

**EcoTec, Inc.**  
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**508-752-9666**

June 18, 2025

Hannah Chace, Conservation Agent  
Town of Bellingham  
10 Mechanic Street  
Bellingham, MA 02019

[hchace@bellinghamma.org](mailto:hchace@bellinghamma.org)

Re: Prospect Hill Estates

Subject: Wetland Wildlife Habitat evaluation

Dear Ms. Chace and Commission Members:

**Introduction:** As requested by the Commission, this report provides the results of a wetland wildlife habitat evaluation conducted in accordance with the Massachusetts Wetland Regulations at 310 CMR 10.60. Those Regulations state:

*(b) An evaluation by the applicant of whether a proposed project will have an adverse effect on wildlife habitat beyond permissible thresholds shall be performed by an individual with at least a masters degree in wildlife biology or ecological science from an accredited college or university, or other competent professional with at least two years experience in wildlife habitat evaluation.*

The author/investigator's credentials exceed those required.

The Regulations require that:

*(a) To the extent that a proposed project on inland Banks, Land under Water, Riverfront Area, or Land Subject to Flooding will alter vernal pool habitat or will alter other wildlife habitat beyond the thresholds permitted under 310 CMR 10.54(4)(a)5., 10.56(4)(a)4., 10.57(4)(a)3. and 10.58(4)(d)1., such alterations may be permitted only if they will have no adverse effects on wildlife habitat. Adverse effects on wildlife habitat mean the alteration of any habitat characteristic listed in 310 CMR 10.60(2), insofar as such alteration will, following two growing seasons of project completion and thereafter (or, if a project would eliminate trees, upon the maturity of replanted saplings) substantially reduce its capacity to provide the important wildlife habitat functions listed in 310 CMR 10.60(2). Such performance standard, however, shall not apply to the habitat of rare species, which are covered by the performance standards established under 310 CMR 10.59.*

The site is not mapped by the Massachusetts Natural Heritage and Endangered Species Program as the location on any state-listed rare species, and 310 CMR 10.59 is not triggered.

MassDEP has produced a manual for conducting habitat evaluations: *Wildlife Habitat Protection Guidance for Inland Wetlands, 2006* (“the Guidance”). This assessment was conducted in accordance with the Regulations and the Guidance.

**Standard of review: “No Adverse Effect”**

The Guidance provides additional clarity with respect to the regulatory “No Adverse Effect” standard, and includes the following text (provided verbatim):

***“V. Adverse Effect***

***A. How is No Adverse Effect on Wildlife Habitat Defined?***

*Applicants must certify, and Conservation Commissions must find, that project alterations requiring Appendix A or B have no adverse effect on wildlife habitat. The wetland regulations define adverse effects on wildlife habitat as the alteration of any habitat characteristics listed in 310 CMR 10.60(2) (e.g. plant community, soil structure, hydrologic regime) insofar as such alteration will, following two growing seasons of project completion and thereafter (or if a project would eliminate trees, upon maturity of replanted saplings) substantially reduce its capacity to provide important wildlife habitat functions listed in 310 CMR 10.60(2) (e.g. shelter and breeding areas, food, nesting sites). It is not adequate to conclude that a project will result in an adverse effect only because alterations to wildlife habitat features are proposed. The alterations become “adverse” when they substantially reduce the site’s capacity to provide important wildlife habitat functions (e.g. shelter, food, breeding areas) and consequently reduce the site’s capacity to support wildlife.”* (emphasis in original).

**Resource Area Thresholds:**

As noted in the regulatory citation above, the Regulations identify the important characteristics of some resource areas and contain alteration thresholds for when wetland wildlife habitat evaluations must be completed in those resource areas:

- Bank: “10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat”
  - The proposed bank alteration is less than this threshold, and therefore the proposed alteration does not require a wildlife habitat evaluation;

