

March 22, 2019

Lancaster Zoning Board of Appeals
Lancaster Town Hall
701 Main Street, Suite 4
Lancaster, MA 01523

Re: Environmental Analysis for Goodridge Brook Estates, Lancaster, MA

1. INTRODUCTION

On behalf of Crescent Builders, Inc., Goddard Consulting, LLC (GC) is pleased to submit an Environmental Analysis for the Goodridge Brook Estates residential development project off Sterling Road in Lancaster, MA (Figure 1). The Analysis was performed in accordance with Chapter 301-8, Sections D(2) to D(4) of the Lancaster Subdivision Rules and Regulations. The three sections from 301-8.D. to be analyzed are as follows:

(2) Material effects upon important wildlife habitats, outstanding botanical features, and outstanding landscape features or historic environs; [Amended 6-13-2011]

(3) Capability of soils, vegetative cover, and proposed erosion control efforts to support proposed development without danger of erosion, silting, or other instability;

(4) Relationship to the requirements of MGL c. 131, §§ 40 and 40A (the Wetlands Protection Act) and to the Massachusetts Environmental Policy Act (MEPA); [Amended 6-13-2011]

2. ANALYSIS OF SECTION 301-8.D(2)

GC biologists Dan Wells and Tom Rebula conducted a Wildlife Habitat Evaluation on March 6, 14, and 19 of 2019. The evaluation consisted of an inspection of the entire project site, with a focus on the onsite wetland resource areas. Dan has a Master's Degree in Wildlife Biology and has worked as a wildlife biologist in eastern MA for over 20 years, and therefore meets the criteria for conducting wildlife habitat evaluations listed in the MA Wetlands Protection Act (WPA) Regulations [310 CMR 10.60 (1)(b)]. Tom has a Bachelor's Degree in Ecology and Evolutionary Biology and has worked as wetland scientist with Goddard Consulting for two years.

2.1 Existing Important Wildlife Habitats

2.1.1 Vernal Pools

The site was evaluated during late winter of 2019, with snow cover and remnant ice present on all of the wetland resource areas, therefore we cannot make any definitive conclusions regarding the presence or absence of vernal pools within the project site or immediate vicinity. In order to determine whether a wetland meets the State (MA DFW Natural Heritage & Endangered Species Program (NHESP)) criteria for being considered a vernal pool, one must follow the procedures outlined in the NHESP's "Guidelines for the Certification of Vernal Pool Habitat" document (hereafter "the NHESP Guidelines"). According to the NHESP Guidelines, a vernal pool can be certified if the appropriate biological and physical criteria are present using either the "Obligate Species Method" or the "Facultative Amphibian Species Method." The requisite biological criteria are optimally surveyed for during early-to-mid April; therefore, the presence or absence of vernal pools cannot be confirmed as of the writing of this report.

Regardless of the biological data, we did not observe any onsite wetlands that have obvious basin or other physical characteristics that are likely to be vernal pools. The two isolated wetlands in the northeast portion of the site (500-series and 700-series) do not appear to contain confined basin depressions that could be described as a "pool" nor are they likely to hold standing water for two continuous months in spring and/or summer, as required in the WPA definition of vernal pool habitat (310 CMR 10.04).

The 300-series wetland, located partially onsite in the northeast corner, appeared to contain some pockets of shallow standing water that could be potentially suitable as breeding habitat for vernal pool-breeding amphibians, however as described above, this could not be confirmed until early-to-mid April.

The 200-series wetland, in the southwest corner of the site, is located on a slope and lacks any obvious basins that could confine standing water of sufficient depth or duration to support breeding by vernal pool amphibians. As discussed above, however, this could not be confirmed until early-to-mid April.

The nearest likely offsite vernal pool (as mapped by the MassGIS online "certified" and "potential" vernal pools layers from NHESP) is a Potential Vernal Pool mapped approximately 570 feet to the southwest of the site (Figure 1).

