



October 30, 2024

WILDLIFE HABITAT EVALUATION

4 Brandt Lane, Worcester, MA

1.0 INTRODUCTION

As part of the Notice of Intent (NOI) for this project, Goddard Consulting, LLC (Goddard) conducted a Wildlife Habitat Evaluation (WHE) as supplemental information to the permit application for the proposed work that would alter Bank and Buffer Zone at the above referenced site in Worcester, MA. This evaluation has been developed in response to 310 CMR 10.60 and the Worcester Wetland Protection Ordinance, primarily evaluating impacts to Bank and Buffer Zone. The project proposes constructing five residential apartment buildings, associated parking and access, and a stormwater management system. An intermittent stream crossing upgrade, stream relocation & replication, and wetland creation are proposed as part of the design.

The purpose of this document is to evaluate the potential for adverse effects to the wildlife habitat functions within the Resource areas and Buffer Zone associated with the proposed project and to determine what wildlife habitat functions will be lost, and if so to what degree, through the implementation of the proposed work.

2.0 METHODOLOGY

In accordance with 310 CMR 10.60 (2) (a) regarding “Wildlife Habitat Characteristics of Inland Resource Areas”, study areas within the subject parcel were evaluated (topography, wildlife usage, soil structure, plant community composition and wetland structure) for their ability to provide important wildlife habitat function and value.

This evaluation was conducted following the guidelines established in the March 2006 DEP document *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*. Additionally, data was gathered on the plant community structure, habitat features and wildlife within the buffer zone within areas of proposed impact.

Though Buffer Zone is not defined as a wildlife habitat resource area in 310 CMR 10.60, we have conducted a habitat assessment of this resource in a similar manner as we would have for other wetland resource areas.

3.0 QUALIFICATIONS OF PREPARER

As required by 310 CMR 10.60, a qualified biologist from Goddard was on-site on June 21, 2024, to conduct this WHE, with supplemental data gathered from published soils maps and available GIS data.

The wildlife habitat assessment was conducted by Mr. Steven Riberdy, Senior Wildlife Biologist, assisted by Wildlife Biologist Mr. Ryan Roseen. Mr. Riberdy is the Lead Biologist at Goddard and has 24 years of experience in wildlife ecology, rare species assessment and study, botany, and wetland ecology/restoration. He is a Certified Wildlife Biologist (“CWB”), Professional Wetland Scientist (“PWS”), Certified Ecologist (“CE”) and Certified Ecological Restoration Practitioner (“CERP”). He has extensive experience conducting wildlife habitat assessments as well as rare species studies, permitting and habitat management/conservation plans (resume attached).

4.0 STUDY AREA DESCRIPTION

The proposed limit of work is within a portion of mixed deciduous dominant forest, forested wetland, and previously disturbed areas of the ±17.8-acre parcel of land located on Brandt Lane in Worcester, MA. This site is partially developed with some small areas of mixed deciduous upland forest and forested wetland. The site is almost completely surrounded by existing development, both residential and commercial. An area of undisturbed forest is located to the north and a small area of forested habitat directly south of the site.

According to the Massachusetts Natural Heritage and Endangered Species Program (MA NHESP), no portion of the proposed work area is within areas mapped as either Priority or Estimated Habitat for Rare Species. There are no mapped potential or certified vernal pools located on-site.

Natural Communities

Goddard surveyed and developed a natural community assessment and identified several distinct natural community types across the study area, including:

- Mixed Deciduous Dominant Upland Forest (9.8-acres)
- Forested Wetland (1.1-acres)
- Open Disturbed (6.9-acres)

Mixed Deciduous Dominant Upland Forest: Mixed deciduous upland forest community is the largest community on site and is located along the periphery of the site mostly in the north, east and southeast sections of the parcel. This forest combines a mostly open (40%) canopy combined with a relatively dense understory. Tree age is uneven with most having a dbh between 8-20 inches with inclusions of smaller saplings as well as larger, more mature trees.

The vegetative composition of this community is similar throughout the site. This community is dominated by red oak (*Quercus rubra*), red maple (*Acer rubrum*), tree of heaven (*Ailanthus altissima*), white oak (*Quercus alba*), eastern cottonwood (*Populus deltoides*), and Norway maple (*Acer platanoides*). The understory is moderate to dense and mostly made up of witch hazel (*Hamamelis virginiana*), multiflora rose (*Rosa multiflora*), Japanese knotweed (*Reynoutria japonica*), Asiatic bitterweet (*Celastrus orbiculatus*), black cherry (*Prunus serotina*), goldenrod sp., grape sp., and poison ivy (*Toxicodendron radicans*).

