Connecticut
Resource Conservation
& Development

NATURAL RESOURCES INVENTORY

TALBOT AND NORTHERN CT LAND TRUST PROPERTIES
ANDOVER, CONNECTICUT

JUNE 2020

Connecticut RC&D Environmental Review Team Program

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(All site photos were taken by CT RC&D staff unless stated otherwise. Cover photo provided by the USGS TopoView website)

CT RC&D Environmental Review Team – Upland Brook _ Talbot Property_ February 14, 2020 - JDav

Acknowledgments

This report is the product of a request from Town of Andover Conservation Commission to CT Resource Conservation and Development's (CT RC&D) Environmental Review Team (ERT) program. The CT RC&D Environmental Review Team program is a service for Connecticut municipalities and land trusts to obtain baseline environmental data and initial best management practices for town properties or properties of significant interest for development or conservation. The ERT service for natural resource inventories is free to Connecticut municipalities and land trusts, funded through the CT Department of Energy and Environmental Protection (CT DEEP) Passport to the Parks Program as well as CT RC&D matching funds.

CT RC&D would like to acknowledge and express their appreciation for the important work of the following Environmental Review Team members. Their professionalism and expertise were critical to the analysis of the Talbot Property, in context with its proximity to open space property currently owned by the Northern Connecticut Land Trust and the Town of Andover. The ERT process will provide the Town of Andover preliminary assessments to evaluation of natural resources and access in consideration of acquisition property by the Town of Andover.

The field review was conducted on February 14, 2020.

Carrie Crompton	Goodwin Master Naturalist/Botanist/Plant Ecology Andover Conservation Commission Member
Jeanne Davies, AICP	Land Use Planner Connecticut Resource Conservation and Development www.ctrcd.org
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We would also like to thank the Conservation Commission members and **Town Administrator, Eric Anderson** for their cooperation and assistance during the ERT review process.

Mike Palazzi, Chairman, Gary Gile, Scott Warren, Mary Ann Gile, Carrie Crompton & Meghan Lally

Prior to the review day, each Environmental Review Team member received a summary of the proposed concepts or projects anticipated for the property along with various information and geographic information maps. The team collectively visited the site and the dynamics of coordinating professional insights and observations was particularly valuable to this natural resource inventory.

Reports from each team member were submitted to the CT RC&D Executive Director/Programs Manager for compilation and editing into this final report.

This report represents the Team's findings. It is not meant to compete with private consultants by providing site plans or detailed solutions to development problems. The Team does not recommend what final action should be taken on a proposed project – all final decisions rest with the town and property owner. This report identifies the existing resource base and evaluates its significance to potential conservation in proximity to existing open space areas and suggests considerations that should be of concern to the town. The results of this Team action are oriented toward conservation of environmental quality and the long-term economics of land use. An additional valued resource for technical conservation assistance is the Eastern Connecticut Conservation District (https://conservect.org/eastern/).

The CT RC&D Council hopes you will find this report of value and assistance in providing information to the Town of Andover. If you require additional information, please contact:

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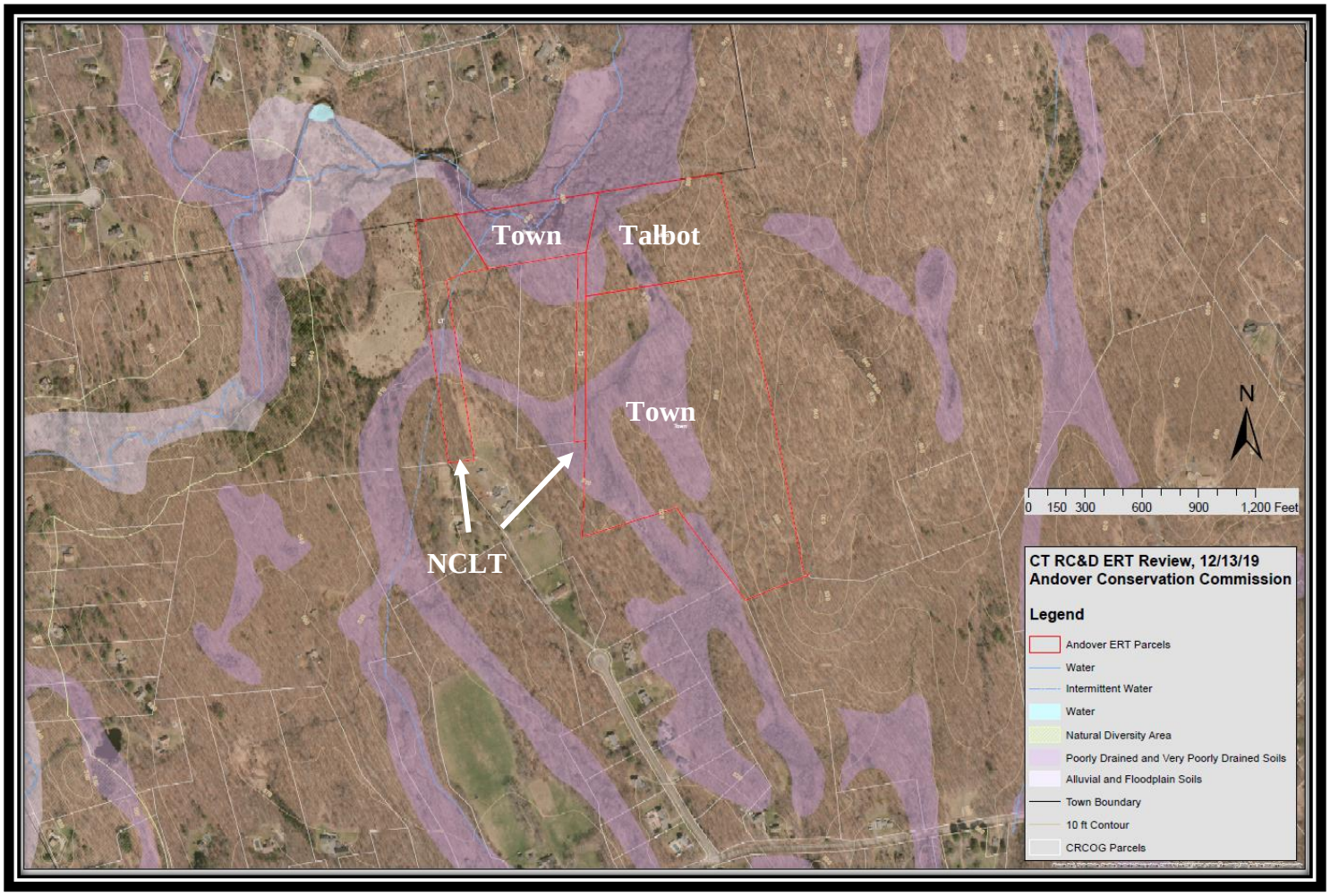
CTRC&D Andover Environmental Review Team – Post Site Visit – February 14, 2020 - JDav

Introduction

The Andover Conservation Commission sought support through an application in July 30, 2019 through CT RC&D Environmental Review Team program to conduct a natural resource and historic/archeological inventory of three parcels that were proposed for donation to the town by their respective land owners, the Northern CT Land Trust (2 parcels) and Thomas D. Talbot (1 parcel). The request was considered at the CT RC&D September meeting. It was noted that Andover was seeking an expedited turnaround to help with determination on acquisition by the town and the application was prioritized to move forward concurrently with several ERT reviews in progress.

The three parcels are adjacent to two existing town owned parcels which are not currently linked. The acquisition of the three parcels under review would create a contiguous, horse-shoe shaped piece of land 37. 7 4 acres in total area. The parcels, all five parcels, are currently land-locked. Although, the current landowners are eager to donate their properties, the central discussion on acquisition is whether the parcels, including the Talbot property value and suitability for active or passive recreation to the town and residents and ease of access to the property.