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- Land Under Water Bodies and Waterways (“LUW”) (presumed to be present, though undefined in an intermittent stream): *“10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat.”*
  - The proposed LUW alteration is less than this threshold, and therefore the proposed alteration does not require wildlife habitat evaluation;
- Bordering Land Subject to Flooding (“BLSF”): *“10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat.”*
  - The proposed BLSF alteration is less than this threshold, and therefore the proposed alteration does not require wildlife habitat evaluation;
- Bordering Vegetated Wetland (“BVW”): There is no wildlife habitat evaluation regulatory threshold for BVW. The Guidance states relative to BVW: *“No threshold - impacts must be replicated in a manner that will function similar to the area that will be lost.”*
  - The proposed wetland replication area exceeds this requirement by a large margin.
- Riverfront Area (“RFA”): The RFA Regulations state that: *“For work within an undeveloped riverfront area which exceeds 5,000 square feet, the issuing authority may require a wildlife habitat evaluation study under 310 CMR 10.60.”* The evaluation described below was completed in accordance with 310 CMR 10.60 and the Guidance, at the Commission’s request.

Based upon the Regulations and Guidance, and the Commission’s decision regarding RFA, the only resource area impact requiring a wildlife habitat evaluation is Riverfront Area.

**Wildlife Habitat Evaluation: Riverfront Area:**

The Regulations at 310 CMR 10.60(2)(e) state:

*“(e) Riverfront Area. The topography, soil structure, plant community composition and structure, and hydrologic regime can provide the following important wildlife habitat functions:*

- 1. Food, shelter, overwintering and breeding areas for wildlife, including turtle nesting areas, nesting sites for birds which typically reuse specific nesting sites, cavity trees, and isolated depressions that function as vernal pools.*
- 2. Migratory areas along the riparian corridor including the movement of wildlife unimpeded by barriers within the riverfront area.*

The Guidance provides a two-step process for conducting habitat evaluations under the Regulations:

1. Appendix A: *Simplified Wildlife Habitat Evaluation*: If any Appendix A evaluation criteria are triggered in the Appendix A level of investigation, a more detailed Appendix B evaluation is required;
2. Appendix B: Detailed Wildlife Habitat Evaluation.

Appendix A:

An “Appendix A: *Simplified Wildlife Habitat Evaluation*” form is attached for RFA. Attached to the Appendix A form are the following supporting documents:

- Map: Habitat of Potential Regional or Statewide Importance - Town of Bellingham;
- Map: Habitat of Potential Regional or Statewide Importance – Close up of the project area;
- Overlay: Habitat of Potential Regional or Statewide Importance – Overlay of the project onto the above map.

As indicated in these materials (see overlay map) a very small portion (a single pixel of the mapping) of the RFA proposed to be altered by the project is within an area mapped as Habitat of Potential Regional or Statewide Importance. Therefore, an Appendix B evaluation was triggered and was conducted.

Appendix B Evaluation:

To complete the evaluation, two steps are required:

1. Desktop research: This included review of aerial photos, soils mapping and other resources to acquire some of the necessary Appendix B information;
2. Field evaluation: Field evaluation for the Appendix B assessment was completed by the author on June 12, 2025, under favorable (warm and dry) growing season conditions. The area was flagged in the field using the site plan and measured offsets from wetland flags. To be conservative, an area larger than the RFA impact area was flagged and included in the field evaluation. The Appendix B form was reviewed in the field, and where appropriate, a visual examination of the area was completed to identify and quantify the various Appendix B habitat features.

The completed Appendix B form is attached.

As indicated in the attached Appendix B and site photos, the subject area is a White Pine - Oak Forest Community [Swain & Kearsley (2000) Code: CT1A100000]. It has a generally closed canopy, but includes a somewhat open patch in the middle which appears to have

been expanded to a degree by the passing of a tracked machine some time ago (possibly for soil testing at some point?) and the displacement of a small number of trees. The understory in this relatively open area is densely vegetated with herbaceous vegetation dominated by hayscented fern (*Dennstaedtia punctilobula*). The shrub layer is relatively sparse throughout, and consists in large part of young white pine (*Pinus strobus*) and oak (*Quercus* spp.).

Appendix B Summary and Conclusions:

The Appendix B evaluation revealed that several habitat characteristics which provide important wildlife habitat are present within the proposed RFA work area, however review of the large adjacent area proposed to be left unaltered by the project indicates that all of these features are common. The proposed RFA alteration represents approximately 6% of the RFA on the site. The surrounding areas of RFA to be left unaltered are similar to the proposed RFA alteration area and contain an abundance of the important wildlife habitat features documented in this study in the proposed impact area:

- Large trees;
- Snags;
- Coarse woody debris on the forest floor;
- Tree cavities; and
- And dense herbaceous cover.