There are a few smaller (4-10" dbh) standing dead trees present in the area with potential to support habitat. Coarse woody debris is low to moderate, providing micro-habitats to both herptiles and small mammals.

The site is a portion of a mixed area consisting of generally small areas of natural woods with larger areas of disturbed sections of housing and development off of Grafton Street. The location of the project is adjacent to existing disturbances and therefore would not significantly affect connectivity with the adjoining natural habitats. Connectivity to the site is low to moderate from the northeastern portion of the parcel. Connectivity through the parcel is limited due to extensive historic disturbances and existing roadways/development north, south, east, and west of the site, including Grafton Street, Pine Hill Road, and Waban Ave.

Forested Wetland: There is small area of red maple forest community on site covering approximately 1.1-acres. This forest is a mix of somewhat (intermediate) closed forested canopy (75%) with a dense shrub layer.

The vegetative composition within this community is dominated by red maple (*Acer rubrum*, 8-12" dbh), with other prominent species including silky dogwood (*Cornus amomum*), elderberry (*Sambucus canadensis*), and cinnamon fern (*Osmunda cinnamomea*). Other tree species observed in the forested wetlands include eastern cottonwood, white ash, and American elm. Other vines, shrubs, or herbaceous plants noted in this community were phragmites, skunk cabbage, nightshade, and poison ivy.

No notable unique habitat features were present within this community. This area provides variety in the overall forested habitat mosaic and is mostly comprised of red maple trees (85%). General forest habitat and forage and cover for wildlife is provided.

Open Disturbed: These areas are found throughout the site, making up a substantial portion of the site. These areas consist of existing paved and gravel areas, a house, large piles of debris and trash, old trailers and vehicles, and general fill piles. The historic and ongoing disturbances do not support a natural community of wildlife and have impacted overall wildlife connectivity throughout the site and beyond. Much of the areas surrounding the disturbances are dominated with invasives. Many of the large piles of debris and various vehicles have recently been removed from the site, but the impact from these areas continues to exist.

5.0 HABITAT CONTEXT

Overall, a majority of the site is a portion of a larger developed area surrounding the site. Connectivity with the adjoining natural habitats is low as the site is a section of a larger mostly developed area. The small undisturbed on-site communities can be accessed by wildlife from the existing forest north and south of the site. Migration of terrestrial wildlife into the site is possible but would be limited by the existing developments and roadways surrounding the site. In response to any potential disturbances, wildlife will continue to utilize the large portion of intact forested habitat to the north of the limit of work. The proposed impact area is as close to the existing developments and disturbances as possible which further reduces potential adverse impacts to wildlife including migratory corridors.

Movement of reptiles and amphibians into the site is expected to be low as the permeability of the surrounding landscape is poor for these taxa. Aquatic connectivity between the site and off-site areas is low.

6.0 IMPACT ASSESSMENT

Impact Area (Buffer Zone)

The primary direct habitat impacts to buffer zone include the loss of forest cover/habitat. This would result in the local (area of cutting) loss of canopy trees and associated forage and cover for passerine birds and arboreal mammals. Some of the early successional habitat which provides cover for mammals and potential nesting and perching trees for songbirds in this forested habitat would also be lost where cutting occurs.

Overall, the impact from the removal of trees is small in the overall context of the larger area. However, these habitats and features are present throughout the wider forested habitats. No special or unique habitats or habitat features areas were found on or proximal to the areas of impact. It is unlikely that the location of the proposed project would adversely affect the overall migratory patterns through the site.

The overall context of the buffer zone area is within portions of mixed aged forest. Given the removal of trees and shrubs that occur here will not likely alter the overall habitat complex of the larger area.