2.1.2 Endangered Species

The site is not mapped by the NHESP as "Estimated Habitats of Rare Wildlife" or "Priority Habitats of Rare Species." This is based on the most current Natural Heritage Atlas, which was published on August 1, 2017. There is no Rare Species Habitat mapped in the immediate vicinity of the site; the nearest such habitat is 9,300 feet to the south. Therefore, there are no records (known to NHESP) of any rare wildlife or plant species within or adjacent to the project site, and the presumption is that there are none present.

2.1.3 Intermittent Stream

An onsite stream system begins in the geographic center of the property and flows southward offsite into Goodridge Brook, which is a known Coldwater Fishery. The significance of this onsite stream to coldwater fish species or other stream-dependent wildlife could not be extensively evaluated given the time of year of the site inspections. The stream is designated as “intermittent,” which means that it does not flow continuously throughout the year. While some sections of the stream appear to be of sufficient depth to hold fish, the intermittent nature of the brook and naturally occurring impediments to fish movement are likely to preclude the on-site portions of the stream from providing breeding habitat for fish.

Some observations of aquatic insects revealed a species of cased caddisfly (order Trichoptera) to be present within the stream. Species level identification of the observed specimens was not performed; however their presence is an indicator of good water quality within the brook.

Additional wildlife species that could potentially utilize the stream for a majority of their life-history functions consist of stream-dwelling salamanders including the two-lined and Northern dusky salamanders. These species are not listed as rare, threatened or endangered but are known to inhabit streams in eastern MA. These species could not be surveyed for until later in the spring. Photo 1 shows a portion of the onsite stream.



Photo 1: South facing view of the onsite stream.

2.1.4 Snags

The site contains numerous tall, dead standing trees or “snags.” These are important wildlife habitat features for birds, such as woodpeckers which forage for insects within the rotting wood or make cavities for sheltering and nesting. They are also important for small mammals, which utilize cavities and crevices for sheltering. The snags are present both within the wetland resources and the adjacent uplands (Photo 2).



Photo 2: View of a significant red maple snag which was found in the large central wetland.

During the environmental assessment of the site, efforts were made to document dead snags on the subject parcel. A series of transects were performed across the parcel and the location of any notable dead snags (>6”d.b.h.) were documented using handheld GPS. While these efforts are unlikely to have documented all snags on the parcel, the accrued data provides insight into the on-site distribution of these habitat features and potential impacts associated with the proposed project. Figure 2, which is attached to this report, provides a visual representation of this data in the context of the proposed project. A total of 375 snags were located on the property, with 196 found to be within areas proposed for development, and 179 outside of the proposed limits of work.

2.1.5 Breeding Birds

Breeding bird use of the site could not be assessed given the timing of site evaluations. Notable species documented onsite during the site evaluations include pileated woodpecker (Photo 3)

and wild turkey. Mature contiguous forests such as that present in the site provide breeding habitat for a variety of permanent and migratory species. Again, no rare bird species are mapped by NHESP as present in the vicinity of the project site.



Photo 3: View of a characteristic square hole created by the pileated woodpecker. Evidence of that this species utilizes the subject parcel was found at numerous locations.

2.1.6 Turtles

Being completely forested, the site is unlikely to provide nesting habitat for turtles. None of the onsite wetlands appear to contain sufficient amounts of standing water throughout the winter that could support over-wintering by aquatic turtles (snapping and painted turtles are the most

common species in the area). Therefore, this site is not likely to be actively used by aquatic turtles. The eastern box turtle is a non-aquatic species that utilizes upland forests and early-successional brushy habitats for the majority of its life cycle. Although this species could utilize the existing forested habitat, it is a State-listed species and there are no mapped populations near the site.

2.1.7 Mammals

Tracking and scat evidence was observed from deer and coyotes. Red, gray and flying squirrels are likely common due to the mature forested habitat. A notable wildlife observation made during the evaluation was an active porcupine den, which was located in a tree cavity (Photo 4). In addition to the den, there was evidence found in other locations of the site of porcupine foraging on conifers.