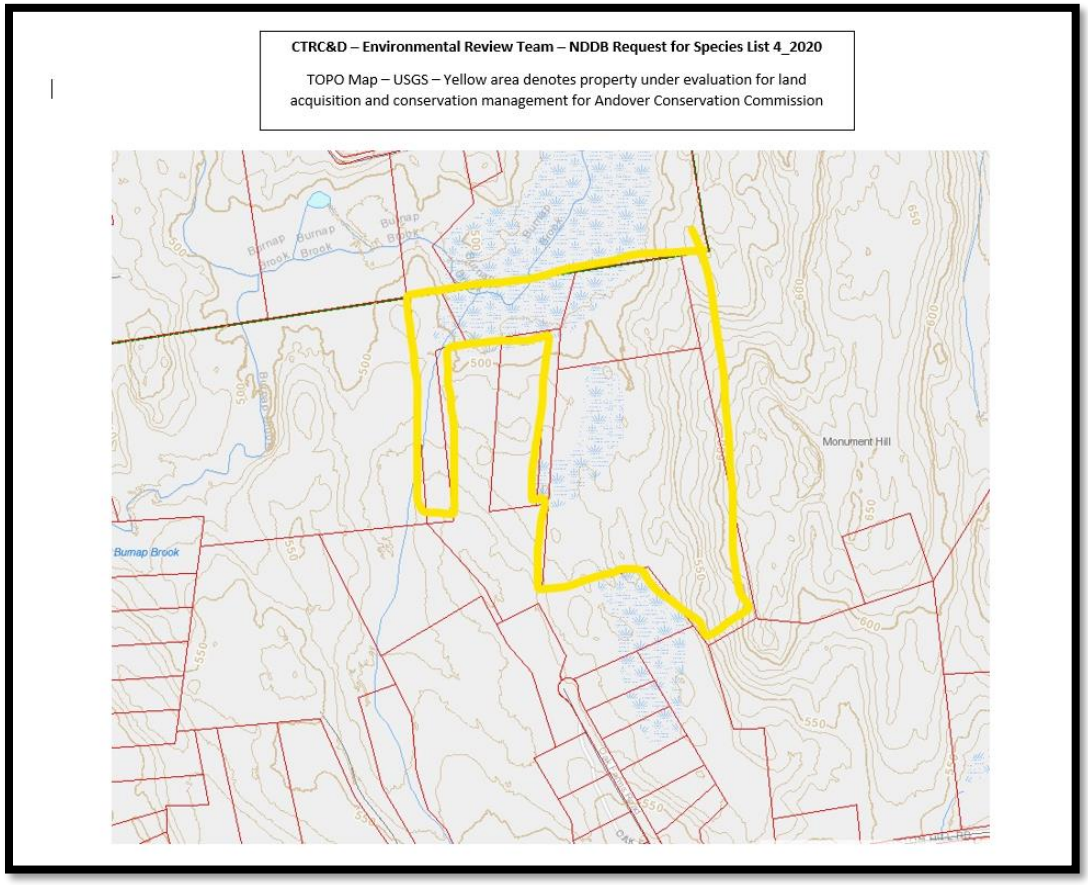


CTRC&D Environmental Review Team – Property Overview (Aerial Subject Properties Delineated in Red) -RD

The Conservation Commission has indicated initial findings that these tracts are likely to have high value as a natural resource protection area, historical preservation area (evaluation of a former mill site) and passive recreation area.

The final Environmental Review Team Report will assist to facilitate decisions with Andover's Board of Selectman regarding whether the land donations should be accepted. Permission to access the parcels was granted by all owners with support for a site visit provided on February 14, 2020 by the adjacent owners Gary and Maryann Gile on Oak Farms Road in Andover.

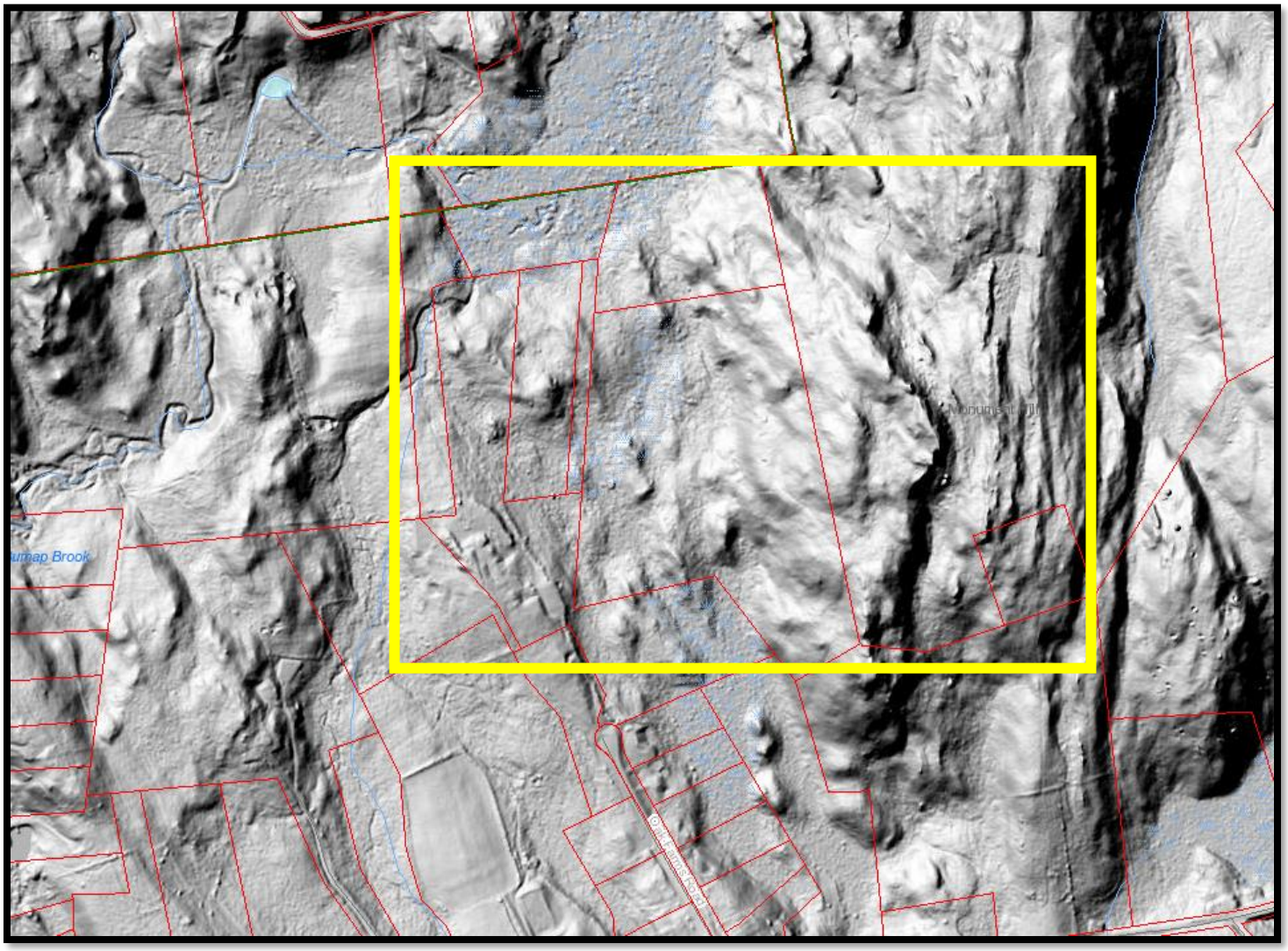
During the site review, additional concerns and questions about adjacent farmland, riverine and flooding concerns as well as protected species were addressed.



The specific issues the Town of Andover wanted to address in the ERT report include:

- Access for Public
- Wetlands Soils
- Historic Context
- Herpetology
- Wildlife
- Botany and Ecology
- Geological Context – Land Use Development
- Invasive Species

This ERT report is a service provided by Connecticut Resource Conservation and Development and professional volunteer scientists, ecologists and land use professionals to assist the Town of Andover toward environmentally responsible decisions with these currently undeveloped parcels.



CTRC&D Environmental Review Team – Lidar Imagery -Yellow Denotes ERT Team Site Visit Tour Area-UConn

Highlights of the Report

- Environmental professional team members, visiting and analyzing the properties and adjacent properties, were of the consensus that the Talbot property in conjunction with the Northern CT Land Trust and Town of Andover Properties present a unique opportunity to preserve a pristine area of ecological habitat. If public access were encouraged, recommendations include limited use of the property as an education opportunity for viewing an unusually pristine natural ecologic system.

- A low hill on the eastern border of the property achieves a maximum elevation at Monument Hill of about 670 ft. East of the property boundary: the maximum elevation within the town property bounds is just over 620 ft. Most of the property under discussion is west of Monument Hill. Low hills in that region only reach elevations of 520-530 ft. Thus, except for Monument Hill, relief on the properties is on the order of 20-30 ft.

- The construction of hiking trails on the Talbot property is not recommended, considering the very steep slopes and the wetland corridor that would need to be crossed in some manner by a trail. It is recommended that the Talbot property be managed for its wildlife habitat value which, as described above, is greatest when it is viewed as a small piece of a much larger complex of unfragmented wetland and upland habitats.

- A young mixed hardwood forest on the Talbot property should be allowed to develop over time into a mature closed canopy forest, like those that exist on adjacent parcels. The botanical health of the parcels is evident in the variety of tree species; the apparent freedom from diseases such as birch canker and beech bark disease; the absence of invasive plant species; and the abundance and variety of mosses and lichens. Such healthy woods provide many "ecosystem services," including the protection of water quality, prevention of soil erosion, carbon sequestration, and the provision of wildlife habitat.

- This type of large unfragmented forested landscape block is becoming increasingly rare in Connecticut due to unrelenting development pressure. Research has shown that large forested landscape blocks, such as the one that the Talbot Property is only a small piece of, are critical for the conservation of a diverse suite of avians, amphibians, reptiles and mammals.

- Acquiring and including the remaining parcels within this corridor makes sense from an ecological perspective as they are situated within a relatively unfragmented landscape corridor containing a mosaic of high-quality wetland and forest habitats. Within town, this corridor stretches from the Bishop Swamp system to the south, north to the Hop River System, with even broader connectivity to the Daly Swamp (headwaters of Burnap Brook) and Merrow Swamp systems in the adjacent town of Hebron.

