

PRELIMINARY HABITAT ASSESSMENT

Dorman Property Herrick Road Boxford, Massachusetts



PREPARED FOR:

Town of Boxford Land Committee
7A Spofford Road
Boxford, MA 01921

PREPARED BY:

Lucas Environmental, LLC
500A Washington Street
Quincy, Massachusetts 02169

REPORT DATE: September 12, 2022





TABLE OF CONTENTS

SECTION I – NARRATIVE.....

1.0 INTRODUCTION 1

2.0 GENERAL ECOLOGY 1

 2.1 Blanding’s Turtle 1

3.0 SITE CHARACTERISTICS AND DESCRIPTION..... 2

 3.1 Vegetative Cover and Habitat Types 3

 3.1 Upland Vegetative Cover Types 3

 3.1.1 Mixed Oak – Pine Forest 3

 3.1.2 Oak Forest..... 3

 3.2 Wetland Vegetative Cover Types 4

 3.2.1 Shrub Swamp..... 4

 3.2.2 Cattail Marsh 4

 3.2.3 Atlantic White Cedar Swamp (Dead)..... 4

 3.2.4 Forested Swamp 4

 3.2.5 Potential Vernal Pools 5

4.0 RESULTS/HABITAT EVALUATION 5

5.0 SUMMARY 5

SECTION II – FIGURES.....

SECTION III – APPENDICES

 APPENDIX A

 PHOTOGRAPHIC DOCUMENTATION.....



SECTION I – NARRATIVE

1.0 INTRODUCTION

The Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP) current MassGIS data layer identifies Priority Habitat of Rare Species (PH 1999) and Estimated Habitat of Rare Wildlife (EH 1282) for Blanding's turtle (*Emydoidea blandingii*), a state-listed Threatened Species. NHESP has recommended that a habitat evaluation be conducted for suitable habitat on and near the site by qualified individuals according to scientifically accepted survey methodologies in order to address potential impacts.

Lucas Environmental, LLC (LE) conducted a field habitat assessment on August 24, 2022 for Blanding's Turtle and its potential habitat on a parcel of land referred to as the Dorman Property (Parcel 28-2-16.1), located on Herrick Road in Boxford, Massachusetts. The objective of the survey was to define the various habitats potentially utilized by the turtles on and/or near the site.

The following evaluation provides a description of the area, a catalog of the dominant plant species and existing habitat features, as well as an assessment of the area's functions and values relative to the turtle.

2.0 GENERAL ECOLOGY

2.1 Blanding's Turtle

Blanding's turtles use a variety of wetland and terrestrial habitat types. Blanding's turtles have been observed in seasonal pools, marshes, scrub-shrub wetlands, and open uplands. Habitat use appears to vary according to the individual and the amount of precipitation, with more upland utilization during dry years. Wetlands are used for overwintering during their inactive season (November to March).

Blanding's turtles overwinter in organic substrate in the deepest parts of marshes, ponds, and occasionally, vernal pools. Some individuals overwinter under hummocks in red maple or highbush blueberry swamps. Upon emergence from overwintering, Blanding's turtles often leave permanent wetlands and move overland to vernal pools and scrub-shrub swamps, where they feed and mate. It is during the summer months that females estivate in upland forest or along forest/field edges.

Blanding's turtles are omnivores, eating both plants and animals. They eat while on land and in the water. The animals Blanding's turtles are known to eat, either alive or as carrion, consist of Pulmonate snails, crayfish, earthworms, insects, golden shiners, brown bullheads, and other small vertebrates. Vernal pools are an important source of many of these prey items. The plants that Blanding's turtles have been known to eat include coontail, duckweed, bulrush, and sedge.

Courtship and mating takes place during the spring and early summer and typically occurs in water. Females will remain in wetland or vernal pool habitat until they begin nesting. The majority of nesting occurs in June in open areas with well-drained loamy or sandy soils, such as dirt roads, powerline right-of-ways, residential lawns, gravel pits, and early successional fields.

Female Blanding's turtles reach sexual maturity at approximately 14-20 years of age and may travel great distances, often more than one kilometer (3,280 feet), to find appropriate nesting habitat. Females typically begin nesting during the daylight and continue the process until after dark.