Photo 4: View of a porcupine den located within a tree cavity on-site. Note the prominent mound of feces which is a hallmark of the species.

2.2 Existing Outstanding Botanical Features

The existing land cover types within the site are mapped on Figure 2 which is attached to this report. The site was surveyed during later winter, with snow cover and before leaf-out, so the vegetative species composition could not be thoroughly assessed. The broad plant community types observed, however, were rather commonly encountered in Eastern Massachusetts. There are no rare plants mapped by NHESP within the site or vicinity.



Photo 5: View of the White Pine Dominant cover type which is prevalent throughout the subject parcel. In general, white pine is the primary species throughout upland areas on the site, with a noticeable component of oak spp. and shagbark hickory. Areas within the southeast of the parcel display a greater proportion of hardwoods. Wetland areas on site are dominant in red maple and ash spp.

2.3 Existing Outstanding Landscape Features or Historic Environs

Although the site contains varied topography, there were no apparent landscape features that we would classify as “outstanding.” The site consists of a large, contiguous forested habitat, which is somewhat uncommon in the mixed agricultural, residential and industrial surrounding landscape, however these mature forested cover types are not unique to the site. Similarly, the rolling topography which can be observed on the site is typical of much of eastern Massachusetts. No significant rocky outcroppings or other geologic features were observed on site.

No areas of manmade historical significance we observed on the site, including but not limited to buildings, cellar holes or abandoned cemeteries. The online mapping program provided by the Massachusetts Cultural Resource Information System (MACRIS) shows no inventory points within the subject parcel. Historic stone walls do exist on the property; however, these features are common across much of the Massachusetts landscape.

2.4 Material Effects Upon Important Wildlife Habitats

If any of the onsite wetlands (including IVW and BVW) are later documented to contain vernal pool habitat, then the clearing of forested habitat immediately adjacent to such areas is likely to have a material effect upon the foraging, sheltering and over-wintering habitat of the

amphibians documented to breed in such wetlands. If the onsite wetlands are confirmed not to contain vernal pool habitat, then the project would not have a material effect upon vernal pool-breeding amphibians.

Although the project would remove numerous snags, a substantial number will remain within the un-altered wetlands.

The notable bird and mammal species observed (porcupine and pileated woodpecker) are not listed as rare, threatened or endangered species in MA, nor are they protected under any other State or local laws.

Since the project will not alter any Bank, BVW or LUW resource areas, there will not be any material effects upon wetland wildlife habitat.

The project requires the filling of the "500-series" non-jurisdictional IVW for construction of Road A. As described above, this IVW and the adjacent 700 series IVW do not appear to have the physical or hydrological characteristics necessary to provide vernal pool habitat. To mitigate for this alteration, the applicant proposes to replicate the square footage of lost IVW at a 1:1 ratio. This replication would be designed so that it expands upon the existing BVW by connecting the 700-series IVW to the existing BVW. This would enhance the functions and values of the existing BVW by creating a more connected wetland system than what is currently present with two discontinuous IVWs separated from the main wetland complex.

3. ANALYSIS OF SECTION 301-8.D(3)

The following analysis is provided by GC Wetland Engineer Mark Arnold. Mark has a Bachelor's degree in Civil Engineering from Worcester Polytechnic Institute and is enrolled in the Umass Amherst Soil Science Master's program. Mr. Arnold is also a Certified Professional in Erosion and Sedimentation Control and has several years of erosion and sedimentation monitoring experience.

The project site has gentle slopes that go from north to south with soils mapped as Ridgebury fine sandy loam, Chatfield-Hollis-Rock outcrop complex, Woodbridge fine sandy loam, Merrimac fine sandy loam and Paxton fine sandy loam. The soils are mostly a hydrologic class of C & D which are poorly drained. These soils do require extra care in stabilizing, but can be accomplished with the items discussed below.