- The parcels include substantial wetland acreage and a high diversity of wetland habitat types. These include two potential vernal pools. Sampling in the spring would be required to determine the amphibian breeding community, but it is likely that these pools support wood frogs, and if the pools hold water for a long enough duration in the summer, spotted salamanders. The surrounding upland forest provides ideal habitat for both obligate vernal pool-breeding species which are widely distributed throughout the region.

- Although the donated parcels have not been subjected to a professional cultural resources survey, historic land records indicate that the area once was part of an early mill complex, Chappel's Mills. A dam is noted to the north of the parcels where Burnap Brook crosses under Shoddy Mill Road in Bolton

- The area is comprised of some locations that contain environmental characteristics associated with Native American land use and settlement. Therefore, it is SHPO's opinion that the parcels currently owned by the town and the parcels to be donated have the potential to contain archaeological resources.

- There are State-listed species (RCSA Sec. 26-306) documented within or nearby the proposed project area including the following listed as "State Special Concern": **Wood turtle** (Glyptemys insculpta), **Spotted turtle** (Clemmys guttata), **Smooth green snake** (Opheodrys vernalis), **Silver-haired bat** (Lasionycteris noctivagans), **Red bat** (Lasiurus borealis), **Hoary bat (**Lasiurus cinereus)

- The parcels under consideration by the Town of Andover contain significant natural resource value and would enhance existing open space already owned by the Town. The parcels are in core forest, containing important agricultural soils, are adjacent to significant wetland resources, and are in the vicinity of sites where threatened or endangered species have been documented. The parcels are adjacent to and in proximity to other protected open space; their preservation would enhance those spaces and contribute to the expansion of the Town of Andover Western Highlands Open Space Corridor.

- Based on site assessment and visit to the property by the ERT Team, access to the property, if acquired, is recommended as a limited access through property acquisition of acreage on Boston Hill Road or Shoddy Mill Road or through acquisition of easements from adjacent property owners for limited access. Limited access opportunities are recommended for education to youth groups, conservation organizations, resident groups interested in ecological preservation of habitat. For this reason, access to the site should be limited to a small parking area off Boston Hill Road or Shoddy Mill Road with education and information signs noting limited trail access and use of property. At a minimum, if property adjacent to the subject properties were to submit for residential subdivision development, consideration of an open space subdivision layout with a sizeable easement area to protect critical habitats and access to those habitats are recommended.

- While not fully evaluated for the purposes of this report, it was noted that properties to the east and south of the Talbot and Northern CT Land Trust should be considered, as recommended in the Town Plan of Conservation and Development for further evaluation and acquisition, especially in collaboration with the Connecticut Department of Energy and Environmental Protection. In addition, rezoning for a watershed district that would preclude use of the area for earth-extraction operations would be of value to protect this valuable eco-system.

Next Steps

- Work closely with the Eastern Connecticut Conservation District, Connecticut Department of Energy and Environmental Protection, the Capitol Regional Council of Governments and organizations such as the Trust for Public Land toward watershed management planning, rezoning for compatible adjacent land use and natural resource planning, including future acquisition of adjacent properties to Talbot, Northern CT Land Trust and Town owned properties.

CTRC&D Environmental Review Team – Tree Fall Habitat – February 14, 2020 - JDav

Topography and Geology

Randolph Steinen and Zachary Klang
Geologists: Connecticut Geological Survey, Department of Energy and Environmental Protection

TOPOGRAPHY

This area of Andover is underlain by relatively non-competent metamorphic rocks that the glaciers, during the last ice age, eroded to a relatively subdued relief. Then, as the glaciers melted, substantial thicknesses of glacial soils (greater than 50 ft. in the local area) were deposited on top of the bedrock (ledge) further reducing the topography. The result is a relatively smooth topography with gentle to locally moderate slopes (see Fig. X in introduction to ERT report). Streams in the immediate area drain northward toward the Burnap Brook wetland area that borders the northern portions of the properties under discussion. The wetland has an elevation of just greater than 500 ft. A low hill on the eastern border of the property achieves a maximum elevation at Monument Hill of about 670 ft. east of the property boundary: the maximum elevation within the town property bounds is just over 620 ft. Most of the property under discussion is west of Monument Hill. Low hills in that region only reach an elevation of 520-530 ft. Thus, except for Monument Hill, relief on the properties is on the order of 20-30 ft.

BEDROCK GEOLOGY

The entire area reportedly is underlain by rocks of the Hebron Gneiss and irregular areas of pegmatite (Snyder, 1970, Rodgers, 1985). Bedrock (ledge) composed of Hebron Gneiss, however, was not observed on the subject parcels during the ERT field observation (pegmatite outcrops were observed and several small outcrops shown on both the bedrock and surficial geologic maps of Snyder, 1970, and O'Leary, 1979). The gneiss is composed of quartz, plagioclase and a variety of calcium-bearing silicate minerals (which are slightly less resistant to weathering and erosion than the silicate minerals in most common rocks in eastern Connecticut). Snyder describes the gneiss as fine to medium-grained gray to greenish gray "calc-silicate rock", containing calcic-plagioclase feldspar, quartz, biotite (mica) and calcic amphibole and pyroxene. Calc-silicate rocks are "weak" rocks according to Snyder, which probably accounts for the lack of outcropping ledge on the properties. Nearby road-cut exposures of the Hebron Gneiss (Figure 1) confirm the gray nature of the rock. But also prominent are pods and lenses of pegmatite, the white areas in the illustrations. Most of the pegmatite consists of coarse-grained quartz and feldspar, minerals which are resistant to erosion. Monument Hill to the east is underlain by pegmatite (Snyder, 1970). Because of the more resistant minerals in pegmatite, it is a strong rock and is more resistant to erosion, which likely accounts for the topographic relief of Monument Hill. Just west of the property, rocks of the Brimfield Schist (which contains pyrrhotite, the foundation corroding mineral) underlie the glacial soils. Pyrrhotite is highly susceptible to chemical weathering, forming an acid as a byproduct, thus rendering Brimfield rocks weak also.

GLACIAL GEOLOGY

Almost the entire area is covered by glacial soil that is referred to as till (O'Leary, 1979; Stone and others 2005). Till consists of poorly sorted unconsolidated soil containing clay sand and coarser material including boulders. Indeed, numerous boulders are found with and in the till in this area. O'Leary suggests that till in the northern area, adjacent to the wetlands surrounding Burnap Brook, is less than 3 m (9-10 ft.) thick. The till appears to be at least 6 m (20 ft.) thick because none of the local drainages eroded through it exposing bedrock. Till is composed of all the material

eroded by the glacier as it grinds across the land surface. Eroded particles of all sizes get frozen into the ice and move with the glacial-ice until melting occurs. Then the eroded debris is deposited as a

