eastern Bluebird, an early successional specialist whose numbers are increasing due to the placement of nest boxes throughout the region, was also observed at a single point during one survey, in a field northeast of Winthrop Street. Blue-winged Warbler, a declining early successional specialist in the Northeast, was not observed during the two spring/summer survey events.

A number of waterbirds were observed in Jennie Dugan Swamp, which lies adjacent to the ROW, north of Powder Mill Road and west of Jennie Dugan Road. Species observed included Canada Goose, two species of herons (Green Heron and Great Blue Heron), and three species of ducks (Wood Duck, Mallard, and American Black Duck). In addition, a Great Crested Flycatcher was observed bringing food to a dead snag within the marsh. This large eastern flycatcher utilizes cavities such as those found in dead trees for nesting.

With the exception of those species highlighted, the majority of bird species observed during the surveys are relatively common breeders in the Northeast and generally have stable populations.

Late Season (Fall)

An additional bird survey was conducted in early October (October 3, 2007) to evaluate how fall migrants and overwintering species may utilize habitats within or adjacent to the ROW. Six new species were added to the list, mostly migrants or winter residents. New species included: Green-winged Teal (fall migrant), Sharp-shinned Hawk (fall migrant), Wilson's (Common) Snipe (fall migrant), Belted Kingfisher (summer or year-round resident), White-throated Sparrow (winter resident), and Bay-breasted Warbler (fall migrant).

The Teal were observed in large groups in Jennie Dugan Swamp upstream of the impounding rail grade. While Green-winged Teal do breed in some parts of Massachusetts, it is not believed that any individuals used the swamp for breeding. A total of 42 individuals were counted in the fall from the excellent vantage point into the marsh provided by the elevated former railbed. Jennie Dugan Swamp is a particularly species-rich habitat along the ROW. In addition to hosting a number of songbird and wading bird species in the breeding season, the fall survey included observations of a Great Blue Heron, Mallard, and Wood Duck. Waterfowl utilizing Jenny Dugan Swamp have apparently habituated to the non-threatening presence of human activity on the ROW and were not flushed by joggers or birdwatchers at a nominal minimum distance of 300 feet. Wood Duck flushed near the ROW landed back in the swamp within 500-feet of observers. A Wilson's (Common) Snipe was observed in Jennie Dugan Swamp on the east side of the path, probing in an exposed mudflat and was likewise not disturbed by the presence of birdwatchers or joggers.

Although the field edges that occur periodically along the ROW had lower species diversity in the fall due to the departure of many breeding species for the winter, a number of flocks of mixed sparrows were observed in these areas consuming fruits. Included in the flocks were White-throated Sparrows, a recent arrival which was not observed during the breeding season. This species generally breeds farther north in Massachusetts, and in northern New England and Canada. The shrubland habitat that dominates edges between fields and woodland along the ROW is vital for this species and others that rely heavily on fruits to fulfill their dietary needs during fall. These edges often include fruit-producing shrubs such as summer grape (*Vitis aestivalis*), eastern red cedar (*Juniperus virginiana*), silky dogwood (*Cornus amomum*), panicled dogwood (*Cornus racemosa*), and Virginia creeper (*Parthenocissus quinquefolia*). Invasive fruit-producing shrub species are also present in these areas along the ROW, including oriental bittersweet (*Celastrus orbiculatus*), glossy buckthorn (*Frangula alnus*), and autumn olive (*Elaeagnus umbellata*).

In addition to the field/forest edges, the open fields themselves play an important role in attracting birdlife, particularly raptors. A Sharp-shinned Hawk was observed

using the woodland/field edge on the eastern edge of the trail east of Harrington Avenue and south of South Meadow Ridge for cover, and then the field itself for hunting. It is likely that other raptors hunt in this field as well, as it is ideal for small mammals and birds.

A small group of migrating Bay-breasted Warblers was observed utilizing the woodland habitat adjacent to White Pond. These birds were gleaning insects from the foliage along the pond edge. Woodland habitat dominates the areas adjacent to the trail for the length of the trail, and it was anticipated that migrating songbirds and warblers in particular would take advantage of insects found within the woodland habitat. Although only one group of warblers was observed during the fall survey, it is important to note that 2007 was a relatively unusual year for migrating warblers. Birds were slow to appear, and reports from banding stations in southern New England indicate that warblers were scarce in general compared with other years. The unseasonably warm temperatures may have played a role in the 2007 slow dispersal pattern.

Summary

In all, 55 bird species from a variety of guilds were observed utilizing the habitats within and adjacent to the ROW during the three bird surveys conducted. These habitats support not only breeding birds, but migrants and winter residents as well. Songbirds were the most abundant family represented overall, but ducks, shorebirds, wading birds, raptors and woodpeckers all contributed to species richness. None of the observed bird species are state or federally listed, and most have relatively stable populations. The behavior of several waterbird species that were expected to be sensitive to human traffic suggests that these species are able to adapt to the presence of low-impact activities like walking, jogging, and bicycle riding that take place on the existing trail.

Mammals/Reptiles/Amphibians/Fish

Observations of mammals, reptiles, amphibians, and fish or evidence of their presence was recorded during numerous site inspections throughout the ROW. No specific quantitative or qualitative surveys (i.e., trapping) were conducted within the study area for this evaluation. Observations made were generally of relatively common species in eastern Massachusetts. Such observations of mammals included white-tailed deer, common raccoon, eastern cottontail, American beaver, little brown bat, and eastern gray squirrel. Observations of reptiles included painted turtle and common garter snake. Observations of amphibians included spotted salamander, wood frog, gray treefrog, northern leopard frog, American toad, green frog, American bullfrog, and spring peeper. A variety of fish species are believes to occur in permanent water bodies and waterways proximal to the ROW. No state-listed species were observed during the site inspections.

In addition to the observations recorded during site inspections by VHB, numerous local residents provided information pertaining to known wildlife usage in the ROW. No formal surveys were conducted by abutting residents. However, descriptions of observations of various species were submitted to the Natural Resources Administrator and relayed to VHB. Such mammal species include white-tailed deer, common raccoon, northern river otter, common muskrat, American mink, long-tailed weasel, fisher, red fox, coyote, voles, mice, eastern chipmunks, and red and gray squirrel. Observations of reptiles and amphibians included common garter snake, northern water snake painted turtle, snapping turtle, green frog, wood frog, spring peepers, and spotted salamander. A regularly used painted turtle nesting area was described within the ROW located north of Commonwealth Avenue. Field observations supported the fact that this area is providing nesting habitat for turtles. Additionally, undocumented observations of evidence of wood turtles and blue-spotted salamanders (both state-listed species) have been reported, associated with the certified vernal pools and Jennie Dugan Swamp.