The proposed project has been designed to comply with the Massachusetts stormwater standards. The site plans provide details (sheet 20 of 27) on the stormwater controls and erosion control measures to prevent erosion, siltation and potential instability during construction. The plans include details on erosion measures being monitored daily. Temporary stabilization notes require mulch being used if the season prevents grass growth. The methods proposed are typical for large construction site and when implemented correctly provide good stabilization efforts. Stock piles are also required to have 12" filter mitt barrier to prevent erosion of soils temporarily stockpiled.

As noted under the stormwater report prepared by GLM the site requires a NPDES Permit. Under the EPA NPDES program the site is required to have double erosion controls spaced at 5-feet where work is within 50-feet of wetlands that provide the same protection as the buffer cleared within the 50-foot area adjacent to the wetlands. In addition, stabilization measures are required to commence within 7 calendar days of the temporary or permanent cessation of earth-disturbing activities anywhere on site. Lastly, increased inspections are required a minimum of every 7 calendar days and within 24 hours of an occurrence of a storm event of 0.25 inches or greater, or the occurrence of runoff from snowmelt sufficient to cause a discharge. The SWPPP prepared under the NPDES program will discuss how construction will be phased to minimize opening up disturbed areas. Measures within the SWPPP should include temporary sediment basins, additional slope erosion measures, and discharges of stormwater controlled during storms. The SWPPP should be more robust due to the nature of the soils on the site which can be controlled if properly managed.

The proposed erosion control efforts shown on the site plans and required under the NPDES program will also require the site to be controlled during construction to prevent erosion, silting, or other instability. Final establishment of stabilized grass areas prior to the removal of erosion controls will provide protection from erosion, silting, or other instability. The required inspections and monitoring under the NPDES program will provide enhanced review and ensure measures implemented are adequate.

4. ANALYSIS OF SECTION 301-8.D(4)

4.1 Relationship to the requirements of the Wetlands Protection Act

The site contains the following resource area subject to the jurisdiction of the WPA: Bank (of intermittent stream), Bordering Vegetated Wetlands (BVW) and Land Under Water Bodies and Waterways (LUW). The project does not propose any direct alteration of the intermittent stream or its associated Bank or Land Under Waterbodies resource areas, therefore the project complies with WPA Regulations performance standards 310 CMR 10.54 and 10.56 respectively. In accordance with 310 CMR 10.60, the project would not adversely affect the wildlife habitat contained within these two resource areas. The project does not propose any alteration to BVW resource area either, therefore the project complies with WPA Regulations performance standards 310 CMR 10.55.

An additional wetland type present within the site is Isolated Vegetated Wetland (IVW). IVW is not an area subject to the jurisdiction of the WPA, therefore there are no WPA performance standards that apply to this resource area¹.

Throughout this project site, the BVW is upgradient of both the Bank and LUW resource areas, so a 100-foot buffer zone extends outward from the BVW. The 100-foot buffer zone is the limit of WPA jurisdiction for this project. As described above, the project does not propose any

¹ IVW may be subject to Federal jurisdiction under the Clean Water Act. Alteration of >5,000 sf of IVW would be subject to 404 Clean Water Act and MassDEP 401 Water Quality Certification performance standards.

alterations to Bank, BVW or LUW resource areas, therefore the work proposed is subject only to buffer zone performance standards (310 CMR 10.02(2)(b):

Activities Within the Buffer Zone. Any activity other than minor activities identified in 310 CMR 10.02(2)(b)2. proposed or undertaken within 100 feet of an area specified in 310 CMR 10.02(1)(a) (hereinafter called the Buffer Zone) which, in the judgment of the issuing authority, will alter an Area Subject to Protection under M.G.L. c. 131, § 40 is subject to regulation under M.G.L. c. 131, § 40 and requires the filing of a Notice of Intent.

The project will require the filing of a Notice of Intent with the Lancaster Conservation Commission. The applicant then has the burden of proof of demonstrating compliance with the WPA regulations. The project has been designed with proper Stormwater Management, erosion control and other features that demonstrate compliance with the WPA Regulations.