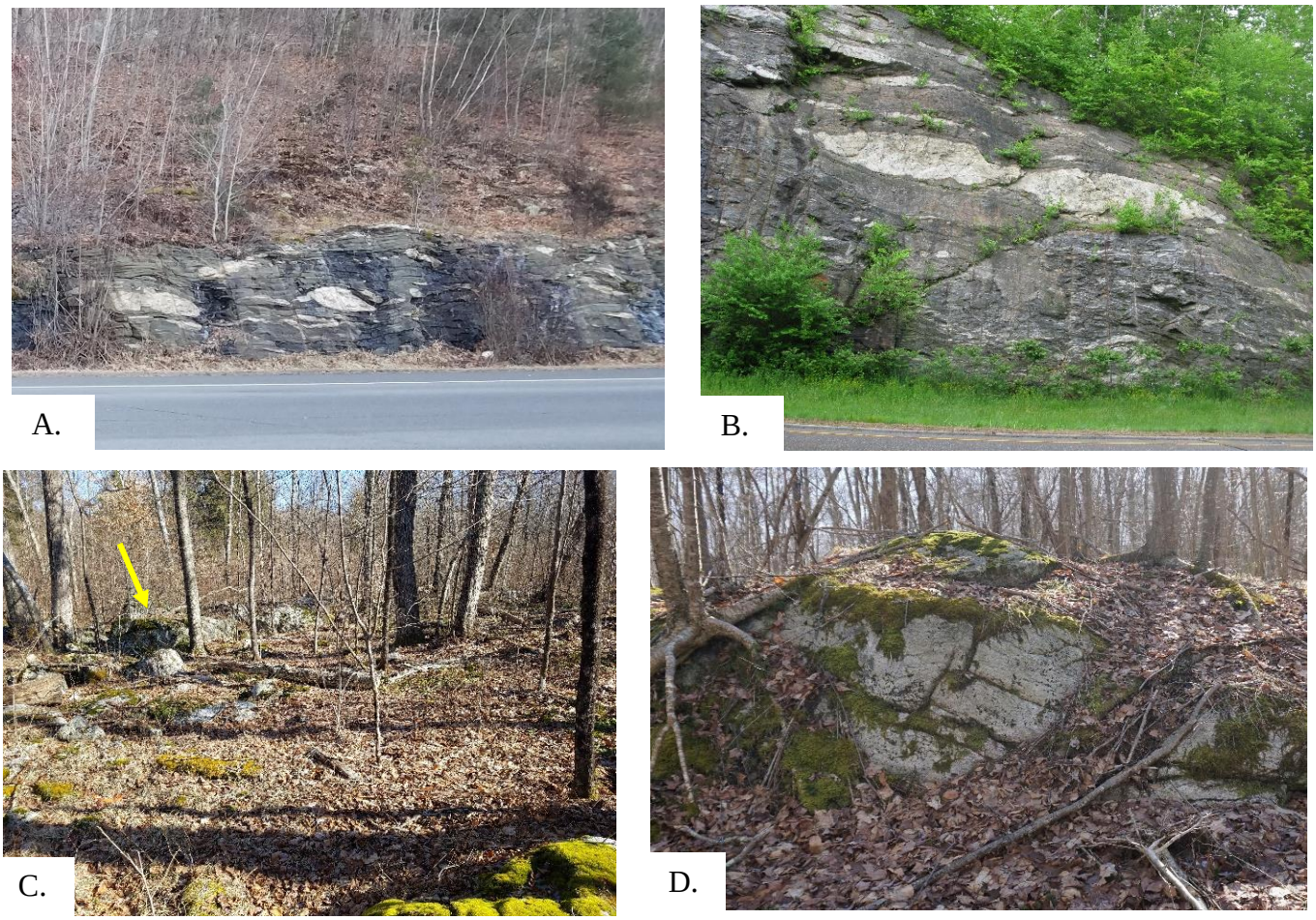


Figure 1. Bedrock (ledge) outcrops of Hebron Gneiss and pegmatite. A. Typical exposure of Hebron Gneiss in road cut outcrop along Route 6 north and west of the Andover town parcels. B. Typical Hebron Gneiss roadcut exposure on Route 9 near Salem, south and east of Andover. C. Pegmatite outcrop (yellow arrow) along banks of stream channel. Outcrop is about 1 m high. D. Pegmatite knoll on adjacent parcel. Outcrop is about 2 m high.

residue on top of the rock. The gray layers of Hebron Gneiss are easily ground to sand and mud sized debris, but the pegmatite bodies are not. Hence, it is noteworthy that all the boulders seen in the area are composed of pegmatite. Because they are found on top of a rock different from themselves, they are technically glacial erratics.

Boulders in the area seem to have been deposited by two mechanisms. Pegmatite boulders found in the stream valleys (Figure 2A) are sub-rounded to slightly-rounded and are mostly less than a meter (3 ft.) in size, in contrast to the generally larger and more angular boulders found on the valley sides and hilltops (interfluves). The present-day catchment area for these valleys is not large enough to produce a flow capable of transporting boulders the size of which are found there. This suggests that the valley boulders were derived from streams of high volume flowing off the top of the glaciers that could transport the boulders of the size found there. Most of the valley bottoms observed contain boulders; they seem to be present even when boulders are lacking in the interfluves areas, supporting the interpretation that valley boulders are deposited by supra-glacial streams (originating on the glacier) and they have not been eroded from till upstream of their present location.

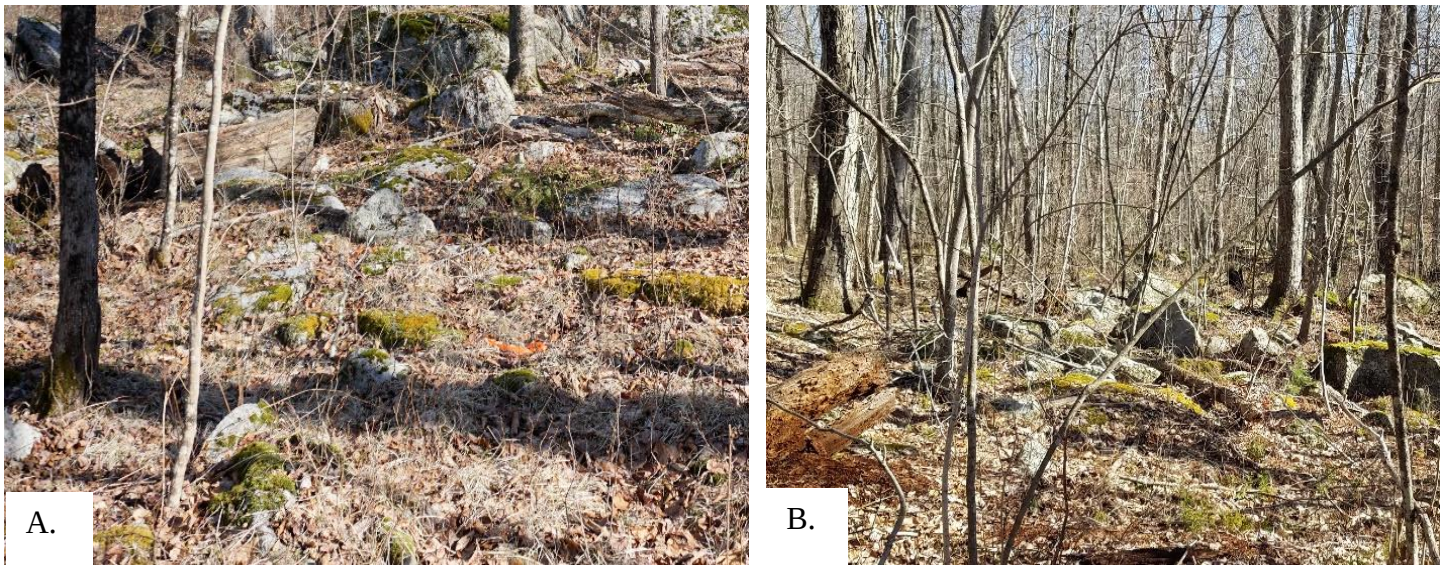


Figure 3. Boulder areas on subject parcels. A. Rounded boulders in stream channel are mostly all less than a meter in diameter and are all rounded to sub-rounded. B. Boulders near top of interfluve are angular and mostly greater than a meter in diameter.

Pegmatite boulders on the interfluves (Figure 2B) appear more abundant in a broad arc-shaped area south of Burnap Brook. These boulders are up to 3 or 4 m (10-12 ft.) in diameter and generally are more angular than the boulders found in stream bottoms. Their larger size and poor rounding generally precludes stream transport. Rather they seem to be deposited directly from glacial ice. Because they are concentrated in this area suggests their deposition occurred on a poorly developed recessional moraine when melt back of the large glacial sheet stalled for a brief period. An ice-margin is mapped through the area by Stone and others (2005).

A small sand and gravel deposit is mapped by O'Leary (1979) immediately west of the town parcels. His map indicates that this deposit has been exploited in the past. The western edge of the sand and gravel may just impinge upon the town property.

References.

O'Leary, D.W., 1979, Surficial geologic map of the Marlborough quadrangle, Connecticut. U.S. Geol. Surv. Geol. Quad. Map GQ-1504

Rodgers, John, 1985, *Bedrock Geological Map of Connecticut*. State Geological and Natural History Survey of Connecticut, Nat'l. Resource Atlas Series, 1:125,000, 2 sheets.

Snyder, G.L., 1970, Bedrock geologic and magnetic maps of the Marlborough quadrangle, east-central Connecticut. U.S. Geol. Surv. Geol. Quad. Map GQ-791.

Stone, J.R., Schafer, J.P., London, E.H., DiGiacomo-Cohen, M.L., Lewis, R.S., and Thompson, W.B., 2005, Quaternary Geologic Map of Connecticut and Long Island Sound Basin (1:125,000). U.S. Geol. Surv. Sci. Invest. Map # 2784.

Wetlands and Wildlife

Edward Pawlak, Registered Soil Scientist – Wildlife/Habitat Biologist
Connecticut Ecosystems LLC

INTRODUCTION

The "Talbot" property contains portions of at least three important habitats. First among them is a small section of a very large riparian wetland (Area 2 in Figure 1; Photo 5) that is associated with Burnap Brook, which is in turn tributary to the Hop River.