Identification of Areas of Significant Environmental Sensitivity

Areas of significant environmental sensitivity were determined through a review of available mapping and GIS data, supplemented with field observations.

Vegetation

Existing vegetation within the ROW was evaluated during the numerous site inspections of the project corridor. No unique or significant plant communities were observed within the portion of the ROW that would be developed into a shared-use trail. Generally, vegetation community types observed were consistent with historically disturbed areas common throughout eastern Massachusetts. A community of mature silver maple trees exists within the BVW associated with the Assabet River (Wetland 10). This area is an excellent example of a native mature forested wetland that provides valuable wildlife habitat and important riverine floodplain.

Unfortunately, the most notable vegetational feature within the ROW is the presence of exotic invasive species. The most commonly observed invasive species were Japanese knotweed (*Polygonum cuspidatum*), tartarian honeysuckle (*Lonicera tatarica*), glossy buckthorn (*Rhamnus frangula*), common reed (*Phragmites australis*), and Oriental bittersweet (*Celastrus orbiculatus*). Although varying degrees of invasive plant infestations were observed throughout the corridor, the area south of Powder Mill Road appeared to be less impacted than the rest of the ROW. The largest infestation of Japanese knotweed was observed north of Commonwealth Avenue, immediately adjacent to the area that is locally known to provide valuable turtle nesting habitat. Tartarian honeysuckle was observed in greatest densities north of

Assabet River Forested Wetland (Wetland 10)

Jennie Dugan Swamp (Wetland 4), both within and adjacent to the railbed. Glossy buckthorn was noted throughout the ROW, occurring in wetland resources and buffer zone areas. Common Reed was observed in several small patches within Jennie Dugan Swamp. Although its presence was noted, the common reed is currently not a dominant plant within the large marsh habitat. Oriental bittersweet was observed in varying degrees throughout the ROW. However, it was not observed to be dominating any plant communities and causing significant damage to mature forested areas.

The quantity and diversity of exotic invasive plant species within the ROW is not uncommon in comparison with other areas of eastern Massachusetts. The historic disturbance of the ROW, coupled with the relatively dense suburban landscape, provides numerous sources for invasive seeds and many opportunities for community establishment. Large infestations may warrant long-term monitoring and treatment to control their spread. However, it is unrealistic to believe that the invasive species currently occurring within the ROW can be fully eradicated.

Rare Species

The U.S. Fish and Wildlife Service (USFWS) was contacted for information pertaining to the presence of federally listed rare species within the project area. According to USFWS, "No federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area."

NHESP was also contacted to obtain up-to-date information on the presence of stat-listed rare species within the project area. According to NHESP, there are several state-listed rare species that occur within the project area falling under the classification of "endangered", "threatened", and "special concern". NHESP defines

these classifications as follows. "Endangered" species are native species which are in danger of extinction throughout all or part of their range, or which are in danger of extirpation from Massachusetts, as documented by biological research and inventory. "Threatened" species are native species which are likely to become endangered in the foreseeable future, or which are declining or rare as determined by biological research and inventory. "Special concern" (SC) species are native species which have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts.

As described above, the three areas along the ROW that support Priority Habitat for state-listed species occur at White Pond, adjacent to Old Marlborough Road, and associated with the Assabet River. An Estimated Habitat polygon occurs coincident with the Priority Habitat of the Assabet River. The White Pond habitat area supports two threatened plant species. The area near Old Marlborough Road supports a special concern plant species and an endangered plant species. An insect of special concern is listed for Assabet River polygon. At the request of NHESP, no specific species information is contained in this report.

Coordination with NHESP is an ongoing effort and rare plant surveys are likely to be required as part of future design phases. Additionally, specific studies will be required to see determine if any rare species will be directly impacted by the development of the shared-use trail. The Concord Natural Resources Commission is currently coordinating further studies pertaining to rare species within the project corridor.

Vernal Pools

Three NHESP certified vernal pools occur proximal to the ROW. Two (CVP 955 and CVP 956) occur just north of Powder Mill Road, one (CVP 944) occurs just south of Powder Mill Road. Field observations made in the Spring of 2007 support the original documents used to certify the vernal pools. Evidence of breeding wood frogs and spotted salamanders was observed. Although no rare species have been documented within the vernal pool habitats, a local resident has indicated that the pools may provide breeding habitat to blue-spotted salamanders (a state-listed rare species). The portion of the abandoned railbed is unlikely to provide non-breeding habitat due to the presence of the railroad ties and ballast. However, the vegetated embankments of the railbed may provide suitable non-breeding habitat to various vernal pool species such as mole salamanders.

The potential impacts to vernal pools through the creation of the shared-use trail is likely to be limited as the trail will be designed to avoid the loss of overstory vegetation and to avoid alterations to local hydrology. In order to avoid impacts to vernal pool species, it is recommended that construction of the trail will be timed to

Wetland 3 Certified Vernal Pool

avoid springtime migrations towards and away from the pools. The removal of the existing rails within the right-of-way may provide a benefit to vernal pool species by improving migratory pathways.

Important Natural Communities

Three areas adjacent to the ROW have been identified for their importance as natural communities. These communities represent areas of high diversity, unique vegetation, and high levels of connectivity to large wetland or natural complexes. Although virtually all of the wetland resources along the ROW provide some measure of importance to the natural environment, these natural features along the ROW have been recognized for their importance and may warrant more detailed consideration through the design and construction process.

Assabet River

The Assabet River (Wetland 10) is part of the larger SuAsCo watershed. The portion of the Assabet river that crosses the ROW is designated as a Wild and Scenic River under the Federal Wild and Scenic River Act. The Act protects rivers that "*possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.*" As the largest river that crosses the ROW, it provides important wildlife, floodplain capacity, aesthetic, and recreational values. These values apply to those areas within the ROW, as well as to the greater riverine system and associated watershed. The mature silver maple forest within the wetlands associated with Assabet River is one of the more unique vegetative communities along the ROW.

Assabet River at ROW Crossing

As only the original bridge abutments remain in this area, a new bridge structure will be required for the proposed trail. The final design of this bridge should maintain the values of the area, account for the value of the mature vegetation in this area, and avoid impacts, as feasible.

Jennie Dugan Swamp

The Jennie Dugan Swamp (Wetlands 4 & 5) provides the greatest diversity of wildlife habitat of the wetland resources located along the ROW. This area maintains several important habitat features including open water, numerous snags for nesting and perching, woody debris, basking sites, and habitat edge value. Although the area has maintained a high wildlife value, the railbed provides an existing man-made alteration to the resource. Observations made during the bird survey indicated that several species of wildlife that utilize this area appear to have adapted to the presence of recreational users of the trail.