Impact Area (Bank)

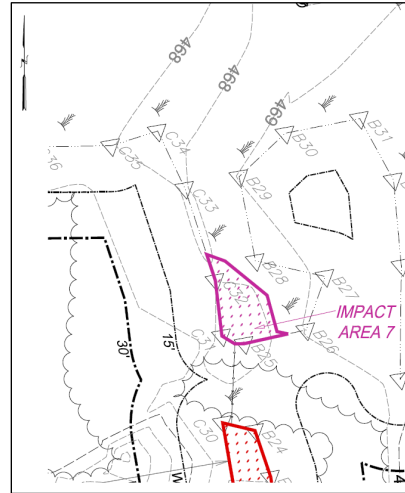
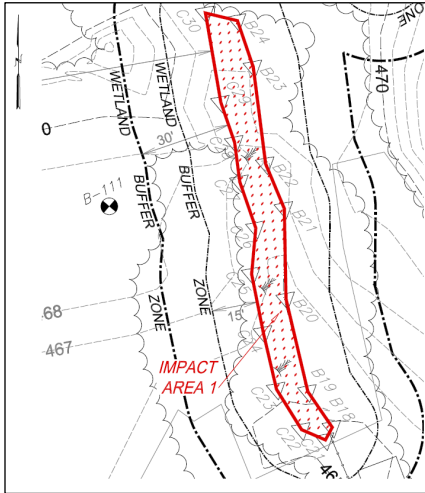
There are several sections of Bank on-site that will be impacted as part of this project totaling approximately 1,019 linear feet. An existing stream crossing (Brandt Ln) will be redeveloped as part of the project to allow adequate access. Another portion of stream will be re-routed. Portions of the existing stream that are proposed to be impacted are not in a natural state and have been heavily altered or impacted in the past. Some sections of the stream (Impact Areas 2 & 3) do not contain a natural bottom. Overall, the proposed impact areas lack quality habitat value and lack any unique or important habitat features.

Impact Areas 1 & 7

Impact area 1 (290.5 LF of impact) is a linear ditch-like intermittent stream which Banks are largely made up of man-made fill and debris. This section of stream is approximately 3-6 feet wide and flows out of the larger wetland system in the northern portion of the site before entering a long underground culvert under the central portion of the site and exits the culvert just before the Brandt Lane crossing. The stream contains a substantial presence of branches and sticks as well as iron-oxidizing bacteria. Area 7 (31.8 LF of impact) is located just north of Impact Area 1 and feeds Area 1. The banks of both areas are dominated by invasives such as Japanese knotweed, garlic mustard, and Asiatic bittersweet. Other vegetation includes Virginia creeper, poison ivy, jewelweed, and American elm.

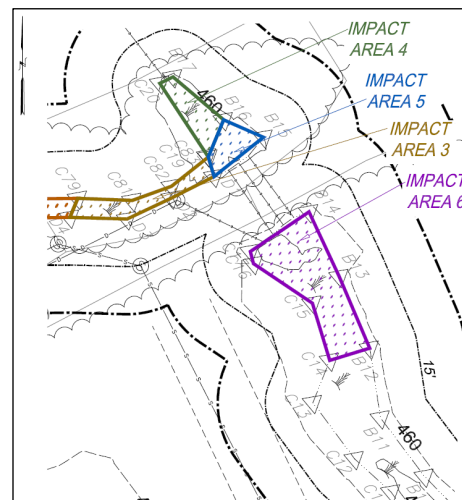
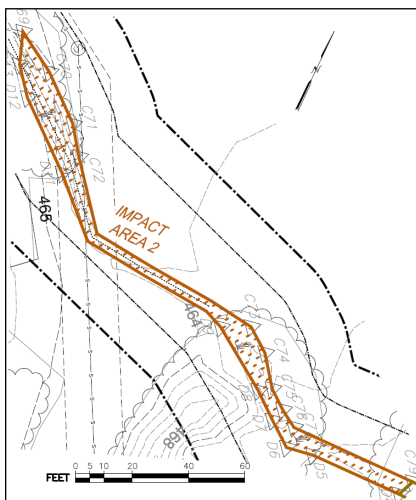
The proposed project shall fill the ditch, reroute the water currently entering the ditch and the culvert through a newly constructed stream channel providing additional functions and values; and construct the parking lot of Building #4 over the existing ditch area. The new stream channel and its Banks will be greater in length than the existing ditch, mimic natural

characteristics including meanders and vegetation, and consist of suitable soils for Bank functions rather than the existing man-made fill and debris.