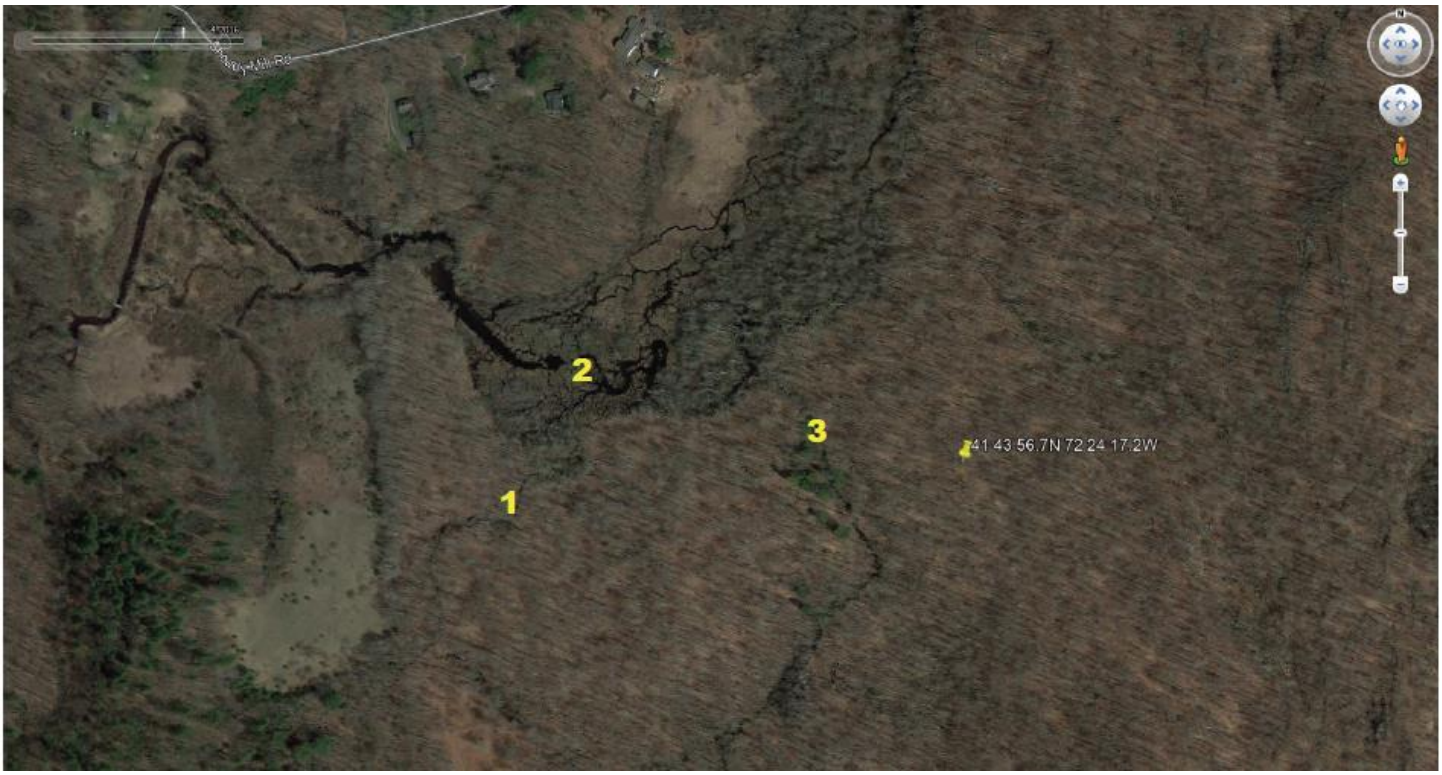


Figure 1. Aerial Photograph Andover ERT Andover, CT- Connecticut Ecosystems LLC- February 26, 2020

The National Wetlands Inventory ("NWI") map (Figure 2) shows that this large wetland complex is made up of "Palustrine Forested, Broad-leaved Deciduous" (PFO1E) and "Palustrine Emergent Persistent" (PEM1E) units, both of which are characterized by a "seasonally flooded/saturated" water regime. In colloquial terms, this means that this large wetland contains forested, shrub and marsh components. This large riparian wetland complex extends far off-site from the Talbot property. The second habitat of interest on the Talbot property is a wooded wetland corridor that extends south from the riparian wetland for a considerable distance, far beyond the limits of the Talbot property (Area 3 in Figure 1; it is also shown in dark green in Figure 2). The NWI map (Figure 2) identifies this wetland as "Palustrine Forested, Broad-leaved Deciduous" (PFO1E), with a "seasonally flooded/saturated" water regime.

Contained within this wooded wetland is a headwaters stream (Photo 7) that is tributary to the riparian wetland. This high gradient shaded channel contains many small boulders and clear water. The third habitat of interest on the Talbot property is a young second growth upland forest (the yellow pushpin in Figure 1; Photo 8) that supports saplings (black birch, yellow birch, American beech) and shrubs. Decaying stumps indicate that this young

forest/scrub habitat developed after a logging operation. Additional off-site adjacent habitats that were observed include two potential vernal pools (Photos 1 and 6); a narrow watercourse with undercut banks and a sandy bottom (Photo 3), which is tributary to the large riparian wetland; and a mature second growth hardwood forest (Photo 4).

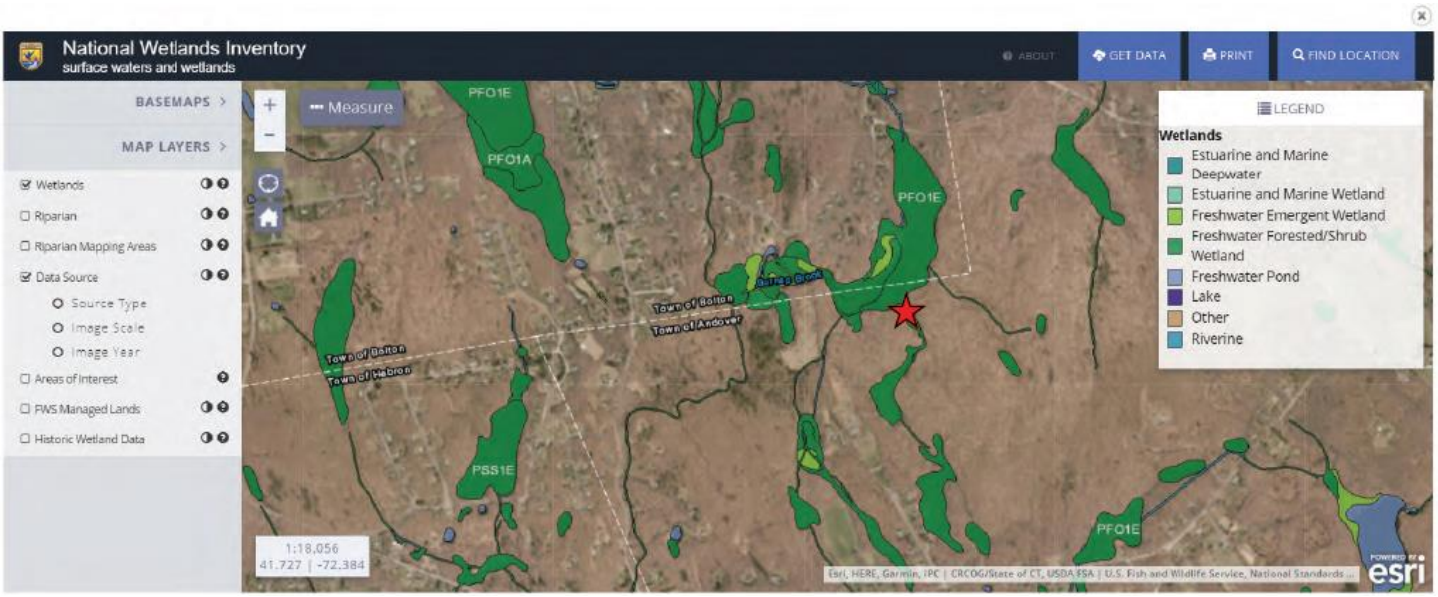


Figure 2. National Wetlands Inventory Map- Andover ERT Andover, CT- Connecticut Ecosystems LLC -February 28, 2020

Andover ERT Andover, CT 2/14/2020
Photo Captions

1. Potential vernal pool
2. Shallow marsh adjacent to potential vernal pool in Photo 1
3. Undercut banks of headwaters stream
4. Mature second growth forest

Andover ERT Andover, CT 2/14/2020 – Photo Captions
5) Burnap Brook riparian wetland.
6) Potential vernal pool at edge of wetland in Photo 5.
7) Headwaters stream.
8) Young forest and scrub on the Talbot property.

WETLAND FUNCTIONS AND VALUES

The wetlands on the Talbot property provide a variety of functions/ecological services:

• Groundwater Discharge and Recharge - Active wetland groundwater discharges support the baseflow of the headwaters stream described above, and ultimately Burnap Brook, to which it is tributary. These groundwater discharges also modulate the water temperature of these resources, which is critical to the aquatic organisms that live there. Groundwater recharge likely occurs in the wetland during the drier summer months, when the groundwater table is lower and does not preclude infiltration.

• Floodflow Alteration - The very large gently sloping, densely vegetated riparian wetland detains and slowly releases a significant amount of stormwater into Burnap Brook, protecting downstream structures.

• Pollutant Removal - The gentle slopes and dense vegetation that characterize the riparian wetland allow it to remove a variety of solid and dissolved pollutants from stormwater runoff.

• Production Export - Biomass generated by the dense vegetation in the riparian wetland decomposes and is seasonally exported into Burnap Brook, supporting the biota in the river and in downstream aquatic systems.

• Wildlife Habitat – The large wooded riparian wetland, along with the wetland that contains the headwaters stream, have the capacity to support a diverse and abundant wildlife community, including numerous amphibians and reptiles, avians and mammals. The headwaters stream likely provides habitat for aquatic salamanders such as the Two-Lined Salamander and the Northern Dusky Salamander.

• Finfish Habitat (Streams and Rivers) - The shaded, rocky channel of the headwaters stream, with its cool water, may support early life stages of brook trout and other finfish.

• Recreation – The riparian wetland offers excellent recreation opportunities, due to its wildlife resources. Those interested in birdwatching will find a diverse avian community in the riparian wetland and the adjacent forested uplands.

• Educational/Scientific Value – All of the wetland and upland habitats described above could potentially serve as educational sites for a variety of investigations, including wildlife studies, functions and values of headwater streams, and a vernal pool ecology.