Therefore, it is the author's professional opinion that, in accordance with the Regulations and guidance, none of these habitat characteristics would be impacted to the degree that the capacity of the site to provide important wildlife habitat functions listed in 310 CMR 10.60(2) would be substantially reduced. Therefore, for all wetland resource areas proposed to be altered, the proposed project complies with the regulatory performance standards requirement to result in no impairment to the capacity of said land to provide important wildlife habitat functions.

I hope that this information is helpful. Please contact me if you have any questions concerning this or other matters.

Sincerely,

A handwritten signature in blue ink, reading "Paul J. McManus". The signature is fluid and cursive, with the first name "Paul" being more prominent.

Paul J. McManus, LSP, SPWS  
President

June 18, 2025

Hannah Chace, Conservation Agent

Town of Bellingham Conservation Commission

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Enclosures:

- Appendix A Form with attachments
- Appendix B Form with attachments
- Site Photographs: Proposed RFA alteration area

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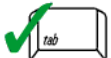
Massachusetts Department of Environmental Protection  
Bureau of Resource Protection – Wetlands program

# Wildlife Habitat Protection Guidance

## Appendix A: Simplified Wildlife Habitat Evaluation

### Project Information

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Bellingham - Prospect Hill - off Prospect and Lake Streets

Project Location (from NOI)

Paul J. McManus, SPWS

Name of Person Completing Form

6/18/2025

Date

### Important Habitat Features

Direct alterations to the following important habitat features in resource areas may be permitted only if they will have no adverse effect (refer to Section V).

- ☐ Habitat for state-listed animal species (receipt of a positive opinion or permit from MNHESP shall be presumed to be correct. Do not refer to Section V).
- ☐ Sphagnum hummocks and pools suitable to serve as nesting habitat for four-toed salamanders
- ☐ Trees with large cavities ( $\geq 18$ " tree diameter at cavity entrance)
- ☐ Existing beaver, mink or otter dens
- ☐ Areas within 100 feet of existing beaver, mink or otter dens (if significant disturbance)
- ☐ Existing nest trees for birds that traditionally reuse nests (bald eagle, osprey, great blue heron)
- ☐ Land containing freshwater mussel beds
- ☐ Wetlands and waterbodies known to contain open water in winter with the capacity to serve as waterfowl winter habitat
- ☐ Turtle nesting areas
- ☐ Vertical sandy banks (bank swallows, rough-winged swallows or kingfishers)

The following habitat characteristics when not commonly encountered in the surrounding area:

- ☐ Stream bed riffle zones (e.g. in eastern MA)
- ☐ Springs
- ☐ Gravel stream bottoms (trout and salmon nesting substrate)
- ☐ Plunge pools (deep holes) in rivers or streams
- ☐ Medium to large, flat rock substrates in streams