Impact Areas 2 & 3

Impact area 2 (442.2 LF of impact) & 3 (93.6 LF of impact) are in the southwestern portion of the site. This section of stream flows over asphalt and is approximately 0.5-3 inches deep and average of 18-36 inches wide. Area 3 appears to be more of a defined paved swale is slightly narrower than most of Area 2. Vegetation surrounding this area of stream is either non-existent or largely dominated by invasives. The limited vegetation in this area mostly consists of knotweed, mugwort, poison ivy, jewelweed, and multiflora rose. These areas lack any in-stream features such as boulders or woody debris that would be beneficial to wildlife. The current state of this section of stream significantly impacts the connectivity of the existing natural stream habitats upstream and downstream. By removing these areas and recreating a more natural stream, the connectivity will improve and offer greater habitat value to the surrounding landscape.



Impact Areas 4, 5, & 6

These impact areas are where the two streams converge and flow through existing culverts under Brandt Lane. Area 4 (48.7 LF of impact) is the location where the outlet to the stream from Impact Area 1 flows out and converges with water from the other stream (Areas 2 & 3) in a pool area (Area 5, 20 LF of impact) before entering three round concrete pipes that go under Brandt Lane. This area also contains iron-oxidizing bacteria and a more natural stream bottom. The banks in this area contain many boulders that appear to have been placed there to stabilize the banks. Adjacent areas also appear to have some fill. Vegetation is similar to other areas, dominated by knotweed, poison ivy, bittersweet, and red oak. On the downstream side (outlet) of the

stream (Area 6, 92 LF of impact), the stream contains another pool feature that is wider and deeper than any other portion of the stream. The stream quickly narrows again as it continues south and eventually off-site.

As mitigation, 2,695 linear feet (LF) of Bank replication is proposed in total. The proposed mitigation will introduce new native species not currently found on-site. The addition of existing and new species on site will enhance the area and provide more habitat value over existing conditions within the area to be replicated. The replication area can be further enhanced for wildlife by providing a variety of woody debris and boulders as habitat features both within and adjacent to the new stream channel. Plunge pools within the meandering stream area also proposed which further enhance habitat value. The replicated stream will fully contain a natural bottom and the stream crossing at Brandt Lane meets stream crossing standards, which also will contain a natural bottom and room for some wildlife passage.

The following is an overview of the likely effect across the entire site on the different taxa and groups of wildlife expected.

Passerine Birds: The overall effect to this group of taxa includes a limited loss of forage, shelter, and breeding sites (mature trees) for forest and cavity nesting species.

Raptors: Perching locations for hawks and owls would be negligibly reduced given the overall site context.

Waterfowl: There would be no expected effect on waterfowl.

Small Mammals: Work for this project would reduce the overall availability of cover and foraging habitat. The impacts may be more apparent in the buffer zone areas.

Aquatic and Semi-Aquatic Mammals: There is likely no effect to these species.

Large Mammals: Large mammal use of the site is likely low and will be minimally affected where the clearing occurs as this will reduce some areas for cover and forage. Ample areas are present in the natural area north of the site. Nothing within the area of impact was noted to be special or unique habitat for larger mammals.

Amphibians: Overall, effects on amphibians are likely small. The forested wetland within the site likely does not support a substantial population. Creation of the new stream channel and wetland area will improve the resource areas and will likely not experience any negative impacts on this taxa.

Reptiles: Overall, reptile use of the site would be limited, particularly in the upland areas. Garter snakes and brown snakes are likely inhabitants of the site, and they will continue to inhabit the similar habitat that remains adjacent to the site. There would be no expected effect on aquatic reptiles (water snakes, turtles).

Noise would be expected due to construction activity. In this situation, the noise is temporary and persists only during working hours. Most likely, wildlife will naturally adjust to the overall disruption and migrate to the undisturbed forests north of the limit of work.

7.0 MITIGATION

Several enhancements or mitigation opportunities could be implemented to reduce impacts or restore affected areas more quickly and provide mitigation for the temporary change of some habitat features and increase the overall usefulness of the site for wildlife post development. These potential wildlife habitat enhancement opportunities are summarized below.

- Re-planting of native shrubs and trees in areas of upland forest to speed the regeneration to shrub habitats.
- Placement of nest boxes along the tree lines to provide nesting opportunities for cavity-nesting passerine birds and bats.
- Targeted removal of invasive plant species and replacement with native vegetation.