The elevated railbed through the swamp has become well-vegetated, forming a screen between the existing walking path and the wildlife habitat features of the wetland. Further study of this area is warranted to determine what effects to wildlife, if any, may result from the construction of the trail. The presence of an exotic invasive wetland plant, common reed, within the Jennie Dugan Swamp also warrants monitoring. Although it currently occurs in only small patches within the wetland, the species is notorious for establishing monocultural stands and greatly decreases wildlife habitat value.

Jennie Dugan Swamp - East Side of ROW (above); West Side of ROW (below)

White Pond

White Pond is a ±43 acre naturally occurring water body located in the town of Concord, about a half mile north of Route 117. It is identified by NHESP as a Living Waters Core Habitat, due to the presence of a rare plant (Resupinate Bladderwort) which is an indicator of healthy aquatic ecosystems. White Pond is classified as a kettle-pond and was formed through the deposition of glacial outwash around a block piece of ice. When the ice melted, it left a deep depression in the landscape that eventually filled with water. White Pond, like most kettle-ponds, has no surficial inputs or outputs resulting in a water turnover rate influenced by precipitation, evaporation, and groundwater recharge.

The pond floor primarily consists of sand and gravel, with limited vegetation. The pond is relatively deep with a maximum depth of 53 feet and an average depth of 30 feet. The pond is frequented by fishermen as it is well known for its small and largemouth bass, rainbow, brook and brown trout and its access by a public boat

White Pond

ramp on the northeastern part of the pond. Currently, the town regulates its use and the hours it can be utilized.

Concerns have been raised in response to the proposed development of the shared-use trail in proximity to White Pond. Concerns have primarily been related to the health of the lake, specifically in regards to water quality. The past several decades have shown a slight downward trend in overall water quality and there is a fear that this will be accelerated by increased pedestrian and bicycle traffic in the area as a result of the trail.

Declines in water quality generally occur very gradually, but become noticed with sudden physical changes observed on the body of water. White Pond suffered its first algal bloom in 1987 giving a strong indication of a declining level of water quality. An increase in limiting factors for plant growth, generally phosphorus and nitrogen are often attributed to this sudden increase in plant matter. Algal blooms are aesthetically unpleasing, but hold deeper implications as they are correlated with the amount of dissolved oxygen in a pond ecosystem. The increased levels of plant matter within the pond will follow an annual cycle that leads to its decomposition at the bottom of the pond, consuming oxygen that was previously unused and available for other species. If this cycle continues for several years, it can eventually lead to anaerobic conditions in deeper, cooler waters required for some species of fish.

Water quality records have been intermittently kept on White Pond for over the past 50 years. Measured parameters include transparency, and phosphorus. Transparency is recorded by lowering a weighted disc through the water column until it is no longer visible. Depths are recorded and used as a measurement of lake productivity. This depth was 18 feet in August of 1949, and 21.50 feet in July of 2007. This depth has varied by years, but has never been shallower than 15 feet suggesting the pond,

at its worst transparency readings, was well within the range of a moderately productive lake (13-23 feet) (Maine PEARL website[1]). The phosphorus readings that have been recorded vary greatly from 3 parts per billion (ppb) to 230 ppb. Though these readings were taken at different depths, the large inconsistencies may suggest experimentally unreliable results. Ultra-oligotrophic lakes, or lakes that have close to no productivity, are extremely clear and generally very deep, have phosphorus levels less than 5 ppb, while hyper-eutrophic lakes, or lakes that have extremely high levels of productivity, can be green in color, and shallow, have phosphorus levels greater than 100 ppb. It is unlikely that a body of water like White Pond would become a hyper-eutrophic pond when it was an ultra-oligotrophic pond only 50 years earlier.

There are many contributing factors that can increase the nitrogen and phosphorus loading that goes into a water body. Runoff from surrounding areas, notably from fertilizer, is often a large contributor. Impervious surfaces such as parking lots and roads that drain directly into water bodies can add a significant amount, as can erosion of soils and sediments from the banks of a water body.

Another contributor of excess nutrients is outdated septic systems that ineffectively leach into the soil and into ground water. A study done on nearby Walden Pond concluded that human waste acted as a significant contributor to increased phosphorus and nitrogen levels in addition to the factors described above. This factor was based off of an estimated 216,000 swimmers per year compared to far lower number at White Pond where swimming is prohibited (Colman and Friesz)[2]. Even if swimming did occur illegally, it would not occur at the same rate and would therefore have a much lower impact on the nutrient loading at White Pond.
Though the creation of the proposed rail trail will inevitably increase pedestrian and bicycle traffic in the area, there are steps that can be taken to limit impacts on the pond. Assuming that nutrient loading is the primary concern regarding the health of the lake, as it has the potential to generate algal blooms and detrimentally effect overall water quality, steps can be taken to ensure that impacts will not further the downward trend witnessed in recent decades. Any authorized access to the pond should be in a controlled manner, to avoid further loss of vegetative cover and erosion. Runoff from the trail should be directed away from the pond and allowed to infiltrate. Existing or proposed management plans for White Pond should include considerations of the proposed trail and the specific opportunities and challenges that the existence of the trail may present.

Erosion control is imperative to limiting the addition of nutrients into the water. It is important to have a forest with a dense canopy and a thick understory. The canopy acts as the initial barrier by dissipating heavy raindrops, while the understory maintains soil and holds it in place. In areas where this does not exist, trees, shrubs, and herbaceous layers can be planted. Any addition of impervious surfaces that may

▼

1 *Lake Classification*. Retrieved September, 9, 2007 from http://www.pearl.maine.edu/glossary/misc/lake_class.htm

2 Colman, J.A. and Paul J. Friesz. *Geohydrology and Limnology of Walden Pond, Concord, Massachusetts*. Pubs.water.usgs.gov.

result in direct runoff will be constructed in a way that directs water and any sediment away from the pond into an area that will filter out sediment and maximize infiltration.

White Pond, due to its designation as a Living Waters Core Habitat, warrants special attention in the final trail design and during construction. Measures to remedy existing erosion on the pond embankment and to prevent future erosion will be important to ensuring that a shared-use trail does not contribute to degradation of the pond's water quality. As only a small portion of the pond immediately abuts the ROW, protective measures associated with the ROW should part of an overall plan to protect the pond from sources of degradation throughout the pond's watershed.

Massachusetts Environmental Policy Act

The Massachusetts Environmental Policy Act (MEPA) has been reviewed for thresholds pertaining to land, rare species, wetlands, waterways and tidelands, transportation, and historical and archaeological resources. ENF and Mandatory EIR thresholds are as follows.

Land

ENF and Mandatory EIR.

- Direct alteration of 50 or more acres of land.
- Creation of ten or more acres of impervious area.

ENF and Other MEPA Review if the Secretary So Requires.