# Wildlife Habitat Protection Guidance

## Appendix A: Simplified Wildlife Habitat Evaluation

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### Activities

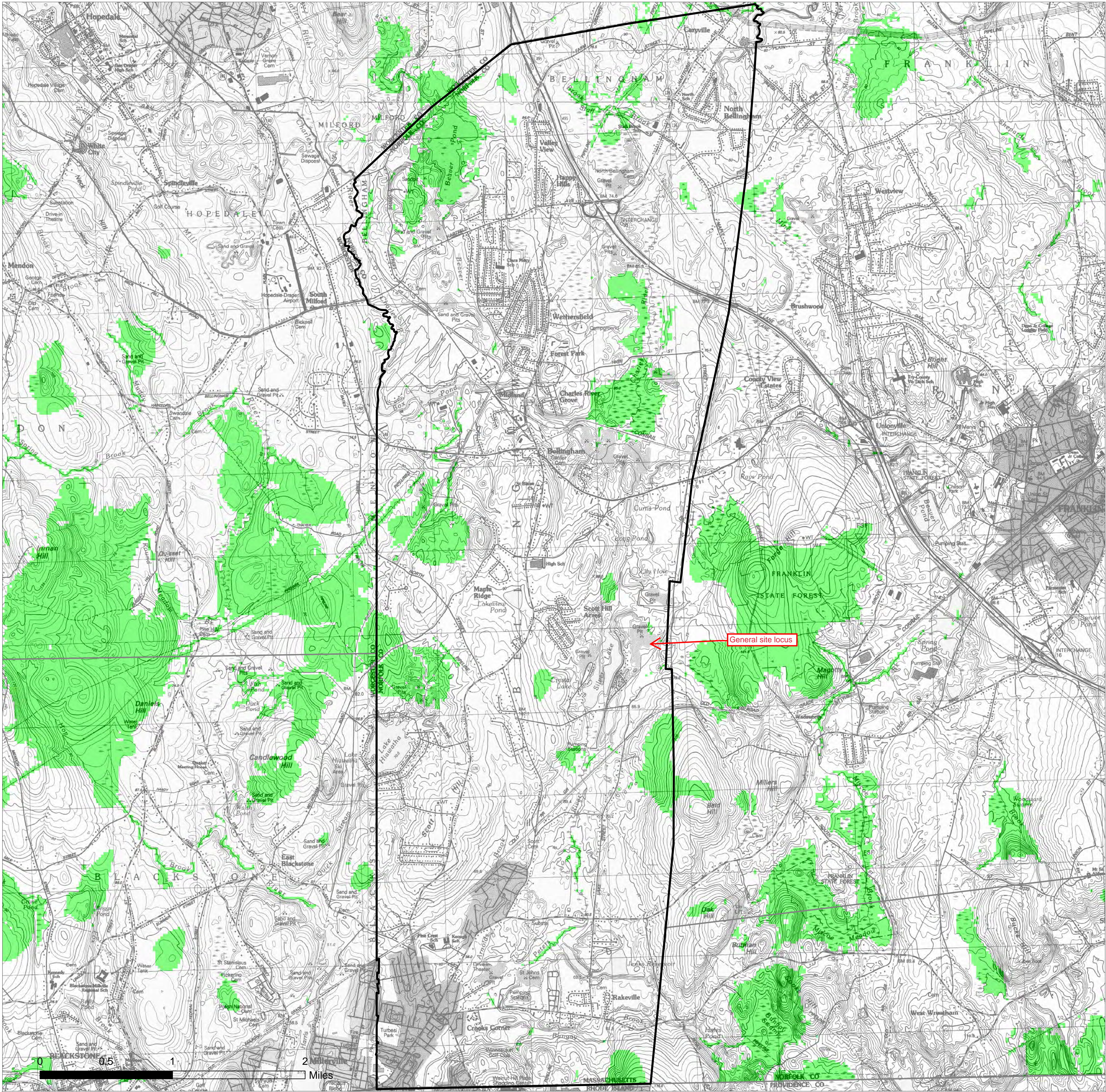
When any one of the following activities is proposed within resource areas, applicants should complete a Detailed Wildlife Habitat Evaluation (refer to Appendix B).

- ☒ Activities located in mapped “Habitat of Potential Regional or Statewide Importance”
- ☐ Activities affecting certified or documented vernal pool habitat, including habitat within 100’ of a certified or documented vernal pool when within a resource area
- ☐ Activities in bank, land under water, bordering land subject to flooding (presumed significant) where alterations are more than twice the size of thresholds
- ☒ Activities affecting vegetated wetlands >5000 sq. ft. occurring in resource areas other than Bordering Vegetated Wetland
- ☐ Activities affecting the sole connector between habitats >50 acres in size
- ☐ Installation of structures that prevent animal movement
- ☐ Activities for the purpose of bank stabilization using hard structure solutions that significantly affect ability of stream channel to shift and meander, or disrupt continuity in cover that would inhibit animal passage
- ☐ Dredging (greater than 5,000 sf)