- Increasing coarse woody debris in adjacent upland and wetland resource areas to increase forest floor structural diversity and create microhabitats from ground dwelling fossorial species.
- Creating pools and in-stream features (boulders, logs, undercut banks, etc.) within the replicated stream to increase variety and areas beneficial to wildlife

8.0 SUMMARY

In general, expected wildlife habitat impacts are minor in the general landscape context. On-site, some upland forest habitat with semi-mature to mature trees & moderate to dense understory will be lost during construction, impacting local cover habitat mainly for small mammals and passerine birds. The site lacks unique or important habitat features and the impacts to Bank will be replicated and greatly improve stream connectivity. Migratory routes to or through the site will be affected on a relatively small scale by the proposed development, but the reconstructed bank and improved crossing will help wildlife move through the site. There may be some reduction in local, more common, species at the site location. We would not expect the proposed limit of clearing to have a quantifiable effect on the overall site's ability to provide important wildlife habitat functions.

References

- Conant, R., and J.T. Collins. 1998. Peterson field guides, reptiles, and amphibians of eastern and central north America. Houghton Mifflin Company. Boston.
- DeGraaf, R.M. and M. Tamasaki. 2001. New England wildlife. University Press of New England. Hanover, NH.
- DeGraaf, R.M. and M. Tamasaki, W. Leak, A. Lester. 2006. Technical Guide to Forest Wildlife Habitat Management in New England. University of Vermont Press. Burlington, VT.
- Ernst, E., and J. Lovich, R. Barbour. 2000. Turtles of the US and Canada. Smithsonian.
- Ernst, C., and E. Ernst. 2003. Snakes of the U.S. and Canada. Smithsonian.
- Kurta, A. 1995. Mammals of the Great Lakes Region. The University of Michigan Press. Ann Arbor.
- MA DEP. 2006. Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands.
- Petranka, J. 1998. Salamanders of the U.S. and Canada. Smithsonian.
- Sorrie, B and P. Somers. 1999. The Vascular Plants of Massachusetts: A County Checklist. NHESP.
- Thompson, E., and R. Sorenson. 2000. Wetland, Woodland, Wildland. The Nature Conservancy. Hanover.

Sincerely,



Steven Riberdy, MS, PWS, CWB, CE, CERP, PSS
Lead Biologist, Soil Scientist and Manager



Ryan Roseen
Wildlife Biologist, Wetland Scientist

Attachments

Site Locus, Natural Communities, and Plan Overlay Maps
MassDEP Wildlife Habitat Evaluation Form

Site Photos



Jun 21, 2024 at 11:43:32 AM
4 Brandt Ln
Worcester MA 01604
United States

Ditch-like intermittent stream to be filled (Impact Area 1)



Jun 21, 2024 at 11:19:45 AM
4 Brandt Ln
Worcester MA 01604
United States

Intermittent stream over paved area (Impact Area 2)



Paved swale for the intermittent stream (Impact Area 3)



Outlet of culverted stream under site (Impact Area 4)



Inlet side of culverts under Brandt Lane (Impact Area 5)



Outlet side of existing culvert under Brandt Lane (Impact Area 6)



Typical small forest patch in between developed areas with fill piles



Previously disturbed area with some grasses starting to grow in northwestern part of site



Existing building and surrounding area



Large trash/debris pile intermixed with invasives near the existing building



Jun 21, 2024 at 11:50:39 AM
65-99 Brandt Ln
Worcester MA 01604
United States

Typical disturbed area with fill piles



Jun 21, 2024 at 11:45:20 AM
4 Brandt Ln
Worcester MA 01604
United States

Disturbed area adjacent to Impact Area 1



More dump piles located on site



Upland forest area along edge of disturbed area

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): 4 Brandt Lane, Worcester

Impact Area (number/name): Bank of Intermittent Stream (Bank) (1,019 SF)

Date(s) of site visit(s) and data collection: June 21, 2024

Weather conditions during site visit (if snow cover, include depth): Sunny, Low 80s

Date this form was completed: October 30, 2024

Person completing form per 310 CMR 10.60(1)(b): Steven Riberdy, Ryan Roseen

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

Signature: 

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	Riverine	Subsystem	Intermittent	Class	Streambed	Subclass	
--------	----------	-----------	--------------	-------	-----------	----------	--

Hydrology/Water Regime:

- | | |
|--|--|
| <input type="checkbox"/> Permanently flooded | <input type="checkbox"/> Saturated (BVW Areas) |
| <input type="checkbox"/> Intermittently exposed | <input type="checkbox"/> Temporarily flooded |
| <input type="checkbox"/> Semi-permanently flooded | <input type="checkbox"/> Seasonally flooded |
| <input checked="" type="checkbox"/> Intermittently flooded (Banks) | <input type="checkbox"/> 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:

- “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)
- “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: N/A

Vegetation Description: N/A

Physical Description: N/A

B. Inventory (Plant community)

% Cover:	Trees: 40%	Shrub: 50%	Vine: 0%	Moss: 5%
	Grass: 0%	Forbs: 5%	Sub Aquatic: 0%	Emerg Aquatic: 0%

Depth to bedrock: 20-41”

Duff/Leaf Litter Depth: 0-1”

Surface stones/boulders: Present

Hydrology: Xeric Mesic, Dry Mesic Mesic Wet
 Hydric Peat/Muck Inundated/Aquatic

Soil Fertility: Rich-Calcific Rich-Alluvial Circumneutral Acidic Agricultural

Average Site Elevation: ±380 feet

Slope Aspect: N NE E SE S SW W NW Flat

Slope: Flat <5% Gentle (5-10%) Average(10-20%) Rather Steep(20-30%)
 Steep (30-45%) Very Steep (45-60%) Abrupt (>60%)

Bedrock Geology: Granite Basalt Sedimentary Limestone/marble

Other_Metamorphic rocks, other_____

Surficial Geology:

Check all landforms that apply:

Summit Upper Slope Mid Slope Lower Slope
 Rolling Terrain Floodplain Wetland Shore/Bank
 Drumlin Ground Moraine Ridge Floodplain
 Outwash Kame Terrace Esker Kettle Pond
 Talus Till Exposed Bedrock Floodplain Alluvium
 Sorted Outwash Coarse Outwash

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**) – Red Oak

Abundant Present Absent

Important Upland/Wetland Food Plants (**fruit/berry/seed**)

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: 0

Number of trees (live or dead) **impacted** > 30”DBH: 0

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

Impacted Total

3	5	6-12" DBH
1	1	12-18" DBH
1	2	18 - 24" DBH
0	0	>24" DBH

Number of tree cavities in trunks or limbs of:

Impacted Total

0	0	6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)
0	0	12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)
0	0	>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)

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
- Groundwater seeps/springs present present absent
- Mud flats present absent
- Exposed areas of well-drained, sandy soil suitable for turtle nesting present absent

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

Estimated percent of viable upland habitat within 400' of nesting areas: _____%

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
 Trees suitable as Bald Eagle Habitat (~>30"DBH/supercanopy) Number: _____

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 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-leaved 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

Notes:

VERNAL POOLS (if present, describe & quantify them on a separate sheet)

Depressions that may serve as seasonal pools: present absent (if absent skip to next section)

Evidence of Inlet or Outlet: Absent Present
Evidence of Fishlessness: Absent Present
Evidence of Breeding activity: Absent Present
Vernal pool part of larger complex: Yes No
Evidence of Pool Dry: Absent Present
Vertical Stratification of Pool Habitat: None Poor Good
Adjacent hummocks, saturated/moss logs: Absent Present
Obligate Species Present: Wood Frog Spotted Salamander
 Marbled Salamander Blue-spotted Salamander

- Jefferson Salamander Eastern Spadefoot Toad
 Fairy Shrimp

Egg masses present Describe: _____

Facultative Species Describe: _____

Vernal Pool vegetation: None Aquatic/emergent Forb Shrub Tree

Estimated Hydroperiod: Ephemeral (<2 mo) Short cycle (2-4 mo) Long cycle (4-8 mo)
 Semi-permanent pond (1-3 years) Pond

Upland Habitat Viability (w/in 500' of pool): Compromised (<25% remains)
 Degraded (26-50% remains)
 Disturbed (51-75% remains)
 Good (76-99% remains)
 Undisturbed (100% remains)

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

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

Notes:

LACUSTRINE HABITATS (If present, describe & quantify them on a separate sheet)

Bank stability: Stable <5% eroded Mod. Stab. 5-30% Mod. Unstab. 30-60% Unstab >60%

Bank composition: Vegetation ____% Soil/mud ____% Rocky ____% Other ____%

Vegetative protection (bank): >90% native 70-90% native 50-70% native <50% native

Riparian zone width (natural): >60 feet 60-40 feet 40-20 feet <20 feet

Bordering habitats: Emergent wetland Forested wetland Upland forest Developed
 Grassland Wet meadow Early success. Other

Trophic classification: Oligotrophic Mesotrophic Eutrophic

Estimated average width of littoral zone: _____ ft.