3.0 SITE CHARACTERISTICS AND DESCRIPTION

The property under investigation consists of an approximate 35.5-acre parcel of land located on Herrick Road near the intersection of Georgetown Road (See Figure 1 – USGS Map and Figure 2 – Aerial Map). The site is undeveloped containing wooded areas and wetlands. There are no structures, or paved parking areas or driveways. A walking trail extends from Herrick Road through the site and connects with other trails on Town-owned land to the south. The site is bound by Herrick Road and residential properties to the north, residential properties and undeveloped woodlands to the east, and Town-owned land to the south.

As noted above, the Massachusetts Natural Heritage Atlas (effective August 1, 2021) indicates that the site is located within Estimated Habitat of Rare Wildlife and Priority Habitat of Rare Species. There are no mapped Certified Vernal Pools on the property; however, NHESP has mapped a Potential Vernal Pool (PVP) in the eastern portion of the site (See Figure 3 – NHESP Map).

A formal wetland delineation has not been performed; however, LE Professional Wetland Scientists (PWS) noted large expansive areas of wetlands that would be jurisdictional under the (M.G.L. Ch. 131, § 40) and regulations (310 CMR 10.00 *et seq.*); Section 404 of the Clean Water Act (33 U.S.C. 1344); and the Town of Boxford Wetlands Protection Bylaw and Regulations. LE noted the presence of Bordering Vegetated Wetlands (BVW) that occupy the western portion of the site, as well as an Isolated Vegetated Wetland (IVW) that exhibits the physical characteristics of a vernal pool in the eastern portion of the site. The IVW was mapped as a PVP by NHESP. LE also noted an additional PVP off-site, approximately 50 feet from the southeast corner of the property. For the purposes of this evaluation, the limit of wetland areas has been estimated in the field and demarcated on the attached figures. A formal delineation and survey have not been completed.

According to the July 3, 2012 FEMA Flood Insurance Rate Maps for Middlesex County, Map Number 25009C0242F, the eastern half of the site is located in Zone X, which is defined as an area of minimal flooding (See Figure 4 – FEMA Map). The western portion of the site is located within Zone A, which is classified as an “*area of 0.1% annual chance flood (100-year storm event) where base elevations have not been determined.*” The boundary of the Zone A generally matches the limit of the large wetland system located in the western half of the site.

Soil characterization was based on custom soil data reporting provided by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). The Soils datalayer has been automated from 1:25,000 published soils surveys. All soils data have been "SSURGO-certified," which means they have been reviewed and approved by the NRCS and meet all standards and requirements for inclusion in the national release of county-level digital soils data.

The soils on the site area are generally consistent with the published data (See Figure 5 – Soils Map). The soil map units for the site includes the following:

- 52A – Freetown muck, 0-1% slopes;
- 253B – Hinckley loamy sand, 3-8% slopes;
- 253C – Hinckley loamy sand, 8-15% slopes; and
- 421D – Canton fine sandy loam; 15-25% slopes, very stony.

The site is not located within an Area of Critical Environmental Concern (ACEC), Outstanding Resource Watershed (ORW), Wellhead Protection Area, or Surface Water Protection Zone.

3.1 Vegetative Cover and Habitat Types

Seven distinct vegetative cover types were identified within the property. Two habitat types are associated with upland (non-wetland) areas and the remaining cover types are associated with wetland habitat. The upland cover types include Mixed Oak-Pine Forest and Oak Forest. The wetland cover types include Shrub Swamp, Cattail Marsh, Atlantic White Cedar Swamp (Dead), Forested Swamp, and Potential Vernal Pool as shown on Figure 6 – Vegetative Cover Type Map. The approximate locations, habitat/area characteristics and habitat suitability are described below. Representative photographs of each area are also included with this report (See Appendix A).

3.1 Upland Vegetative Cover Types

The majority of the site consists of forested uplands. There are two cover separate cover types characterized on the site: Mixed Oak-Pine Forest and Oak Forest. Upland areas consist of approximately 20.5 acres of the site.