# Habitat of Potential Regional or Statewide Importance

## Town of BELLINGHAM, MA

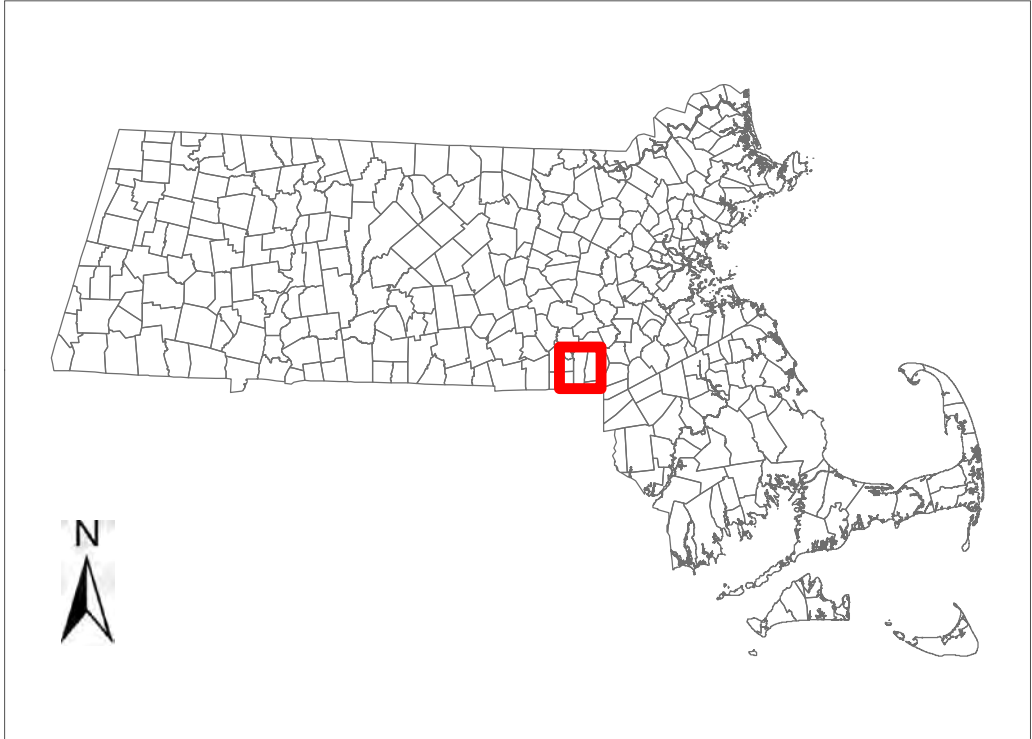


### Habitat of Potential Regional or Statewide Importance

MassDEP's Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands (June 2006) adopted a new approach for assessing wildlife habitat impacts associated with work in wetlands. This approach utilizes maps developed at the University of Massachusetts Amherst using the Conservation Assessment and Prioritization System (CAPS). The maps depict Habitat of Potential Regional or Statewide Importance that may trigger more intensive review under the MA Wetlands Protection Act. For more information on how to assess wildlife habitat impacts, see Section III of the Guidance document: <https://www.mass.gov/doc/massachusetts-wildlife-habitat-protection-guidance-for-inland-wetlands/download>.

CAPS is an approach to prioritizing land for conservation/protection based on the assessment of ecological integrity for various ecological communities (e.g. forested wetland, shrub swamp, headwater stream) within an area. The CAPS model assesses ecological integrity of the Massachusetts landscape as influenced by environmental stressor metrics (e.g. pollution, fragmentation). It relies on data that are broadly available across Massachusetts. Ecological features which are not consistently surveyed or uniformly available, such as certified vernal pools, rare species habitat, and contamination sites are not included in the CAPS analysis. When available, this more specific ecological information may be used in conjunction with the CAPS outputs to better understand particular sites in Massachusetts and support informed conservation decision-making. For more information on the statewide maps produced by the CAPS model, see: <http://www.umasscaps.org>. These maps were prepared by the University of Massachusetts Amherst, with funding from the Massachusetts Department of Environmental Protection.