WILDLIFE HABITAT VALUE OF YOUNG FOREST ON TALBOT PROPERTY

In order to consider the wildlife habitat value of this young forest, it is necessary to review it from a landscape-level perspective, which places it in the context of other adjacent wetland and upland habitats. What is most striking about the landscape depicted in Figure 1 is the very low degree to which it has been fragmented by development (roads, houses, etc.). This type of large unfragmented forested landscape block is becoming increasingly rare in Connecticut due to unrelenting development pressure. Research has shown that large forested landscape blocks such as the one that the Talbot Property is only a small piece of, are critical for the conservation of a diverse suite of

avians, amphibians, reptiles and mammals. While many wildlife species are “generalists” that can survive in human-fragmented landscapes (e.g., White-tailed Deer, American Robin, Green Frog, Garter Snake, etc.), there are many other “specialists” that can only persist in large unfragmented landscape blocks. These include “forest interior” avians (e.g., Black-and-White Warbler, Scarlet Tanager, Veery, Pileated Woodpecker, etc.), amphibians (Spotted Salamander, Marbled Salamander, Wood Frog, etc.), reptiles (Eastern Box Turtle, Wood Turtle, Eastern Ribbon Snake, etc.) and mammals (e.g., Bobcat, Gray Fox, etc.).

RECOMMENDATIONS

The construction of hiking trails on the Talbot property is not recommended, considering the locally very steep slopes and the wetland corridor that would need to be crossed in some manner by a trail. Instead, is recommended that the Talbot property be managed for its wildlife habitat value which, as described above, is greatest when it is viewed as a small piece of a much larger complex of unfragmented wetland and upland habitats (Figure 1). Is recommended that the young mixed hardwood forest on the Talbot property be allowed to develop over time into a mature closed canopy forest, similar to those that exist on adjacent parcels.

CTRC&D Environmental Review Team – On Site Team Discussion – February 14, 2020 - JDav

Botany and Ecology Assessment

Carrie Crompton, Goodwin Master Naturalist

INTRODUCTION OBSERVATIONS – SITE WALK

February 14, 2020, 1:30-3:45 p.m. Sunny and clear, 25°.

We walked north from the Giles' property through the Land Trust property; turned east into the Town property, where we crossed an innominate stream, staying south of the swamp; passed through the hemlock grove on the Talbot property; and continued uphill to the monument that marks the border between Andover and Bolton. We returned by roughly the same route.

TAKEWAY IMPRESSION

The two parcels in question – the Land Trust and Talbot properties – are healthy oak-hickory forests about 70 years into succession.

- The botanical health of the parcels is evident in the variety of tree species; the apparent freedom from diseases such as birch canker and beech bark disease; the absence of invasive plant species; and the abundance and variety of mosses and lichens.

- Such healthy woods provide many "ecosystem services," including the protection of water quality, prevention of soil erosion, carbon sequestration, and the provision of wildlife habitat.

The relatively pristine condition of the forest could easily be spoiled by the introduction of invasives (especially Japanese barberry and burning bush, which thrive in open woodlands like these), so it seems desirable to keep the area off-limits to heavy equipment that might inadvertently import invasive seeds and plant "cuttings" into the area. Therefore, I recommend no logging. I recommend that human use of the parcels should be limited to carefully planned single-track footpaths, for purposes of nature study and exercise. (No dog-walking or camping.) Any paths that come close to wetlands, ponds, or the swamp must be made in consultation with the Andover Conservation Commission and permitted by the Andover IWWC.

A BRIEF INVENTORY

TREES

In summer aerial photos, the entire area, apart from the large swamp on Town Property, appears as a nearly solid green canopy. In the winter, of course, it appears to be much more open. On the uplands of the Land Trust and Talbot properties, the woods are predominantly of the oak-hickory type, with many birches and other fast-growing, shade-tolerant species. The mature black oaks and hickories appear to be about up to 50–70 years old, none older. It is likely that the land was used as pasture until about 1950. (A short section of barbed wire was found on the western border of the Land Trust property.) There is evidence of logging on the Talbot and Town properties in the past 10 years.

The Land Trust property has white pines on the western border, both mature trees and young ones. It was suggested on the walk that this might be due to underlying soil being a glacial sand deposit. It is also likely that the area was formerly open (as opposed to lightly wooded) pasture, and white pine was able to get established quickly when the field was abandoned.

Aside from the white pine grove, the property is almost uniformly covered with hardwood saplings and seedlings, mostly black and yellow birch; but there are many well-spaced mature black oaks and shagbark hickories, with some red oak, American beech, black birch, sugar maple, red maple, white ash, Eastern hop-hornbeam (*Ostria virginiana*), and ironwood (*Carpinus caroliniana*).

There is a red maple swamp on the Town property between the Land Trust and the Talbot properties. We did not actually enter the swamp, so I couldn't distinguish among the species there. To be expected in the swamp: Speckled Alder, Clethra, Buttonbush, Maleberry, Blueberry, Swamp Azalea, Horsetails. Possibly Gray Birch, River Birch, Silver Maple. It is not impossible that there are Atlantic White Cedars in this swamp.

There are no conifers on the Town property.

Generally absent throughout the area: Sycamore. Also missing (or perhaps merely not noticed) are shade-intolerant species such as Eastern Red Cedar, Common Juniper, Spruce, Tulip Tree, *Populus* species (Quaking Aspen and Bigtooth Aspen, Cottonwood), Butternut, Pignut Hickory, White Birch, Gray Birch, American Elm, Slippery Elm. There might have been Sassafras saplings, which I would not recognize without their leaves.

Path through the Town Property - Crompton

There is a small hemlock grove on Talbot property, just before the elevation starts to rise, and the soil gets drier. Surrounding the hemlock grove, the mixed hardwoods are similar to those seen on the Land Trust property.

Hemlock grove on Talbot Property -Crompton

Evidence of the presence of Emerald Ash Borer in a White Ash tree -Crompton

- **The trees throughout are remarkably healthy-looking.**
- **No evidence of black birch canker.**
- **No evidence of beech bark disease.**
- **No indications of woolly adelgid on hemlocks.**
- **No indications of emerald ash borer presence on one tree (woodpecker-stripped bark).**

SHRUBS

There are carpets of lowbush blueberry bushes and some highbush blueberry in the upland areas.
Spicebush flourishes in the wetter areas. I didn't notice any evergreen shrubs, such as Mountain Laurel or Great Rhododendron. Brambles are filling in the logging tracks.

MOSSES, LICHENS, FERNS, LYCOPODIUMS

There are many glacial rocks and boulders strewn throughout low-lying town property, all well-covered with a variety of moss and lichen species.

Many species of ferns can be expected to thrive in the wetland areas – Cinnamon fern, Sensitive fern, New York fern, Marsh fern (around pools and wetlands), Polypody. Once again, it would take a separate trip to discover which species are present on site. Identified patches of Princess Pine (Lycopodium obscurum), Christmas fern and some Polypody fern at the edges of the stream.

There is evidence of logging on town and Talbot land within the past 10 years: tracks that are just beginning to fill in with brambles and birch saplings. The stumps all have some moss cover or fungal bodies but are not greatly decayed.

Glacial rocks covered with mosses - Crompton

Evidence of logging on Town Property-Crompton

Princess Pine (Lycopodium obscurum) -Crompton

Polypody Fern -Crompton

VINES

Some grape vines near the stream. No poison ivy**.**

INVASIVES

No invasive plant species noted: no Asiatic Bittersweet, Japanese Barberry, Rosa multiflora, Ailanthus, Autumn Olive.

FORBS

Given that our walk was in February, we saw no annual, biennial, or perennial wildflowers or sedges. Many species can be presumed from the generally acidic soil types underlying the oak-hickory forest and the moist soils around the stream and the swamp. I would expect to find abundant Skunk Cabbage, False Hellebore, Trout Lily, Wood Anemone, Marsh Marigold, and many other spring-blooming plants, but it would take a separate walk to determine what is present on site.

CTRC&D Environmental Review Team – Talbot Property Viewshed – February 14, 2020 - JD

Herpetological Assessment

Hank J. Gruner, Herpetologist

SUMMARY

- Based on the wetland and forest habitat present within or immediately adjacent to the parcels, 13 species of amphibians and 13 species of reptiles potentially occur. These include four state-listed reptiles, and 10 amphibians and reptiles considered by the CTDEEP to be species of Greatest Conservation Need.
- Wetland habitats within, and immediately adjacent to the parcels, feature a range of hydrological regimes and likely support a high diversity and abundance of breeding amphibians.
- Wetland and forest habitat are of high quality with little evidence of impact from invasive plants.
- Wetland and upland habitats are contiguous, providing ecological connectivity among parcels and across a broader landscape.
- The parcels are contiguous with a designated open space corridor within the Towns Plan of Conservation and Development.

ASSESSMENT METHODS
AMPHIBIAN AND REPTILE SPECIES OCCURRENCE

On February 14, 2020 a site walk was conducted by a Connecticut Resource Conservation and Development Environmental Review Team (ERT) to assess various natural resource and historic features associated with the parcels, including wildlife habitat. Because the timing of the ERT fell outside of the activity season for amphibians and reptiles, this assessment is based on a review of the upland and wetland habitats present, coupled with an analysis of wetland, soil and topographic maps and aerial photographs of the landscape.