3.1.1 Mixed Oak – Pine Forest

Approximately 17.6 acres of the site consist of Mixed Oak – Pine Forest vegetative cover type. This cover type is characterized as being vegetated by a co-dominance of red oak (*Quercus rubra*) and white pine (*Pinus strobus*) in the overstory. In addition to these species, the tree canopy is vegetated with a mix of shagbark hickory (*Carya ovata*), red maple (*Acer rubrum*), and white spruce (*Picea glauca*) in varying densities. The understory is relatively open and mostly vegetated with a mix of the overstory species, particularly white pine, as well as black huckleberry (*Gaylussacia baccata*) and low bush blueberry (*Vaccinium angustifolia*). The herbaceous layer is vegetated with Pennsylvania sedge (*Carex pennsylvanica*), bracken fern (*Pteridium aquilinum*), poison ivy (*Toxicodendron radicans*), wild sarsaparilla (*Aralia nudicaulis*), teaberry (*Gaultheria procumbens*), princess pine (*Lycopodium obscurum*), and starflower (*Trientalis borealis*).

3.1.2 Oak Forest

Approximately 2.9 acres of the site consist of the Oak Forest vegetative cover type. This cover type is characterized as being vegetated by a dominance of red oak in the tree canopy. White pine is absent in the tree canopy although it can be observed in the shrub layer in low density. The remaining plant species in the understory and herbaceous layer are nearly identical to the Mixed Oak – Pine Forest cover type. The differentiating feature in this vegetative cover type is the lack of dominance from white pine in the overstory.

3.2 Wetland Vegetative Cover Types

Approximately 16 acres of the site consist of wetland cover types. A large wetland system occupies the western half of the property. Five distinct sub-categories of wetlands have been characterized on the site, which include Shrub Swamp, Cattail Marsh, Atlantic White Cedar Swamp (Dead), Forested Swamp, and Potential Vernal Pool. Each are described below.

3.2.1 Shrub Swamp

The largest wetland cover type is Shrub Swamp which occupies approximately 8.5 acres of the site. This cover type is characterized as having hummocks vegetated with sweet pepperbush (*Clethra alnifolia*), winterberry (*Ilex verticillata*), and red maple shrubs. The lower areas were vegetated primarily with beggarstick (*Bidens* sp.). There are large areas with dead snags throughout the swamp indicating the area must have been forested in the past. Two relict beaver dams and an abandoned beaver lodge were observed in the swamp, which must have elevated water levels throughout, effectively killing the trees. Review of aerial photography from 2005 shows the area to be mostly forested. However, reviewing aerials from 2011-2012, it appears that a beaver dam is located in the southwest corner and the trees have started to die out. There are snags of Atlantic white cedar (*Chamaecyparis thyoides*) still present in the swamp and are large enough to be considered a separate cover type (described below).

The Shrub Swamp was dry at the time of the site walk due to ongoing drought conditions but there are clear indications of prolonged inundation and open water areas throughout. Water staining on trees and hummocks indicate water levels range up to 24 to 30 inches. There are also pockets of deeper areas that could also function as vernal pool breeding areas.

3.2.2 Cattail Marsh

Cattail Marsh occupies approximately 2.7 acres of the site. This cover type is characterized as being vegetated by a dominance of broad-leaved cattail (*Typha latifolia*), and an absence or near absence of woody vegetation such as shrubs, trees, and snags. Other plant species observed include purple loosestrife (*Lythrum salicaria*) and beggarstick.

3.2.3 Atlantic White Cedar Swamp (Dead)

As mentioned above, the beaver dams raised water levels throughout the wetland system and flooded out the trees. Snags of Atlantic white cedar trees remain in two areas of the swamp totaling approximately 0.8 acres. A great blue heron (*Ardea herodias*) nest was observed on one of the snags. Other plant species observed in this cover type include cattail, speckled alder (*alnus rugosa*), and beggarstick.

3.2.4 Forested Swamp

There is a large, approximate 3.8-acre, forested swamp located in the southwest corner of the site, downgradient of the beaver dams. The wetland exhibits a typical red maple swamp vegetative community. Common species include red maple, yellow birch (*Betula alleghaniensis*), sweet pepperbush, royal fern (*Osmunda regalis*), and cinnamon fern (*Osmundastrum cinnamomea*). There are also several large diameter Atlantic white cedar trees throughout, measuring approximately 12 to 18-inch diameter at breast height.