- Direct alteration of 25 or more acres of land.
- Creation of five or more acres of impervious area.

Rare Species

ENF and Mandatory EIR. None.
ENF and Other MEPA Review if the Secretary So Requires.

- Alteration of designated significant habitat.
- Taking of an endangered or threatened species or species of special concern, provided that the Project site is two or more acres and includes an area mapped as a Priority Site of Rare Species Habitats and Exemplary Natural Communities.

Wetlands, Waterways, and Tidelands

ENF and Mandatory EIR.

- Provided that a Permit is required:
  - Alteration of one or more acres of bordering vegetating wetlands; or

- Alteration of ten or more acres of any other wetlands.
- Alteration requiring a variance in accordance with the Wetlands Protection Act.
- Provided that a Chapter 91 License is required, New non-water dependent use or Expansion of an existing non-water dependent structure, provided the use or structure occupies one or more acres of waterways or tidelands.

ENF and Other MEPA Review if the Secretary So Requires.

- Provided that a Permit is required:
  - Alteration of 5,000 or more sf of bordering or isolated vegetated wetlands;
  - New fill or structure or Expansion of existing fill or structure, except a pile-supported structure, in a velocity zone or regulatory floodway

Transportation

ENF and Mandatory EIR.

- Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project:
  a. construction of a New roadway two or more miles in length; or
  b. widening of an existing roadway by one or more travel lanes for two or more miles.
- Generation of 3,000 or more New adt on roadways providing access to a single location.
- Construction of 1,000 or more New parking spaces at a single location.

ENF and Other MEPA Review if the Secretary So Requires.

- Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project:
  a. construction of a New roadway one-quarter or more miles in length; or
  b. widening of an existing roadway by four or more feet for one-half or more miles.
- Construction, widening or maintenance of a roadway or its right-of-way that will:
  a. alter the bank or terrain located ten more feet from the existing roadway for one-half or more miles, unless necessary to install a structure or equipment;
  b. cut five or more living public shade trees of 14 or more inches in diameter at breast height; or
  c. eliminate 300 or more feet of stone wall.
- Abandonment of a substantially intact rail or rapid transit right-of-way.
- Generation of 2,000 or more New adt on roadways providing access to a single location.
- Generation of 1,000 or more New adt on roadways providing access to a single location and construction of 150 or more New parking spaces at a single location.

- Construction of 300 or more New parking spaces at a single location.

Historical and Archaeological Resources

ENF and Mandatory EIR. None.
ENF and Other MEPA Review if the Secretary So Requires. Unless the Project is subject to a Determination of No Adverse Effect by the Massachusetts Historical Commission or is consistent with a Memorandum of Agreement with the Massachusetts Historical Commission that has been the subject of public notice and comment:

- Demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth; or
- Destruction of all or any part of any Archaeological Site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth.

EOEA Advisory Opinion

In March of 2007, the Executive Office of Environmental Affairs issued an Advisory Opinion pertaining to MEPA filing requirements for the Bruce Freeman Rail Trail. This opinion found: "*the Bruce Freeman Rail Trail is not a common plan or undertaking requiring the submission of a single environmental review document under MEPA. However, in order to ensure due compliance with MEPA, I will require each municipality to submit an Environmental Notification Form (ENF) for its own portion of the rail trail, provided that it would exceed MEPA review thresholds. Each ENF should include an analysis of alternatives, including alternative alignments, and should present a project with logical endpoints, such as a road or public park, rather than municipal boundaries, in order to preserve the ability of adjacent municipalities to explore alternative alignments that avoid or minimize environmental impacts*."

Therefore, at a minimum, the Concord portion of the Bruce Freeman Rail Trail will require the filing of an ENF under MEPA.

Summary and Recommendations

VHB was contracted by the Town of Concord to conduct an evaluation of natural resources within a 3.5-mile section of abandoned railroad right-of-way associated with a proposed regional shared-use trail known as the Bruce Freeman Rail Trail. The evaluation included several tasks to identify sensitive natural resources within the project area that could be affected by the construction and/or operational use of a shared-use trail. Though a variety of environmental resource areas are found along

the ROW, none appear to be of particular constraint to the development of a shared-use trail. The wildlife habitat review indicates that the wetland resource areas vary in habitat value but also concluded that no high value habitat features would be directly impacted by the construction of a shared-use trail. Additionally, no evidence of species that would be especially sensitive to the trail were identified through the survey. The 25% trail design has incorporated the constraints identified herein.

Recommendations for design considerations or further study include the following:

- A continued assessment of the ROW for the presence of rare species in coordination with NHESP should occur.
- Existing or proposed management plans for White Pond should include considerations of the proposed trail and the specific opportunities and challenges that the existence of the trail may present. Consideration should be given to enhanced erosion control measures and treatment of existing erosion issues proximal to White Pond.
- Timing of construction activities should consider proximity to vernal pools and avoid critical migratory periods.
- Final design plans may warrant inclusion of monitoring and potential treatment of invasive plant infestations to prevent the further spread of such species along the ROW.
- The final landscape design should exclusively use native species to counteract presence of exotic invasive species.

Attachment A
DEP Wildlife Guidance
Appendix B Forms

■

➤ Appendix B Forms

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1: Summary Sheet

Project Name: Bruce Freeman Rail Trail

Location: Concord, Massachusetts

Date: August 20, 2007

Size of Area Being Impacted: Project is at 25% design.

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/Waterway	Wetland	Upland*	Total Area
1. Wetland 1 (White Pond)				
2. Wetland 2				
3. Wetland 3				
4. Wetland 4 (Jennie Dugan Swamp)				
5. Wetland 5 (Jennie Dugan Swamp)				
6. Wetland 6				
7. Wetland 7				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

The subject site follows an abandoned railroad right-of-way from the Sudbury town line, north towards Route 2. A full description can be found in the Abbreviated Notice of Resource Area Delination submitted September, 2007.

Certification

I hereby Certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

_____

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Appendix B: Detailed Wildlife Habitat Evaluation

Part 1: Summary Sheet

Project Name: Bruce Freeman Rail Trail

Location: Concord, Massachusetts

Date: August 20, 2007

Size of Area Being Impacted: Project is at 25% design.

Impact Areas (linear feet, square feet, or acres for each of the impact areas within the site)

Name	Waterbody/Waterway	Wetland	Upland*	Total Area
1. Wetland 8				
2. Wetland 9				
3. Wetland 10 (Assabet River)				
4. Wetland 11 (Nashoba Brook)				
5. Wetland 12 (Nashoba Brook)				
6.				
7.				

*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

The subject site follows an abandoned railroad right-of-way from the Sudbury town line, north towards Route 2. A full description can be found in the Abbreviated Notice of Resource Area Delination submitted September, 2007.