The following language is from 310 CMR 10.03(1)(a):

(a) Any person who files a Notice of Intent to perform any work within an Area Subject to Protection under M.G.L. c. 131, § 40 or within the Buffer Zone has the burden of demonstrating to the issuing authority:

1. that the area is not significant to the protection of any of the interests identified in M.G.L. c. 131, § 40; or

2. that the proposed work within a resource area will contribute to the protection of the interests identified in M.G.L. c. 131, § 40 by complying with the general performance standards established by 310 CMR 10.00 for that area.

3. that proposed work within the buffer zone will contribute to the protection of the interests identified in M.G.L. c. 131, § 40, except that proposed work which lies both within the riverfront area and within all or a portion of the buffer zone to another resource area shall comply with the performance standards for riverfront areas at 310 CMR 10.58. For minor activities as specified in 310 CMR 10.02(2)b.1. within the riverfront area or the buffer zone to another resource area, the Department has determined that additional conditions are not necessary to contribute to the protection of the interests identified in M.G.L. c. 131, § 40.

The project has been designed to comply with the above regulation.

4.2 Relationship to the requirements of the Mass. Environmental Policy Act (MEPA)

The Massachusetts Environmental Policy Act (MEPA) is as follows:

The purpose of MEPA and 301 CMR 11.00 is to provide meaningful opportunities for public review of the potential environmental impacts of Projects for which Agency Action is required, and to assist each Agency in using (in addition to applying any other applicable statutory and regulatory standards and requirements) all feasible means to avoid Damage to the Environment or, to the extent Damage to the

Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

The MEPA process generally includes larger infrastructure and development projects which trigger review by a state action or require “*Agency Action*.” MEPA has multiple review thresholds which include impacts to land, State-listed Species under M.G.L. c. 131A, wetlands, waterways and tidelands, water, wastewater, transportation, energy, air, solid and hazardous waste, historical and archaeological resources and areas of critical environmental concern. The proposed project does not require MEPA review since it does not require state agency review. The project does meet several thresholds which are part of the MEPA trigger process, but since state agency action isn’t required the project doesn’t meet the requirements of 301 CMR 11.00. The thresholds the project meets are land disturbance, with the 5 acres trigger being met by 8± acres of new created impervious surfaces. The wastewater trigger (0.5 miles of sewer line) is met with the proposed sewer lines of 0.9± miles. Thresholds are based on site plans dated March 7, 2019 using the extent of tree clearing proposed. If a state action were to be triggered, then the MEPA process would also be triggered.

by 

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By: 

Mark R. Arnold, BSc, Wetland Engineer

By: 