Water source: Streams Groundwater Surface runoff Artificial

Discharge: Streams Groundwater Artificial

Basin status: Water fills basin >75% full 75-25% full <25% full

Algae cover: <25% 25-50% 50-75% >75%

Emergent plant cover: <25% 25-50% 50-75% >75%

SAV cover: <25% 25-50% 50-75% >75%

Evidence of wildlife: Fish Turtles Waterfowl Mammals

Human disturbance: In-lake structures Beaches Bank disturbance Recreation

Notes:

RIVERINE HABITATS (If present, describe & quantify them on a separate sheet)

Duration: Perennial Intermittent
Gradient: Low Moderate High
Epifaunal substrate/cover (woody debris, undercut banks, etc.): >70% 70-40% 40-20% <20%
Substrate: Boulders _15_ % Cobbles ___ % Gravel _20_ % Sand ___ %
 Woody Deb. ___ % Organics _35_ % Unnatural _30_ %
Embeddedness (extent to which gravel, cobbles, etc are embedded in sediment):
 0-25% 25-50% 50-75% >75%
Velocity depth regime: All four present 3 present 2 present dominated by 1
In-Stream Habitats: Riffle ___ % Pool _5_ % Shallow Run _30_ % Deep Run ___ %
Sediment deposition: <5% 5 - 30% 30 - 50% >50%
Channel flow status: Water fills channel >75% full 75-25% full <25% full
Channel alteration: None Some (crossings) Extensive (40-80%) Majority (>80%)
Frequency of riffles: Frequent Infrequent Occasional None
Pool substrate: Mix of gravel, firm sand, roots, SAV Mix of mud, some roots & SAV All mud or sand Bedrock or clay
Pool variability: Mix of depths & sizes Large, deep Shallow Small, shallow or absent
Channel sinuosity: Bends increase stream length 3-4 times Bends increase stream length 1-2 times Channel straight
Bank stability: Stable <5% eroded Mod. Stab. 5-30% Mod. Unstab. 30-60% Unstab >60%
Vegetative protection (bank): >90% native 70-90% native 50-70% native <50% native
Riparian zone width (natural): >60 feet 60-40 feet 40-20 feet <20 feet

Notes:

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 1.0 acre in size? yes no
(marsh and waterbirds) 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

For upland resource areas is the impact area part of contiguous forested habitat at least
 (forest interior nesting birds, large mammals) 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 in size? yes no
 (special habitat such as gallery floodplain forest, alder thicket, etc.) > 1 acre in 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 embedded in a large area of natural habitat (limited connectivity function)
- Impact area contributes to a limited number of connectors to adjacent area of habitat (somewhat important for connectivity function)
- Impact area serves as *part of* a sole connector to adjacent area 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
- Disturbance from roads or highways
- Is the site the only resource area in the vicinity of an otherwise developed area
- Other human disturbance: development in close proximity

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

V. Habitat Suitability Checklist (Buffer Zone Areas)

Forage:

Reptiles None Poor Fair Good Excellent
 Amphibians None Poor Fair Good Excellent

Avifauna	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Mammals	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Fish	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent

Notes: _____

Overwintering

Reptiles	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Amphibians	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Avifauna	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Mammals	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Fish	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent

Notes: _____

Breeding/Nesting:

Reptiles	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Amphibians	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Avifauna	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Mammals	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Fish	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent

Notes: _

Cover/Shelter

Reptiles	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Amphibians	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Avifauna	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Excellent
Mammals	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Fish	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent

Notes: _____

Travel/Migratory

Reptiles	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Amphibians	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Avifauna	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Excellent
Mammals	<input type="checkbox"/> None	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent
Fish	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Poor	<input type="checkbox"/> Fair	<input type="checkbox"/> Good	<input type="checkbox"/> Excellent

Notes: _____