3.2.5 Potential Vernal Pools

There are two PVP wetlands located on the subject property and one additional PVP wetland located off-site approximately 50 to 75 feet from the southeast corner of the property. The first PVP is located east of the main Shrub Swamp. It measures approximately 30 to 35 feet wide and 120 feet long. The pool was dry at the time of the site visit with water depths ranging on average from three feet deep throughout with a maximum depth of five feet at its deepest point. The perimeter of the pool is vegetated with a mix of red maple, winterberry, highbush blueberry, royal fern, and cinnamon fern. There is an extremely high likelihood that this wetland feature functions as breeding habitat for vernal pool dependent wildlife given its size and water depths. Numerous adult wood frogs (*Rana sylvatica*) were observed throughout the surrounding forested areas.

The second PVP is located in the southwest section of the site, south of the beaver dam. It is much smaller in size, measuring approximately 15 feet by 25 feet with water depths ranging between eight to sixteen inches. The third PVP is located off-site and was not studied in great detail; however, it is estimated to measure approximately 75 feet by 100 feet with depths ranging between three to five feet. The area exhibits the physical characteristics of a vernal pool and likely provides breeding habitat for vernal pool indicator species.

4.0 RESULTS/HABITAT EVALUATION

This section includes a discussion on the results of the habitat assessment. The entire site is within rare species habitat as mapped by NHESP. However, LE does not believe that the entire site provides habitat for Blanding's turtle. Adult Blanding's turtles are unlikely to utilize the upland forested areas (Mixed Oak-Pine and Oak Forest cover type) other than for migrating to or from the wetland areas and vernal pools. The introduction of the beaver dams created a large semi-aquatic wetland system with an interspersed marsh, shrub swamp, forested wetlands, and semi-permanent open water habitat. These areas may provide feeding, breeding, and possibly overwintering habitat for this species. LE did not observe any areas of suitable nesting habitat on the site.

5.0 SUMMARY

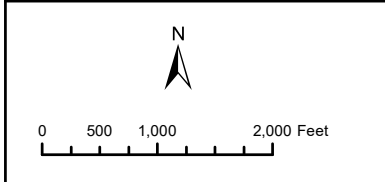
This evaluation is intended to identify areas of suitable Blanding's Turtle habitat that are or are not present on the site in order to assist the Town of Boxford in planning for suitable use of property, including its potential for conservation or development. This evaluation is not intended to be a survey of turtles; rather, it is an assessment of habitat, and whether suitable habitat was found on the property, and whether there are any portions of the property that do not appear to provide habitat. The large wetland system and vernal pools on the property may provide feeding, breeding, and possibly overwintering habitat for this species. LE did not observe any areas of suitable nesting habitat on the site.