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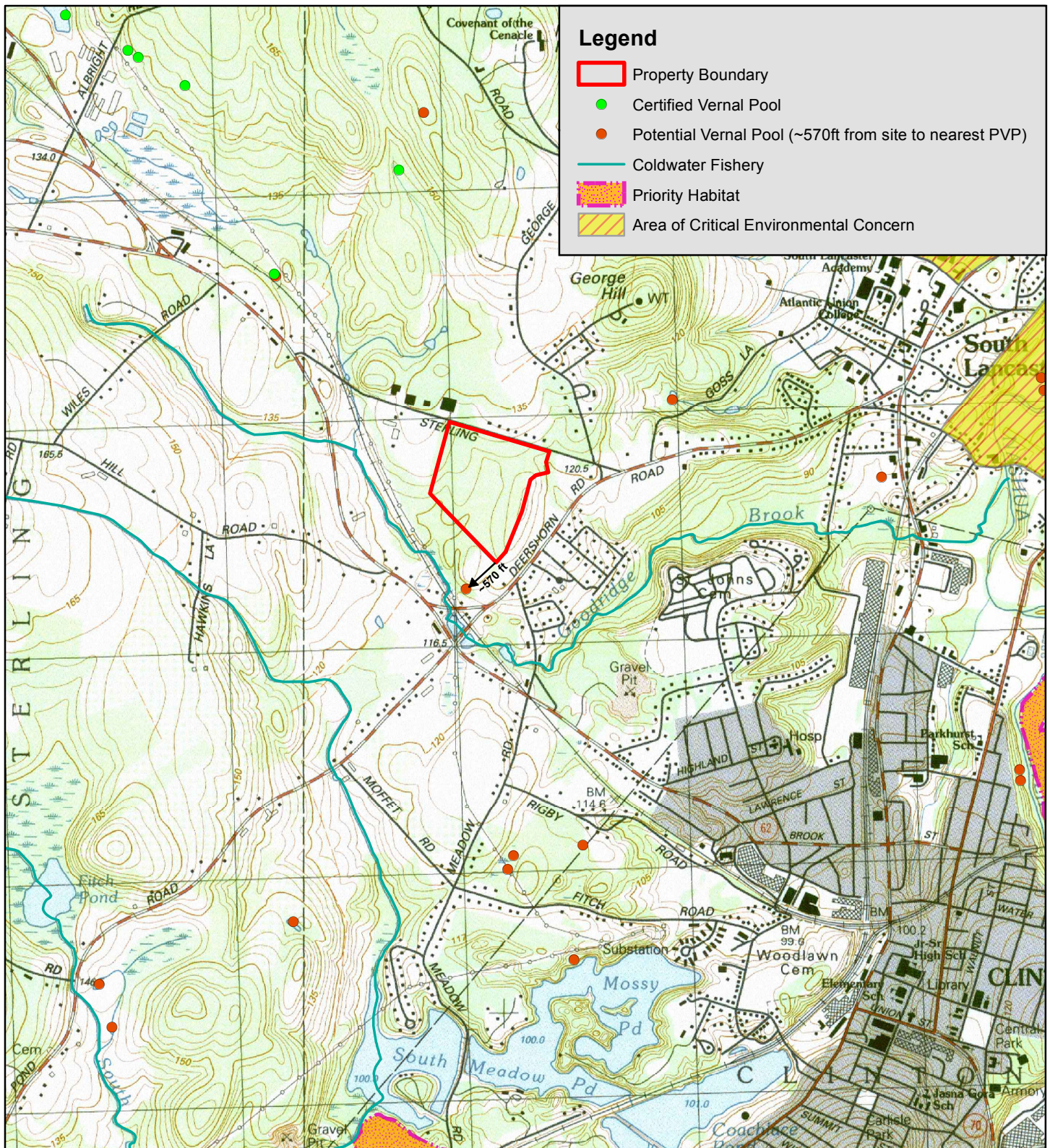
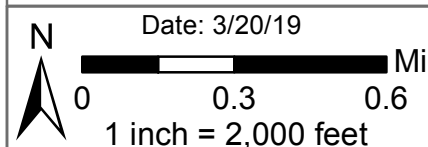