The distribution and habitat use of amphibians and reptiles in the region is well-known, and the author has 37 years of experience researching Connecticut's herpetofauna, including significant work within Andover and surrounding towns (*see* Klemens 1993; Klemens et al *in press*). Direct observations and specimen records of amphibians and reptiles collected as part of these more than three-decades effort were utilized to compile species checklists based on the habitat present within, or immediately adjacent to the parcels (Table 1: Amphibians and Table 2: Reptiles). Species are listed as either of "Probable" or "Possible" occurrence. Probable occurrence indicates that appropriate habitat is present and the species is widely distributed in similar habitat within the town and the region. Possible occurrence indicates that appropriate habitat is present however the species has a more restricted distribution within the town and the region.

The species checklists were not broken down by habitat or individual parcel, as the parcels are contiguous and their combined acreage is rather small. Many species of amphibians and reptiles seasonally disperse among different habitats to fulfill various functions such as; thermoregulation, feeding, hibernating/aestivating, or reproduction. Thus, species checklists that are based on a broader ecosystem that encompass a diversity of inter-connected habitats are ecologically more appropriate. Where appropriate, the location of critical habitat types (e.g. vernal pools) are identified to individual parcel and the association of species to particular habitats is referenced in the narrative.

The checklists are annotated with references to individual species State conservation listings. These include, Connecticut's Endangered, Threatened and Special Concern species list (CTDEEP 2015a), and Connecticut's Wildlife

Action Plan (CTDEEP 2015b). The CTWAP includes three levels of Greatest Conservation Need for individual species, "Most Important", "Very Important" and "Important".

Table 1. Amphibian Species List

Common Name	Scientific Name	Occurrence	CT E/T/SC Listing[1]	CT WAP Listing[2]
AMPHIBIANS- SALAMANDERS				
Spotted salamander	*Ambystoma maculatum*	Probable		GCN Important
Northern dusky salamander	*Desmognathus fuscus*	Probable		GCN Important
Northern two-lined salamander	*Eurycea bislineata*	Probable		
Four-toed salamander	*Hemidactylium scutatum*	Probable		
Red-spotted newt	*Notophthalmus viridescens*	Possible		GCN Important
Eastern red-backed salamander	*Plethodon cinereus*	Probable		
AMPHIBIANS – FROGS				
American toad	*Anaxyrus americanus*	Probable		
Gray treefrog	*Hyla versicolor*	Probable		GCN Important
American bullfrog	*Lithobates catesbeiana*	Probable		
Green frog	*Lithobates clamitans*	Probable		
Pickerel frog	*Lithobates palustris*	Probable		
Wood frog	*Lithobates sylvaticus*	Probable		GCN Important
Spring peeper	*Pseudacris crucifer*	Probable		

Table 2. Reptile Species List

Common Name	Scientific Name	Occurrence	CT E/T/SC Listing	CT WAP Listing
REPTILES – TURTLES				
Snapping turtle	*Chelydra serpentina*	Probable		
Painted turtle	*Chrysemys picta*	Probable		
Spotted turtle	*Clemmys guttata*	Probable	Special Concern	GCN Very Important
Wood turtle	*Glyptemys insculpta*	Probable	Special Concern	GCN Very Important
Eastern box turtle	*Terrapene carolina*	Possible	Special Concern	GCN Very Important
REPTILES – SNAKES				
Eastern wormsnake	*Carphophis amoenus*	Probable		
Northern black racer	*Coluber constrictor*	Possible		GCN Important
Northern ring-necked snake	*Diadophis punctatus*	Probable		
Eastern milksnake	*Lampropeltis Triangulum*	Probable		
Northern watersnake	*Nerodia sipedon*	Probable		
DeKay's brownsnake	*Storeria dekayi*	Probable		
Ribbonsnake	*Thamhophis saurita*	Possible	Special Concern	GCN Very Important
Eastern gartersnake	*Thamnophis sirtalis*	Probable		

[1] List of Endangered, Threatened, and Special Concern species of Connecticut (2015a)
[2] Connecticut Wildlife Action Plan (2015b), CT Department of Energy and Environmental Protection

AMPHIBIAN AND REPTILE HABITAT

Wetland Habitat

The parcels include substantial wetland acreage and a high diversity of wetland habitat types. These include two potential vernal pools. One pool is located along a narrow wetland swale in the western Land Trust parcel, and a second pool lies tucked within a narrow, rocky drainage along the lower northwest slope of Monument Hill on the Talbot parcel. Sampling in the spring would be required to determine the amphibian breeding community, but it is likely that these pools support wood frogs, and if the pools hold water for a long enough duration in the summer, spotted salamanders. The surrounding upland forest provides ideal habitat for both of these obligate vernal pool-breeding species which are widely distributed throughout the region.

Shrub/forest swamp are the predominant wetland habitats present, including the majority of the Town parcel. This parcel and the northwestern portion of the Talbot parcel fall within the extensive wetland system associated with Burnap Brook. This wetland system features various habitat types including areas of permanently ponded water, open canopy tussock sedge/shrub swamp, temporary pools embedded within the swamp, forested wetlands and Burnap Brook. Due to the diversity of vegetation, variable canopy cover and hydrological regimes among these wetlands, this system likely supports a high diversity (up to 12 species) and abundance of breeding amphibians. These wetlands also likely provide habitat for three state-listed reptiles: spotted turtle, wood turtle and ribbonsnake.

Two smaller shrub/forest wetlands occur within or immediately adjacent to the parcels. One is associated with a narrow swale connecting with the small, intermittent stream in the western Land Trust parcel. The second is located immediately adjacent to the northeast corner of the Talbot parcel. Both of these wetlands, especially the adjacent wetland, contain sphagnum moss cover, a critical habitat feature for breeding four-toed salamanders. The wetland adjacent to the Talbot parcel was logged over and features an open canopy. Both spotted turtles and ribbonsnakes may also seasonally occupy this wetland which is connected to the Burnap Brook wetland system.

CTDEEP CT.Gov - Images (Left to Right: Four-Toed Salamander, Spotted Turtle, Ribbonsnake)

There are three stream corridors among the parcels. These include Burnap Brook, a portion of which flows through the northern Town parcel, and two smaller, intermittent streams that drain into Burnap Brook. The first of these flows through the western Land Trust parcel. This stream is relatively shallow with a distinctly sandy substrate. The second intermittent stream flows through the larger interior Town parcel and the Talbot parcel to the north. This stream is associated with an extensive forest swamp that formed along the base of the western slope of Monument Hill. This stream features a rocky substrate with deeper pools containing organic deposition. Groundwater seepage areas were evident along the course of the stream.

These stream habitats likely provide year-round habitat for both northern two-lined and northern dusky salamanders, although the dusky salamander may be absent from the first intermittent steam due to the character of its habitat (i.e., sandy substrate, lack of seepage areas). A wide variety of frog species would be expected to utilize these habitats seasonally, although not for breeding. Because of their association with swamp systems, both Burnap Brook and the second intermittent stream likely provide important seasonal habitat for spotted turtles and ribbonsnakes (both state-listed species). The state-listed wood turtle has also been documented as occurring in the Burnap Brook

system. In addition to providing important habitat for various species, the stream corridors also serve an important function in facilitating the movement of individual animals between wetland habitats. For example, individual spotted turtles likely utilize the second intermittent stream to disperse between the swamp system associated with Burnap Brook and the wetlands situated along the base of Monument Hill.

Upland Habitat

The parcels are predominantly forested with the exception of a small section of early successional open-field habitat located along the southeastern border of the western Land Trust parcel. More than 50% of the western boundary of this parcel borders a large mid-successional stage field (off-site). This is important to note, as several early successional habitat-associated species may occur within this adjacent parcel. If present, they likely seasonally utilize the forest habitat, especially along the edge of the western Land Trust parcel, and possibly wetland habitats associated with Burnap Brook along the Town parcel. These species include the state-listed eastern box turtle and the northern black racer.

The forest habitat is dominated by deciduous hardwood. Scattered young white pines are found throughout the forest especially within the western Land Trust parcel, and a small eastern hemlock stand is located along a moist ravine in the Talbot parcel. The Talbot parcel features a greater of shrub cover owing to more recent forestry activity.in this area. The Talbot parcel falls along the northwestern slope of Monument Hill and the forest here features a predominantly rocky substrate. Very few invasive plant species were observed, and their abundance throughout the forest appears to be quite low.

These forests offer high quality habitat for many species of amphibians that utilize the surrounding wetlands for breeding, but require forest habitat outside of the breeding season, and for hibernation. These include: spotted salamander, four-toed salamander, red-spotted newt, wood frog, gray treefrog, American toad and spring peeper. A variety of snake species would also be expected within these habitats, especially in the western Land Trust parcel adjacent to the reverting field, in drier areas featuring rocky outcroppings, and along stream and wetland edges throughout the parcels.