SECTION II – FIGURES



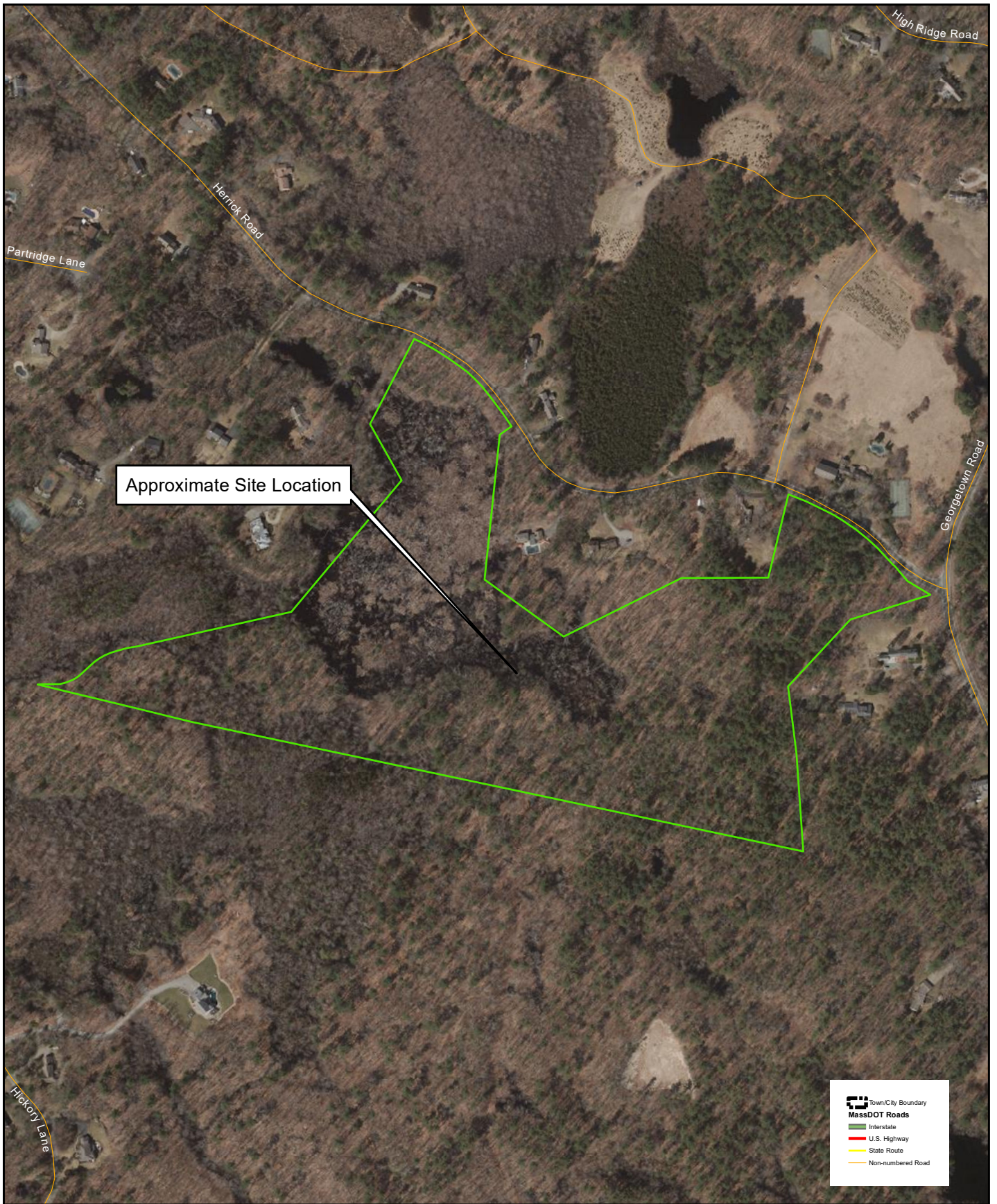
Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs, USGS Topographic Quadrangle



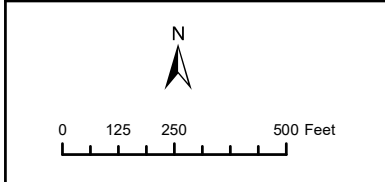
USGS Map
Dorman Property
Herrick Road
Boxford, MA