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I hereby Certify that this project has been designed to avoid, minimize, and mitigate adverse effects on wildlife habitat, and that it will not, following two growing seasons of project completion and thereafter, substantially reduce its capacity to provide important wildlife habitat functions.

_____

Signature of Wildlife Specialist (per 310 CMR 10.60 (1) (b))

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 1 (White Pond)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Open Water
Subclass:

Hydrology/Water Regime:
- [x] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 20.5 Shrubs (<20') 0 Woody Vines 3 Mosses 10.5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	White Pine		
Tree	Red Maple		
Tree	Red Oak		
Shrub	Sweet Pepper Bush		
Shrub	Huckleberry		
Herb	Massachusetts Fern		

C. Inventory (Soils)

Soil Survey Unit: Hinckley Loamy Sand, 15-15% slopes
Drainage Class: Excessively drained
Texture (upper part): sandy loam; weak fine granular structure
Depth: 12-24 in.

Depth to Water Table _____

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: <10

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 6-12" dbh 1 12-18" dbh 1 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

1 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____ 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____ >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☒ breeding amphibians ☒ non-breeding amphibians (foraging, rehydration)
☒ turtles ☒ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☒ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☐ Evidence of significant chemical contamination

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community; evidence of recreational use on pond)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 2

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-leaved deciduous

Hydrology/Water Regime:
- ☐ Permanently flooded
- ☐ Intermittently exposed
- ☒ Semi-permanently flooded
- ☐ Seasonally flooded
- ☐ Saturated
- ☐ Temporarily flooded
- ☐ Intermittently flooded
- ☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name Red Maple Swamp
Vegetation Description Red maple is dominant over story
Physical Description Hillside seeps and upland drainage ways

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 20.5 Shrubs (<20') 0 Woody Vines 3 Mosses 10.5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Maple	Herb	Canada Mayflower
Tree	White Pine		
Tree	Red Oak		
Tree	Red Birch		
Shrub	Red Maple		
Shrub	High Bush Blueberry		
Herb	Hay Scented Fern		

C. Inventory (Soils)

Soil Survey Unit: Hinckley Loamy Sand, 15-25% slopes
Drainage Class: Excessively Drained
Texture (upper part): Weak Fine Granular Structure
Depth: 13-24 in.

Depth to Water Table _____

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: <5

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 6-12" dbh 1 12-18" dbh _____ 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

1 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____ 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____ >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☒ breeding amphibians ☒ non-breeding amphibians (foraging, rehydration)
☒ turtles ☒ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☒ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☐ Evidence of significant chemical contamination

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 3

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [x] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 20.5 Shrubs (<20') 0 Woody Vines 0 Mosses
20.5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	White Pine		
Tree	White Oak		
Tree	Red Maple		
Tree	Red Oak		
Shrub	High Bush Blueberry		
Shrub	Tussock Sedge		
Shrub	Red Maple		

C. Inventory (Soils)

Soil Survey Unit: Hinckley series
Drainage Class: Excessively drained
Texture (upper part): Weak fine granular structure
Depth: 13-24 in.
Depth to Water Table _____

Hinckley Loamy Sand, 15-15% slopes
Hinkley Loamy Sand, 3-8% slopes
Scarboro Sandy Loam, 0-3 % slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: <5

Number (or density) of Standing Dead Trees (potential for cavities and perches):
2 6-12" dbh 2 12-18" dbh 2 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_1_12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_1_>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☒ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☒ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☐ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☒ present	☐ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☒ present	☐ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☒ present	☐ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☒ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☐ Evidence of significant chemical contamination

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 4 (Jennie Dugan Swamp)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [X] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 38 Trees (>20') 20.5 Shrubs (<20') 0 Woody Vines 0 Mosses 63 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Maple		
Tree	White Pine		
Tree	Red Oak		
Shrub/Herb	Cattail		

C. Inventory (Soils)

Soil Survey Unit: Scarboro Sandy Loam
Drainage Class: Very poorly drained soil
Texture (upper part): Sandy, mixed, mesic
Depth: 0-26 in.
Depth to Water Table

Scarboro Sandy Loam, 0-3% slopes
Sudbury Fine Sandy Loam, 3-8% slopes
Windsor Loamy Sand, 3-8% slopes
Hinckley Loamy Sand, 15-25% slopes
Freetown Muck

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☒ Abundant ☐ Present ☐ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: 1

Number (or density) of Standing Dead Trees (potential for cavities and perches):

_____6-12" dbh _____12-18" dbh _____18-24" dbh _____>24" dbh

Marsh has large quanitites of standing dead trees on either side of the ROW.

Number of Tree Cavities in trunks or limbs of: Tree cavities are abundant in dead trees on both side of the ROW.

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)

☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)

☒ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)

☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)

☒ Rock piles, crevices or hollow logs suitable for:

☐ otter ☒ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture

☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☒ breeding amphibians ☒ non-breeding amphibians (foraging, rehydration)

☒ turtles ☒ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders) ☐ present ☒ absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders) ☐ present ☒ absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter) ☐ present ☒ absent

Undercut or overhanging banks (small mammals, mink, weasels) ☐ present ☒ absent

Vertical sandy banks (bank swallow, kingfisher) ☐ present ☒ absent

Areas of ice-free open water in winter ☐ present ☒ absent

Mud flats ☐ present ☒ absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting ☐ present ☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites: ☐ present ☒ absent

Bank swallow colony: ☐ present ☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☒ yes	☐ no
	2.0 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☒ yes	☐ no
	10.0 acres in size?	☒ yes	☐ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☒ yes	☐ no
	10.0 acres in size?	☒ yes	☐ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☒ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (presence of ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community; evidence of recreational use on pond)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 5 (Jennie Dugan Swamp)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Scrub Shrub
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [X] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 10.5 Trees (>20') 10.5 Shrubs (<20') 0 Woody Vines 0 Mosses 38 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Gray Birch		
Herb/Shrub	Broad-Leaved Cattail		
Herb	Carex sp.		
Herb	Arrowhead		
Shrub	Glossy Buckthorn		

C. Inventory (Soils)

Soil Survey Unit: Freetown Muck
Drainage Class: Very poorly drained
Texture (upper part): organic and till outwash
Depth: 0-51 in.
Depth to Water Table _____

Freetown Muck
Windsor Loamy Sand, 3-8% slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☐ Abundant ☒ Present ☐ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☒ Present ☐ Absent

Number of trees (live or dead) > 30" DBH: _____

Number (or density) of Standing Dead Trees (potential for cavities and perches):
_____6-12" dbh _____12-18" dbh _____18-24" dbh _____>24" dbh