Figure 1: USGS Site Locus

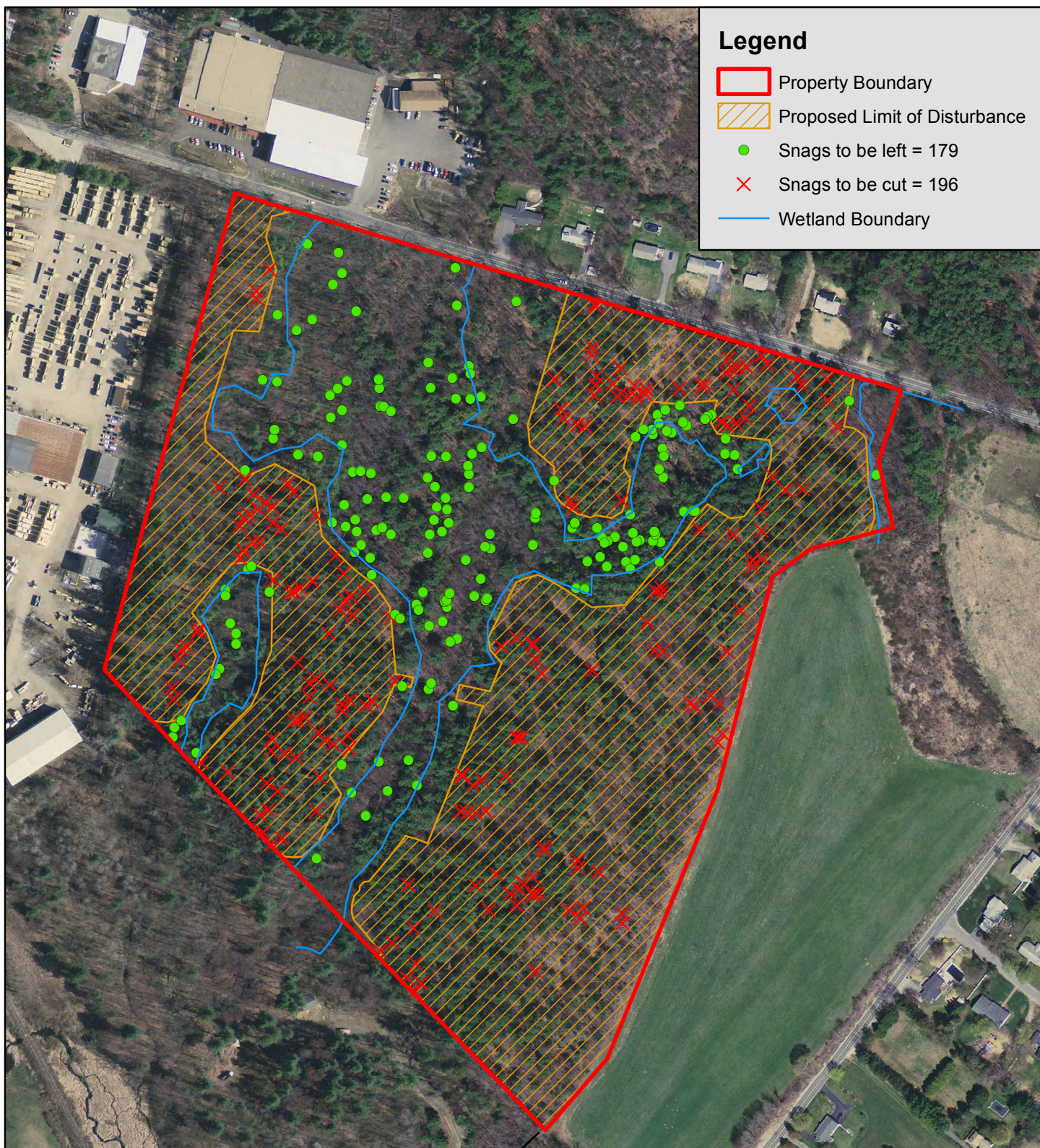
Goodridge Brook Estates - Lancaster, MA

(Map: 41, Lot: 34B)



GIS Data Source: "Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT"





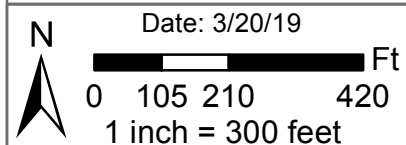
Legend

- Property Boundary
- Proposed Limit of Disturbance
- Snags to be left = 179
- × Snags to be cut = 196
- Wetland Boundary

Figure 2: Locations of Dead Snags

Goodridge Brook Estates - Lancaster, MA

(Map: 41, Lot: 34B)



GIS Data Source: "Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT"

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Strategic Wetland Permitting LLC