FIGURE 1

LUCAS
 ENVIRONMENTAL, LLC



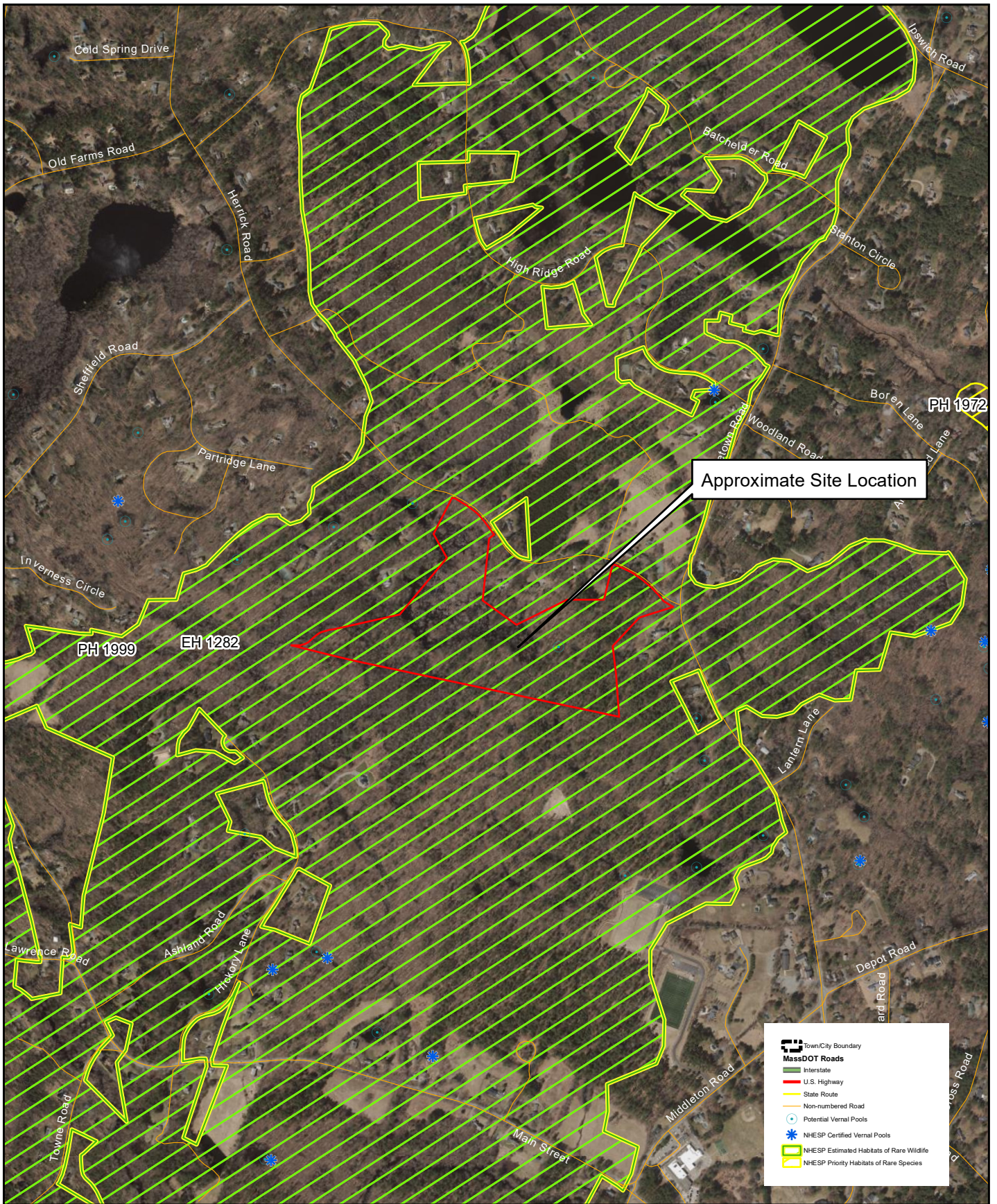
Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



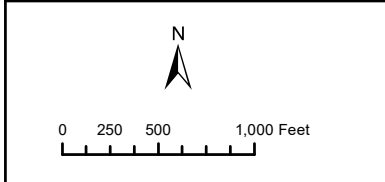
Aerial Map
Dorman Property
Herrick Road
Boxford, MA