**North end of marsh has >50 standing dead tree; South end of marsh has <50 standing dead trees.

Number of Tree Cavities in trunks or limbs of: **Abundant in marsh

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☒ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☒ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☒ breeding amphibians ☒ non-breeding amphibians (foraging, rehydration)
☒ turtles ☒ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☒ yes	☐ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (presence of ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community; recreational ball field)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 6

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass:

Hydrology/Water Regime:
- ☐ Permanently flooded
- ☐ Intermittently exposed
- ☐ Semi-permanently flooded
- ☐ Seasonally flooded
- ☐ Saturated
- ☐ Temporarily flooded
- ☒ Intermittently flooded
- ☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 85.5 Shrubs (<20') 10.5 Woody Vines 0 Mosses
63 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Maple		
Tree	White Oak		
Shrub	Oriental Bittersweet		
Shrub	Honeysuckle		
Shrub	Glossy Buckthorn		
Herb	Poison Ivy		

C. Inventory (Soils)

Soil Survey Unit: Hinckley Loamy Sand, 8-15%, 15-25% slopes
Drainage Class: Excessively drained
Texture (upper part): sandy glacial outwash from granite, gneiss, and schist
Depth: 12-30 in.

Depth to Water Table _____

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: _____

Number (or density) of Standing Dead Trees (potential for cavities and perches):

_____6-12" dbh _____12-18" dbh _____18-24" dbh _____>24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☒ Evidence of significant levels of dumping (litter, small twigs, and branches)

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 7

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- ☐ Permanently flooded
- ☐ Intermittently exposed
- ☐ Semi-permanently flooded
- ☒ Seasonally flooded
- ☐ Saturated
- ☐ Temporarily flooded
- ☐ Intermittently flooded
- ☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 63 Shrubs (<20') 3 Woody Vines 10.5 Mosses 63 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Maple		
Tree	Red Oak		
Tree	White Oak		
Shrub	High Bush Blueberry		
Shrub	Glossy Buckthorn		
Herb	Tussock Sedge		
Herb	Sphagnum		

C. Inventory (Soils)

Soil Survey Unit: Birdsall silty loam
Drainage Class: Very poorly drained
Texture (upper part): silt loam
Depth: 16-30 in.
Depth to Water Table _____

Windsor Loamy Sand, 3-8% slopes
Birdsall Silty Loam, 0-3% slopes
Raynham silt loam, 0-5% slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☒ Present ☐ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: _____

Number (or density) of Standing Dead Trees (potential for cavities and perches):

2 6-12" dbh _____ 12-18" dbh _____ 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☐ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders) ☐ present ☒ absent

Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders) ☐ present ☒ absent

Underwater banks of fine silt and/or clay (beaver, muskrat, otter) ☐ present ☒ absent

Undercut or overhanging banks (small mammals, mink, weasels) ☐ present ☒ absent

Vertical sandy banks (bank swallow, kingfisher) ☐ present ☒ absent

Areas of ice-free open water in winter ☐ present ☒ absent

Mud flats ☐ present ☒ absent

Exposed areas of well-drained, sandy soil suitable for turtle nesting ☐ present ☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites: ☐ present ☒ absent

Bank swallow colony: ☐ present ☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☐ Evidence of significant levels of dumping

☒ Evidence of significant erosion or sedimentation problems (Adjacent agricultural field)

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (Agricultural fields)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 8

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 8-20-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
☐ Permanently flooded
☐ Intermittently exposed
☐ Semi-permanently flooded
☒ Seasonally flooded
☐ Saturated
☐ Temporarily flooded
☐ Intermittently flooded
☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 98 Trees (>20') 63 Shrubs (<20') 3 Woody Vines 3 Mosses
63 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	White Pine		
Tree	Red Maple		
Shrub	High Bush Blueberry		
Herb	Skunk Cabbage		
Herb	Cinnamon Fern		

C. Inventory (Soils)

Soil Survey Unit: Raynham silt loam
Drainage Class: Poorly drained
Texture (upper part): course-silty loam
Depth: 16-37 in.
Depth to Water Table

Birdsall silty loam, 0-3% slopes
Raynham silt loam, 0-5% slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☒ Present ☐ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☒ Present ☐ Absent

Number of trees (live or dead) > 30" DBH: ____

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 6-12" dbh 1 12-18" dbh 1 18-24" dbh ____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☒ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 9

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 10-02-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Scrub-Shrub
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- ☐ Permanently flooded
- ☐ Intermittently exposed
- ☐ Semi-permanently flooded
- ☐ Seasonally flooded
- ☐ Saturated
- ☐ Temporarily flooded
- ☒ Intermittently flooded
- ☐ Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name _____
Vegetation Description _____
Physical Description _____

B. Inventory (Plant community)

%Cover: 38 Trees (>20') 85.5 Shrubs (<20') 20.5 Woody Vines 0 Mosses 63 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Shrub	Silky Dogwood		
Shrub	Glossy Buckthorn		
Shrub	Oriental B.H.		
Herb	Rough Stemmed Goldenrod		
Woody Vine	Riverbank Grape		

C. Inventory (Soils)

Soil Survey Unit: Raynham silt loam
Drainage Class: Poorly
Texture (upper part): silt and very fine sand
Depth: 16-37

Depth to Water Table _____

Scio very sandy loam, 3-8% slopes
Raynham silt loam, 0-5% slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☒ Present ☐ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☒ Present ☐ Absent

Number of trees (live or dead) > 30" DBH: _____

Number (or density) of Standing Dead Trees (potential for cavities and perches):

1 6-12" dbh 2 12-18" dbh _____ 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☒ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
	25.0 acres in size?	☐ yes	☒ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☒ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☐ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 10 (Assabet River)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 10-02-07

Person completing form per 310 CMR 10.60(1)(b): Matthew Varrell, Ryan Scott

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Varrell

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [x] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [x] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name Small-River Floodplain Forest
Vegetation Description Dominated by Silver Maple and Green Ash
Physical Description Shallow banks with area subject to over bank flooding.