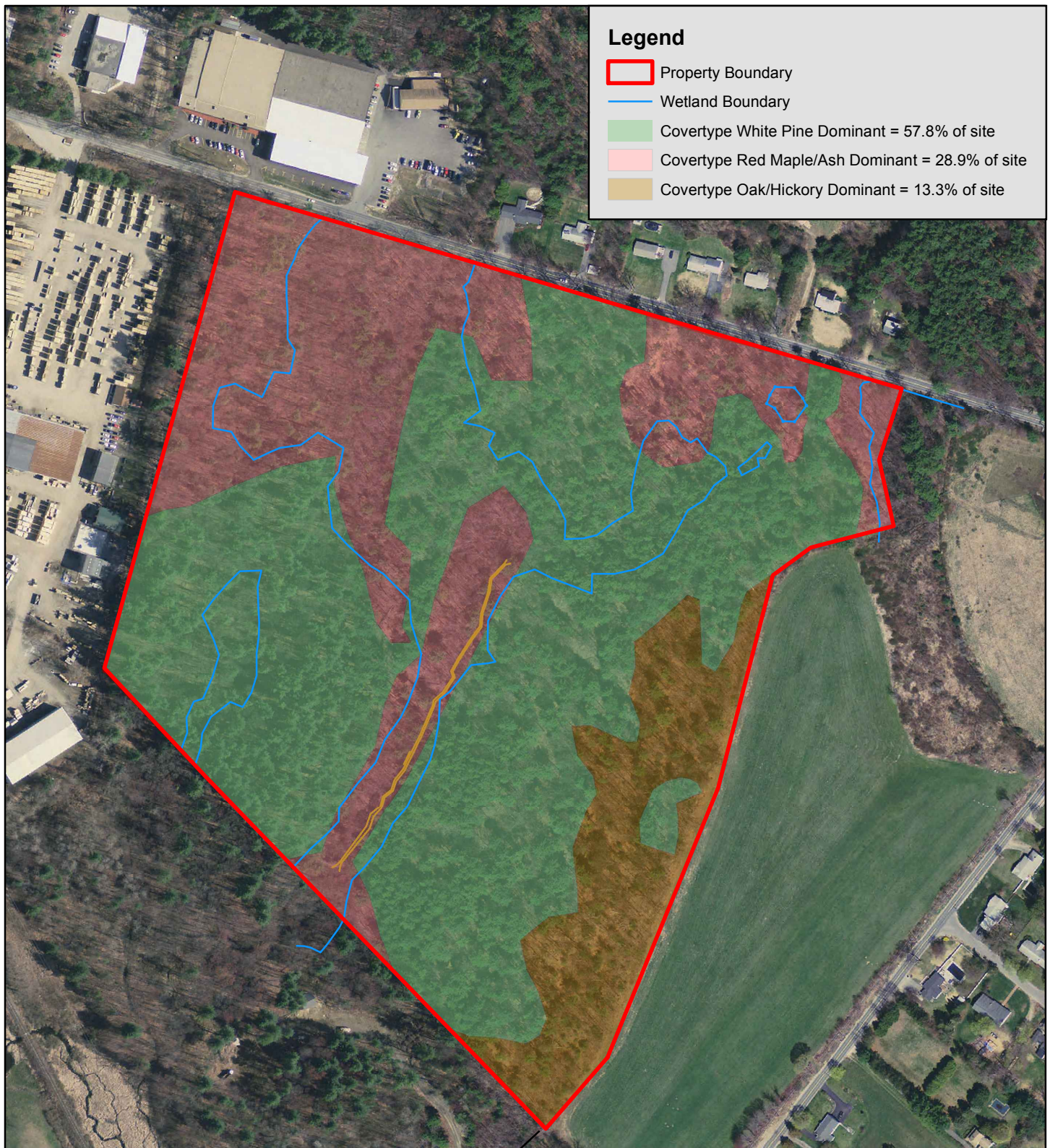
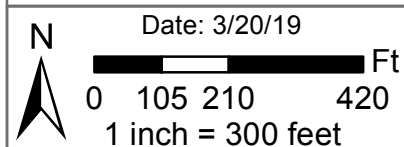


Figure 3: Covertypes Map

Goodridge Brook Estates - Lancaster, MA

(Map: 41, Lot: 34B)



GIS Data Source: "Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT"

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