FIGURE 2

LUCAS
 ENVIRONMENTAL, LLC



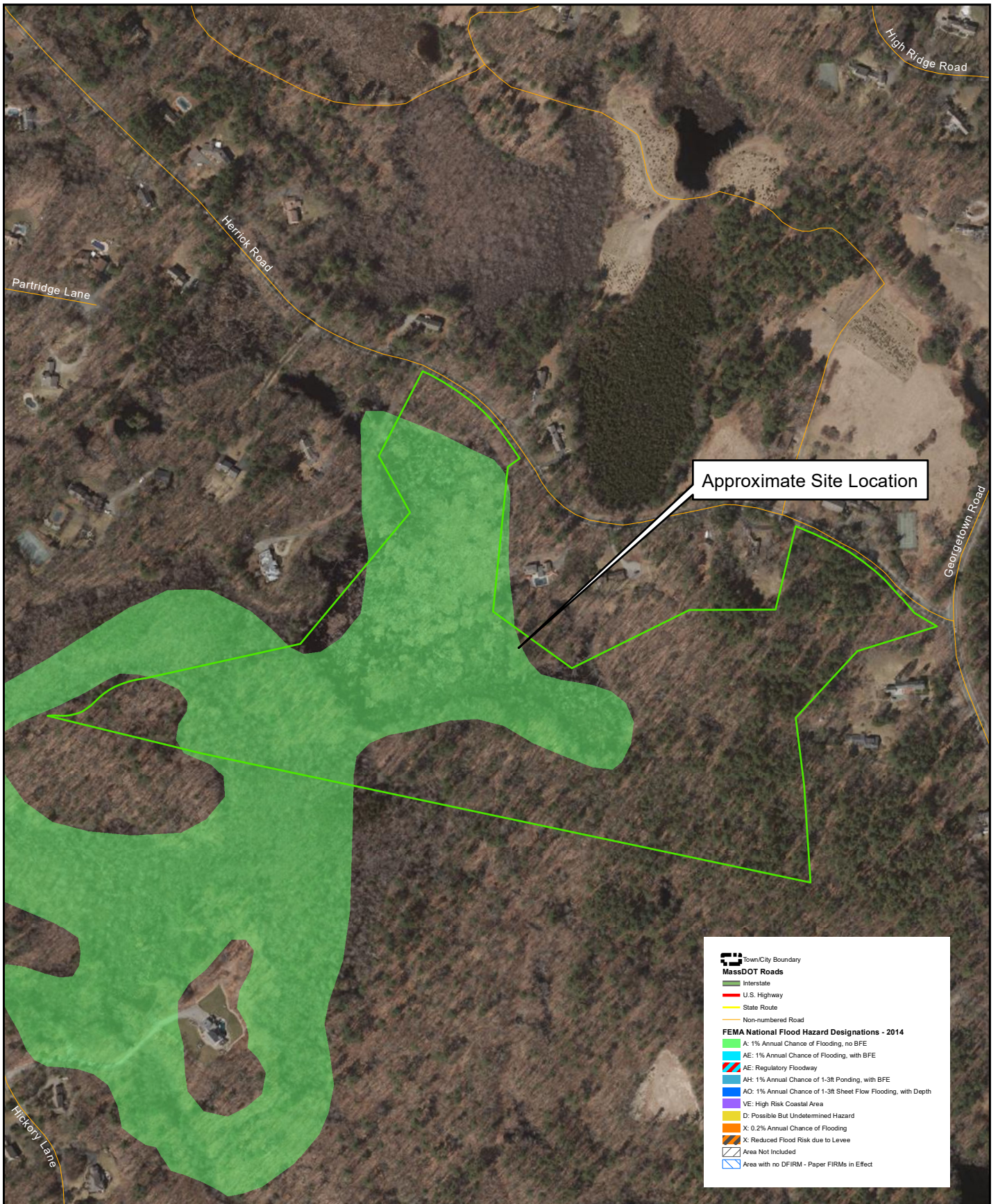
Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



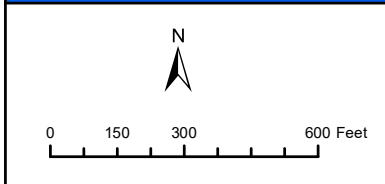
NHESP Map
Dorman Property
Herrick Road
Boxford, MA