Updated January 9, 2024



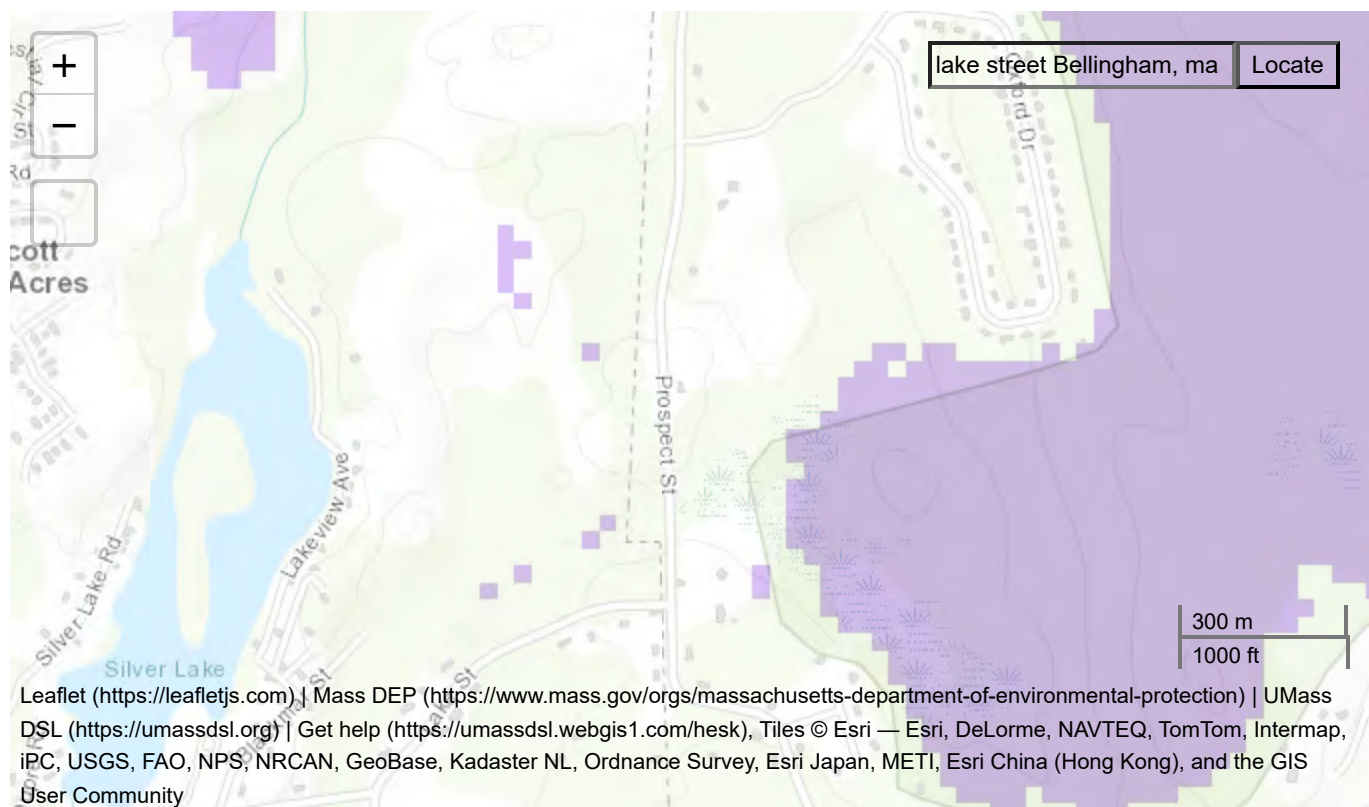
UMass  
Amherst



UMass  
Extension

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Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands Program

# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 1. Summary Sheet

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Prospect Hill Townhouses

Project Name

Bellingham - off Prospect and Lake Streets

Location

Riverfront Area: 28,570 sf

6/18/2025

Size of Area Being Impacted

Date

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

| Name               | Waterbody/<br>Waterway | Wetland | Upland* | Total Area |
|--------------------|------------------------|---------|---------|------------|
| 1. Riverfront Area | unnamed stream         |         | 28,570  | 28,570     |
| 2.                 |                        |         |         |            |
| 3.                 |                        |         |         |            |
| 4.                 |                        |         |         |            |
| 5.                 |                        |         |         |            |
| 6.                 |                        |         |         |            |
| 7.                 |                        |         |         |            |

\*Riverfront Area/BLSF

Attach Sketch map and/or photos of the Impact Areas

Narrative Description of Site (attach separate page if necessary)

See attached narrative report and photographs

### 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))

Paul J. McManus, SPWS

Typed or Printed Name



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (for each wetland or non-wetland resource area)