B. Inventory (Plant community)

%Cover: 85.5 Trees (>20') 38 Shrubs (<20') 3 Woody Vines 3 Mosses
20.5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Silver Maple	Herb	Poison Ivy
Tree	Elm		
Shrub	Oriental Bittersweet		
Shrub	Glossy Buckthorn		
Shrub	Silky Dogwood		
Tree	Weeping Willow		
Herb	Spotted Touch-Me-Not		

C. Inventory (Soils)

Soil Survey Unit: Merrimac fine sandy loam
Drainage Class: somewhat excessively drained
Texture (upper part): sandy loam, weak granular struc.
Depth: 18-30 in.
Depth to Water Table _____

Hinckley Fine Sandy Loam, 3-8%
Merrimac-Urban land complex, 0-8% slopes
Merrimac fine sandy loam, 8-15% slopes

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☐ Abundant ☒ Present ☐ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: <10

Number (or density) of Standing Dead Trees (potential for cavities and perches):
3 6-12" dbh _____ 12-18" dbh _____ 18-24" dbh _____ >24" dbh

Number of Tree Cavities in trunks or limbs of:

1 6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____ 12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____ >18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☒ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☒ otter ☒ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☒ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☒ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☒ present	☐ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☒ present	☐ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☒ present	☐ absent
Mud flats	☒ present	☐ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☒ present	☐ absent
Flooded > 25 cm (pied-billed grebe)	☒ present	☐ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☒ present	☐ absent
Flooded > 25 cm (least bittern, common moorhen)	☒ present	☐ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☒ present	☐ absent
Flooded > 25 cm (least bittern, common moorhen)	☒ present	☐ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity *(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)*

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☒ yes	☐ no
	10.0 acres in size?	☒ yes	☐ no
	25.0 acres in size?	☒ yes	☐ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☒ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 11 (Nashoba Brook)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 10-02-07

Person completing form per 310 CMR 10.60(1)(b): Ryan Scott, Christine Thurber

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Vanni

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [x] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name Small-River Floodplain Forest
Vegetation Description Dominated by Silver Maple and Green Ash
Physical Description Shallow banks with area subject to over bank flooding.

B. Inventory (Plant community)

%Cover: 85.5 Trees (>20') 63 Shrubs (<20') 20.5 Woody Vines 0 Mosses 20.5 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Oak		
Tree	Elm		
Tree	Silver Maple		
Tree	Red Maple		
Shrub	Glossy Buckthorn		
Vine	Grape		
Herb	Sensitive Fern		

C. Inventory (Soils)

Soil Survey Unit: Deerfield loamy sand
Drainage Class: moderately well drained soil
Texture (upper part): loamy fine sand
Depth: 18-35 in.
Depth to Water Table _____

Urban Land
Udorthents-Urban land complex, 0-25%
Deerfield loamy sand, 3-8%

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)
☐ Abundant ☐ Present ☒ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)
☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)
☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: 5

Number (or density) of Standing Dead Trees (potential for cavities and perches):

_____6-12" dbh _____12-18" dbh _____18-24" dbh _____>24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☐ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☒ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☐ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☒ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☒ present	☐ absent
Vertical sandy banks (bank swallow, kingfisher)	☒ present	☐ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☒ yes	☐ no
	10.0 acres in size?	☒ yes	☐ no
	25.0 acres in size?	☒ yes	☐ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☒ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☒ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (residential community)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8

Appendix B: Detailed Wildlife Habitat Evaluation
Part 2: Field Data Form
(For each wetland or non-wetland resource area)

I. GENERAL INFORMATION

Project Location (from NOI page 1): Bruce Freeman Rail Trail

Impact Area (number/name): Wetland 12 (Nashoba Brook)

Date(s) of site visit(s) and data collection: 7-27-2007

Weather Conditions During Site Visit (if snow cover, include depth): Sunny, 90 degrees

Date this form was completed: 10-02-07

Person completing form per 310 CMR 10.60(1)(b): Ryan Scott, Christine Thurber

The information on this data sheet is based on my observations unless otherwise indicated

Signature: Matthew Vanni

II. SITE DESCRIPTION (complete A or B under Classification -See instructions for full description)

A. Classification

1. For Wetland Resource Areas, complete the following:

System: Palustrine
Subsystem:
Class: Forested
Subclass: Broad-Leaved Deciduous

Hydrology/Water Regime:
- [x] Permanently flooded
- [ ] Intermittently exposed
- [ ] Semi-permanently flooded
- [ ] Seasonally flooded
- [ ] Saturated
- [ ] Temporarily flooded
- [ ] Intermittently flooded
- [ ] Artificially flooded

2. For Riverfront or Bordering Land Subject to Flooding Resource Areas, complete the following:
Use a terrestrial classification system such as one of the two listed below:

a. "Classification of the Natural Communities of Massachusetts (Draft)" by Patricia C. Swain and Jennifer B. Kearsley, MA DFW NHESP, Westborough, MA. July 2000. (www.mass.gov/dfwele/dfw/nhsep/nhclass.htm)
b. "New England Wildlife: Habitat, Natural History, and Distribution" by Richard M. DeGraaf and Deborah D. Rudis, USDA Forest Service, Northeastern Forest Experiment Station. General Technical Report NE-108. August 1992. 491 pages.

Community Name Low-energy riverbank
Vegetation Description Herbaceous and graminoid
Physical Description Low gradient rivers that are not subject to sever flooding.

B. Inventory (Plant community)

%Cover: 20.5 Trees (>20') 20.5 Shrubs (<20') 20.5 Woody Vines 0 Mosses 38 Herbaceous

Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata):

Strata	Plant Species	Strata	Plant Species
Tree	Red Maple		
Shrub	Silky Dogwood		
Shrub	Glossy Buckthorn		
Shrub	Purple Loosestrife		
Woody Vine	Grape		

C. Inventory (Soils)

Soil Survey Unit: Whitman Loams
Drainage Class: Very poorly drained soil
Texture (upper part): loam, very weak fine
Depth: 12-25 in.
Depth to Water Table

Birdsall silty loam, 0-3% slopes
Windsor loamy sand, 3-8% slopes
Whitman loams, 0-5% slopes
Hollis-rock outcrop complex, 3-15% slopes
Deerfield loamy sand

III. IMPORTANT HABITAT FEATURES (Complete for all resource areas)

If the following habitat characteristics are present, describe & quantify them on a separate sheet & attach

Wildlife Food

Important Wetland/Aquatic Food Plants (smartweeds, pondweeds, wild rice, bulrush, wild celery)

☐ Abundant ☒ Present ☐ Absent

Important Upland/Wetland Food Plants (hard mast and fruit/berry producers)

☐ Abundant ☒ Present ☐ Absent

Shrub thickets or streambeds with abundant earthworms (American woodcock)

☐ Present ☒ Absent

Shrub and/or herbaceous vegetation suitable for veery nesting ☐ Present ☒ Absent

Number of trees (live or dead) > 30" DBH: _____

Number (or density) of Standing Dead Trees (potential for cavities and perches):

_____6-12" dbh _____12-18" dbh _____18-24" dbh _____>24" dbh

Number of Tree Cavities in trunks or limbs of:

_____6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

_____12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

_____>18" diameter (e.g., hooded merganser, wood duck, common goldeneye, common merganser, barred owl, mink, raccoon, fisher)