FIGURE 3

LUCAS
 ENVIRONMENTAL, LLC



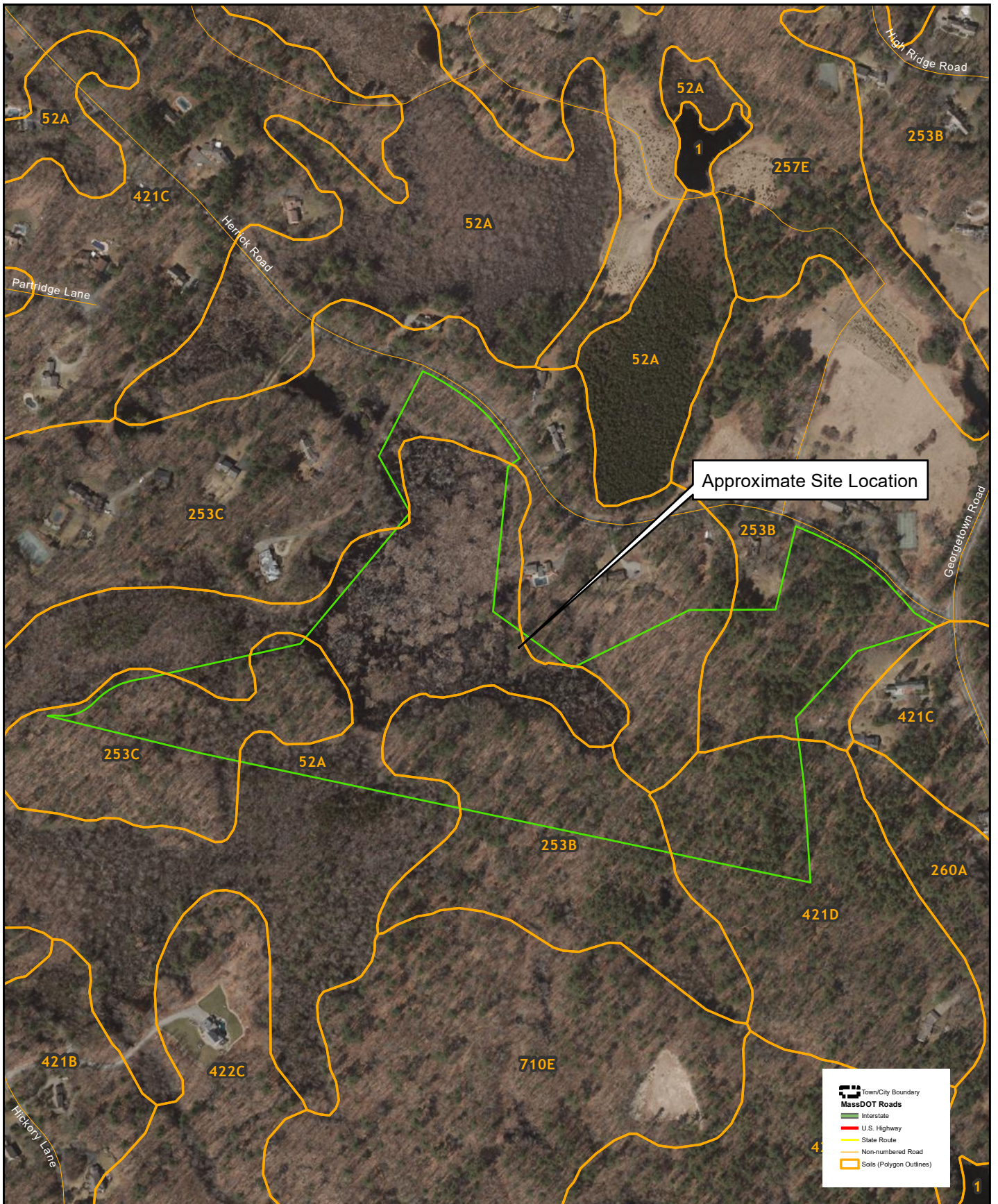
Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



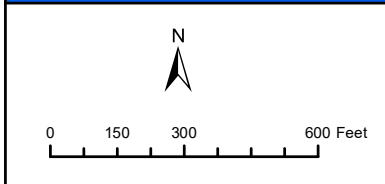
FEMA Map
Dorman Property
Herrick Road
Boxford, MA

FIGURE 4





Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2021)



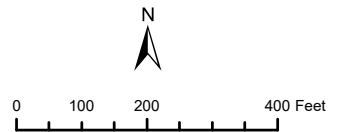
Soils Map
Dorman Property
Herrick Road
Boxford, MA



FIGURE 5



Source: Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs; USGS Color Ortho Imagery - 15cm (2019)



Vegetative Cover Map
Dorman Property
Herrick Road
Boxford, MA

FIGURE 6





SECTION III – APPENDICES

PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPHIC DOCUMENTATION

DATE: August 24, 2022



Photograph 1: View of Mixed Oak-Pine Forest cover type (typical).



Photograph 2: View of Mixed Oak-Pine Forest cover type common throughout site.

PHOTOGRAPHIC DOCUMENTATION

DATE: August 24, 2022



Photograph 3: View of Oak Forest cover type (typical).



Photograph 4: View of eastern edge of Shrub Swamp. Evidence of ponding of water approximately 24-30 inches throughout.

PHOTOGRAPHIC DOCUMENTATION

DATE: August 24, 2022



Photograph 5: View of eastern edge of Shrub Swamp (typical).



Photograph 6: View of Atlantic White Cedar Swamp (Dead) in western portion of site. Great Blue Heron nest observed on snag.

PHOTOGRAPHIC DOCUMENTATION

DATE: August 24, 2022



Photograph 7: View of Cattail Marsh cover type in northeast portion of site.



Photograph 8: View of abandoned beaver lodge in Shrub Swamp.

PHOTOGRAPHIC DOCUMENTATION

DATE: August 24, 2022



Photograph 9: View of beaver dam in southwest corner of site.



Photograph 10: View of Potential Vernal Pool in eastern portion of site.