#### I. General Information

Bellingham - off Prospect and Lake Streets

Project Location (from NOI page 1)

Riverfront Area

Impact Area (number/name)

6/12/2025

Date(s) of Site Visit(s) and Data Collection

No snow, clear conditions, growing season

Weather Conditions During Site Visit (if snow cover, include depth)

Paul J. McManus, SPWS

6/18/2025

Person completing form per 310 CMR 10.60(1)(b)

Date this form was completed

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

*Paul J. McManus*

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: \_\_\_\_\_

Subsystem: \_\_\_\_\_

Class: \_\_\_\_\_

Subclass: \_\_\_\_\_

Hydrology/Water Regime

☐ Permanently flooded

☐ Saturated

☐ Intermittently exposed

☐ Temporarily flooded

☐ Semi-permanently flooded

☐ Intermittently flooded

☐ Seasonally 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. ([Department of Fish & Game Website](#))

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.

White Pine - Oak Forest Community [Code: CT1A100000 (Swain & Kearsley, 2000)]

Community Name

Pine + Oak dominated upland

Vegetation Description

Flat to moderately sloping upland on well drained outwash - see narrative, photos, and soils report

Physical Description



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

#### B. Inventory (Plant community)

|   |  |                      |                  |   |                  |
|---|--|----------------------|------------------|---|------------------|
| % Cover:  | 95<br>Trees (> 20')  | 10<br>Shrubs (< 20') | 5<br>Woody vines | Mosses  | 90<br>Herbaceous |
| Plant Lists (species that comprise 10% or more of the vegetative cover in each strata; "*" designates a dominant plant species for the strata): NOTE: List includes add'l species at less than 10% cover) |  |                      |                  |   |                  |
| Strata  | Plant Species  |                      | Strata           | Plant Species   |                  |
| Tree  | White pine, red oak, red maple                                     |                      | Herbaceous       | hayscented fern, canada mayflower, lowbush blueberry, poison ivy      |                  |
| Sapling/Shrub   | white pine, red oak, hop hornbeam, witch hazel, highbush blueberry |                      |                  | white oak, red oak, New York fern                                     |                  |
| Vine  | horse brier  |                      |                  | star flower, tree clubmoss, partridgeberry, sassafrass, cinnamon fern |                  |
|   |  |                      |                  |   |                  |
|   |  |                      |                  |   |                  |

#### C. Inventory (Soils)

|                              |  |
|------------------------------|--|
| 260B Sudbury Fine Sandy Loam | B  |
| Soil Survey Unit             | Drainage Class                                 |
| Sandy loam                   | 0-22 inches (over gravelly coarse sand to 60") |
| Texture (upper part)         | Depth  |
| +/- 18-36"                   |  |
| 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



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

Number of trees (live or dead) > 30" DBH: 3

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

|           |            |            |           |
|-----------|------------|------------|-----------|
| <u>2</u>  | <u>1</u>   | <u>0</u>   | <u>0</u>  |
| 6-12" dbh | 12-18" dbh | 18-24" dbh | > 24" dbh |

Number of Tree Cavities in trunks or limbs of:

4  
6-12" diameter (e.g., tree swallow, saw whet owl, screech owl, bluebird, other songbirds)

0  
12-18" diameter (e.g., hooded merganser, wood duck, common goldeneye, mink)

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)

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, re-hydration)

☐ 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



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

Important habitat characteristics (if present, describe and 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





# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

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<sup>1</sup>

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-leaved emergent 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 | 1.0 acre in size?   | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| (marsh and waterbirds)                                | 2.0 acres in size?  | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
|   | 5.0 acres in size?  | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
|   | 10.0 acres in size? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

<sup>1</sup> 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.



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

|   |                     |   |  |
|---|---------------------|---|--|
| Is the impact area part of a wetland complex at least                                     | 2.5 acres in size?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| (turtles, frogs, waterfowl, mammals)  | 5.0 acres in size?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
|   | 10.0 acres in size? | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
|   | 25.0 acres in size? | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| For upland resource areas is the impact area part of contiguous forested habitat at least |                     |   |  |
| (forest interior nesting birds)   | 50 acres in size?   | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No            |
|   | 100 acres in size?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
|   | 250 acres in size?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
|   | 500 acres in size?  | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| (grassland nesting birds)   | > 1.0 acre in size? | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> No |
| (special habitat such as gallery floodplain forest, alder thicket, etc.)                  | > 1.0 acre in size? | <input type="checkbox"/> Yes            | <input checked="" type="checkbox"/> 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 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 impacts on the 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
- ☐ Other human disturbance
- ☐ Is the site the only resource area in the vicinity of an otherwise developed 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.