Small mammal burrows ☐ Abundant ☒ Present ☐ Absent

Cover/Perches/Basking/Denning/Nesting Habitat

- ☒ Dense herbaceous cover (voles, small mammals, amphibians & reptiles)
- ☐ Large woody debris on the ground (small mammals, mink, amphibians & reptiles)
- ☐ Rocks, crevices, logs, tree roots or hummocks under water's surface (turtles, snakes, frogs)
- ☒ Rocks, crevices, fallen logs, overhanging branches or hummocks at, or within 1m above the water's surface (turtles, snakes, frogs, wading birds, wood duck, mink, raccoon)
- ☐ Rock piles, crevices or hollow logs suitable for:
  ☐ otter ☐ mink ☐ porcupine ☐ bear ☐ bobcat ☐ turkey vulture
- ☐ Live or dead standing vegetation overhanging water or offering good visibility of open water (e.g., osprey, kingfisher, flycatchers, cedar waxwings)

Depressions that may serve as seasonal (vernal/autumnal) pools: ☐ present ☒ absent

Standing water present at least part of the growing season, suitable for use by:

☐ breeding amphibians ☐ non-breeding amphibians (foraging, rehydration)
☐ turtles ☐ foraging waterfowl

Sphagnum hummocks or mats, moss covered logs or saturated logs, overhanging or directly adjacent to pools of standing water in spring (four-toed salamander): ☐ present ☒ absent

IMPORTANT HABITAT CHARACTERISTICS *(If present, describe & quantify them on a separate sheet)*

Medium to large (> 6"), flat rocks within a stream (cover for stream salamanders and nesting habitat for spring & two-lined salamanders)	☐ present	☒ absent
Flat rocks and logs on banks or within exposed portions of streambeds (cover for stream salamanders and nesting habitat for dusky salamanders)	☐ present	☒ absent
Underwater banks of fine silt and/or clay (beaver, muskrat, otter)	☐ present	☒ absent
Undercut or overhanging banks (small mammals, mink, weasels)	☐ present	☒ absent
Vertical sandy banks (bank swallow, kingfisher)	☐ present	☒ absent
Areas of ice-free open water in winter	☐ present	☒ absent
Mud flats	☐ present	☒ absent
Exposed areas of well-drained, sandy soil suitable for turtle nesting	☐ present	☒ absent

WILDLIFE DENS/NESTS *(If present, describe & quantify them on the back of this sheet)*

Turtle nesting sites:	☐ present	☒ absent
Bank swallow colony:	☐ present	☒ absent

Nest(s) present of: ☐ Bald Eagle ☐ Osprey ☐ Great Blue Heron

Den(s) present of: ☐ Otter ☐ Mink ☐ Beaver

Project area is within:

- ☐ 100' of beaver, mink or otter den, bank swallow colony or turtle nesting area
- ☐ 200' of Great blue heron or osprey nest(s)
- ☐ 1400' of a bald eagle nest[8]

EMERGENT WETLANDS *(If present, describe & quantify them on a separate sheet)*

Emergent wetland vegetation at least seasonally flooded during the growing season (wood duck, green heron, black-crowned night heron, king rail, virginia rail, coot etc.)

Flooded > 5 cm	☒ present	☐ absent
Flooded > 25 cm (pied-billed grebe)	☐ present	☒ absent

Persistent emergent wetland vegetation at least seasonally flooded during the growing season (mallard, American bittern, sora, common snipe, red-winged blackbird, swamp sparrow, marsh wren)

Flooded > 5 cm	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Cattail emergent wetland vegetation at least seasonally flooded during the growing season

Flooded > 5 cm (marsh wren)	☐ present	☒ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

Fine-leafed emergent wetland vegetation (grasses and sedges) at least seasonally flooded during the growing season (common snipe, spotted sandpiper, sedge wren)

Flooded > 5 cm	☒ present	☐ absent
Flooded > 25 cm (least bittern, common moorhen)	☐ present	☒ absent

IV. LANDSCAPE CONTEXT

A. Habitat Continuity ***(If present, describe the landscape context on a separate sheet and its importance for area-sensitive species)***

Is the impact area part of an emergent marsh at least (marsh and waterbirds)	1.0 acre in size?	☐ yes	☒ no
	2.0 acres in size?	☐ yes	☒ no
	5.0 acres in size?	☐ yes	☒ no
	10.0 acres in size?	☐ yes	☒ no
Is the impact area part of a wetland complex at least (turtles, frogs, waterfowl, mammals)	2.5 acres in size?	☒ yes	☐ no
	5.0 acres in size?	☒ yes	☐ no
	10.0 acres in size?	☒ yes	☐ no
	25.0 acres in size?	☒ yes	☐ no

[8] 1400 feet is the distance used by NHESP for evaluating potential disturbance impacts on eagle nests under MESA. Keep in mind, however, that this doesn't give jurisdiction within 1400' of an eagle's nest; it only identifies it on the checklist so that adverse effects can be avoided if work in a resource area is within 1400 feet.

For upland resource areas is the impact area part of contiguous forested habitat at least

(forest interior nesting birds)	50 acres in size?	☐ yes	☒ no
	100 acres in size?	☐ yes	☒ no
	250 acres in size?	☐ yes	☒ no
	500 acres in size?	☐ yes	☒ no
(grassland nesting birds)	> 1 acre is size?	☐ yes	☒ no

(special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre is size? ☐ yes ☒ no

B. Connectivity with adjoining natural habitats

☐ No direct connections to adjacent areas of wildlife habitat (little connectivity function)

☐ Connectors numerous or impact area is imbedded in a large area of natural habitat (limited connectivity function)

☒ Impact area contributes to a limited number of connectors to adjacent areas of habitat (somewhat important for connectivity function)

☐ Impact area serves as *part of* a sole connector to adjacent areas of habitat (important for connectivity function)

☐ Impact area serves as *only* connector to adjacent areas of habitat (very important for connectivity function)

V. HABITAT DEGRADATION (Describe degradation and wildlife habitat impacts on back of the sheet)

☒ Evidence of significant chemical contamination (ROW)

☐ Evidence of significant levels of dumping

☐ Evidence of significant erosion or sedimentation problems

☐ Significant invasion of exotic plants (e.g. purple loosestrife, *Phragmites*, glossy buckthorn)

☒ Disturbance from roads or highways (adjacent to abandoned ROW and Route 2)

☐ Is the site the only resource area in the vicinity of an otherwise developed area

☒ Other human disturbance (agricultural area)

Note: These are not the only important habitat features that may be observed on a site. If the wildlife specialist identifies other features they should be noted in the application.

VI. QUANTIFICATION TABLE FOR IMPORTANT HABITAT CHARACTERISTICS

(For each important habitat characteristic identified within the impact area, describe amount/extent and distribution of that characteristic under current and post-construction conditions)

Habitat Characteristic	Amount Impacted in Impact Area	Current (entire site)	Post-Construction (entire site)
Example: Standing dead trees 6-12" dbh	4	12	8