# Wildlife Habitat Protection Guidance

## Appendix B: Detailed Wildlife Habitat Evaluation

### Part 2. Field Data Form (continued)

#### VI. Quantification Table for Important Habitat Characteristics

| Habitat Characteristic                 | Amount Impacted in Impact Area | Current (entire site) | Post-Construction (entire site) |
|--|--------------------------------|-----------------------|---------------------------------|
| Example: standing dead trees 6-12" dbh | 4                              | 12                    | 8                               |
| Hard mast/ fruit, berry                | present                        | abundant overall      | abundant remaining              |
| Lg Trees (>30" DBH)                    | 3                              | common (100's)        | abundant remaining              |
| Standing dead trees 6-12" DBH          | 2                              | common overall        | common remaining                |
| Standing dead trees 12-18" DBH         | 1                              | common overall        | common remaining                |
| Tree cavities 6-12"                    | 4                              | common overall        | common remaining                |
|  |                                |                       |                                 |
|  |                                |                       |                                 |
|  |                                |                       |                                 |
|  |                                |                       |                                 |



1. View of impact area from west side of impact area: View NE



3. View of impact area from west side of impact area: View SE



2. View of impact area from west side of impact area: View E



4. View of impact area from south end of impact area: View NW





5. View of impact area from south end of impact area: View NE



7. View south of impact area from northern portion of impact area: View SW



6. View south of impact area from northern portion of impact area: View SE



8. View North beyond northern limit of impact area





9. View West beyond West side of impact area



11. View East beyond east side of impact area



10. View South beyond south end of impact area



12. Example of coarse woody debris – typical within and outside of impact area



United States  
Department of  
Agriculture

NRCS

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Norfolk and Suffolk Counties, Massachusetts

Prospect Hill - RFA Alteration  
Area



June 18, 2025



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



# Custom Soil Resource Report


## MAP LEGEND


### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

### Special Point Features

 Blowout

 Borrow Pit


 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot


 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry


 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip


 Sodic Spot


 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

### Water Features

 Streams and Canals

### Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts  
Survey Area Data: Version 20, Aug 27, 2024

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

| Map Unit Symbol                    | Map Unit Name                                  | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| 260B                               | Sudbury fine sandy loam, 2 to 8 percent slopes | 1.0          | 100.0%         |
| <b>Totals for Area of Interest</b> |  | <b>1.0</b>   | <b>100.0%</b>  |

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

## Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Norfolk and Suffolk Counties, Massachusetts

### 260B—Sudbury fine sandy loam, 2 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* vky4  
*Elevation:* 0 to 2,100 feet  
*Mean annual precipitation:* 45 to 54 inches  
*Mean annual air temperature:* 43 to 54 degrees F  
*Frost-free period:* 145 to 240 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Sudbury and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Sudbury

##### Setting

*Landform:* Outwash plains  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Friable coarse-loamy eolian deposits over loose sandy glaciofluvial deposits

##### Typical profile

*H1 - 0 to 11 inches:* sandy loam  
*H2 - 11 to 22 inches:* sandy loam  
*H3 - 22 to 60 inches:* gravelly coarse sand

##### Properties and qualities

*Slope:* 2 to 8 percent  
*Depth to restrictive feature:* 18 to 36 inches to strongly contrasting textural stratification  
*Drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* About 18 to 36 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* Low (about 4.0 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B  
*Ecological site:* F144AY027MA - Moist Sandy Outwash  
*Hydric soil rating:* No

**Minor Components**

**Walpole**

*Percent of map unit:* 5 percent

*Landform:* Terraces

*Hydric soil rating:* Yes

**Merrimac**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

**Deerfield**

*Percent of map unit:* 5 percent

*Landform:* Outwash plains

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* No

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