ECOLOGICAL LANDSCAPE CONTEXT

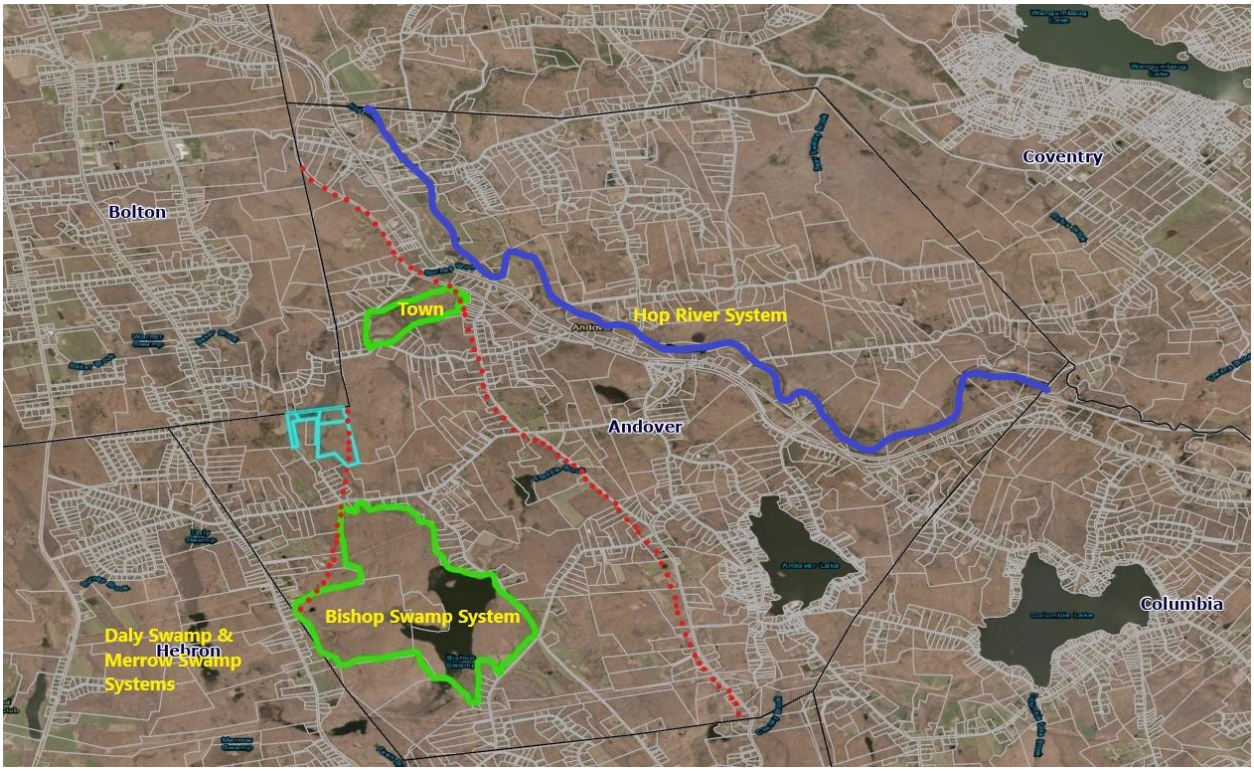
Long-term dispersal of individuals across the landscape is critical for maintaining the genetic health of populations, and for enabling populations to respond to changing environmental conditions.

Figure 1 provides an overview of the ecological landscape context discussed below.

Within town boundaries, the parcels are situated immediately adjacent to the Western Highlands Open Space corridor identified within Andover's Plan of Conservation and Development (*see* figure. D, chapter. 8, POCD). Why these parcels were not included within the mapped outline of this open space corridor is unknown, and somewhat curious, given that the parcels are contiguous with the corridor and include already acquired town land. Acquiring and including the remaining parcels within this corridor makes sense from an ecological perspective as they are situated within a relatively unfragmented landscape corridor containing a mosaic of high-quality wetland and forest habitats. Within town, this corridor stretches from the Bishop Swamp system to the south, north to the Hop River System, with even broader connectivity to the Daly Swamp (headwaters of Burnap Brook) and Merrow Swamp systems in the adjacent town of Hebron.

Much of this area falls within the town's Western Highlands Open Space corridor, and includes significant acreage of protected land including, the Bishop Swamp Wildlife Management Area (603 ac.) and town-owned land (104 ac.). A substantial number of large (>10 ac.) privately-owned parcels exist within this corridor providing opportunities for future conservation efforts. A high priority of these efforts should be focused on the 162-acre Laudano Trust parcel located just east of the parcels, and the two Hartford Neighborhood Centers, Inc. parcels (162 ac.) located southwest of Bishop Swamp.

Figure 1. Landscape context



- **Light blue outlined parcels** = ERT parcels reviewed including town owned parcels
- **Green outlined parcels** = State-owned Bishop Swamp Wildlife Management Area and Town-owned parcel along Burnap Brook
- **Red dotted outline** = approximate area of the Western Highlands Open Space Corridor mapped within the Town's POCD

LITERATURE CITED

Klemens, M.W. 1993. *Amphibians and Reptiles of Connecticut and Adjacent Regions*. State Geological and Natural History Survey Bulletin 112. Hartford, CT. 318 pp.

Klemens, M.W., H.J. Gruner, D.P. Quinn and E.R. Davison. *In press*. *Conservation of Amphibians and Reptiles in Connecticut.* Revision to State Geological and Natural History Survey Bulletin 112. CT Department of Energy and Environmental Protection. Hartford, CT.

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CTDEEP. 2015b. Connecticut's Wildlife Action Plan. https://www.ct.gov/deep/cwp/view.asp?a=2723&q=329520&deepNav_GID=1719

Archaeological Resource Assessment

Cathy Labadia
Archaeologist /Deputy State Historic Preservation Officer
Dept of Community and Economic Development – State Historic Preservation Office

Connecticut®

Department of Economic and Community Development

State Historic Preservation Office

March 20, 2020

Ms. Jeanne Davies
1066 Saybrook Road
P.O. Box 70
Haddam, CT 06438
(via email only to jdavies@ctrcd.org)

Subject: Northern CT Land Trust and Talbot Properties Acquisition
Andover, Connecticut

Dear Ms. Davies:

The State Historic Preservation Office (SHPO) appreciates the opportunity to comment on the proposed land donation to the Town of Andover. To assist in providing recommendations to the town, Catherine Labadia, Staff Archaeologist, participated in a walkover of the properties on February 14, 2020. The subject parcels are located south of Burnap Brook, near the easternmost corner of the western town boundary where it changes from an east-west direction to a north-south direction. A total of three parcels, encompassing approximately 37.74 acres, would be added to two parcels currently owned by the town. SHPO understands that this property will be managed for its natural resources, wildlife, and forestry.

Although the donated parcels have not been subjected to a professional cultural resources survey, historic land records indicate that the area once was part of an early mill complex, Chappel's Mills. A dam is noted to the north of the parcels where Burnap Brook crosses under Shoddy Mill Road in Bolton (11/03/1868 Land Deed). No water control features or ruins, however, were observed during the walkover of the subject parcels. Based on water flow and conditions observed during the field review, any remaining ruins associated with the historic mill likely are located north of the parcels under consideration. SHPO notes, however, that the area is comprised of some locations that contain environmental characteristics associated with Native American land use and settlement. Therefore, it is SHPO's opinion that the parcels currently owned by the town and the parcels to be donated have the potential to contain archaeological resources.

The primary purposes of protecting and ensuring the future survival of the significant natural resources on these properties also affords permanent protection of our State's important cultural resources that might otherwise be lost to development. Therefore, SHPO is supportive of the proposed acquisition and environmental stewardship. For additional information or questions, please contact me at (860) 500-2329 or catherine.labadia@ct.gov.

Sincerely,

Catherine Labadia
Deputy State Historic Preservation Officer

State Historic Preservation Office
450 Columbus Boulevard, Suite 5 | Hartford, CT 06103 | P: 860.500.2300 | Cultureandtourism.org
An Affirmative Action/Equal Opportunity Employer An Equal Opportunity Lender

Natural Resources Regional Context

Judy Rondeau, Natural Resource Specialist
Eastern Connecticut Conservation District

WATER RESOURCES

The parcels under review are located in the Burnap Brook watershed (CT 3107-00), which is part of the Willimantic River regional watershed and the Thames major watershed. Burnap Brook, located to the north of the subject parcels, flows northeasterly into the Hop River, a tributary to the Willimantic River. Two unnamed streams flow into Burnap Brook. The first, a perennial stream, crosses the westerly North Connecticut Land Trust parcel. The second, an intermittent stream that originates in a wetland located south of the larger Town parcel, flows through that parcel and the Talbot property. The southern edge of a large (40-acre) wetland system associated with Burnap Brook is located in the northerly Town parcel and portions of the Talbot and NCLT parcels.

WATER QUALITY

All streams, lakes and groundwater in Connecticut have been assigned water quality classifications by the Connecticut Department of Environmental Protection. These classifications are based on the designated uses of the waterbody or groundwater, which include aquatic recreation, habitat for aquatic wildlife and drinking water supplies.

The surface water quality classifications of Burnap Brook and the unnamed perennial tributary on the Talbot and NCLT parcels are Class A. Designated uses for class A surface waters include habitat for fish and other aquatic life and wildlife, potential drinking water supplies, recreation, navigation and water supply for industry and agriculture.

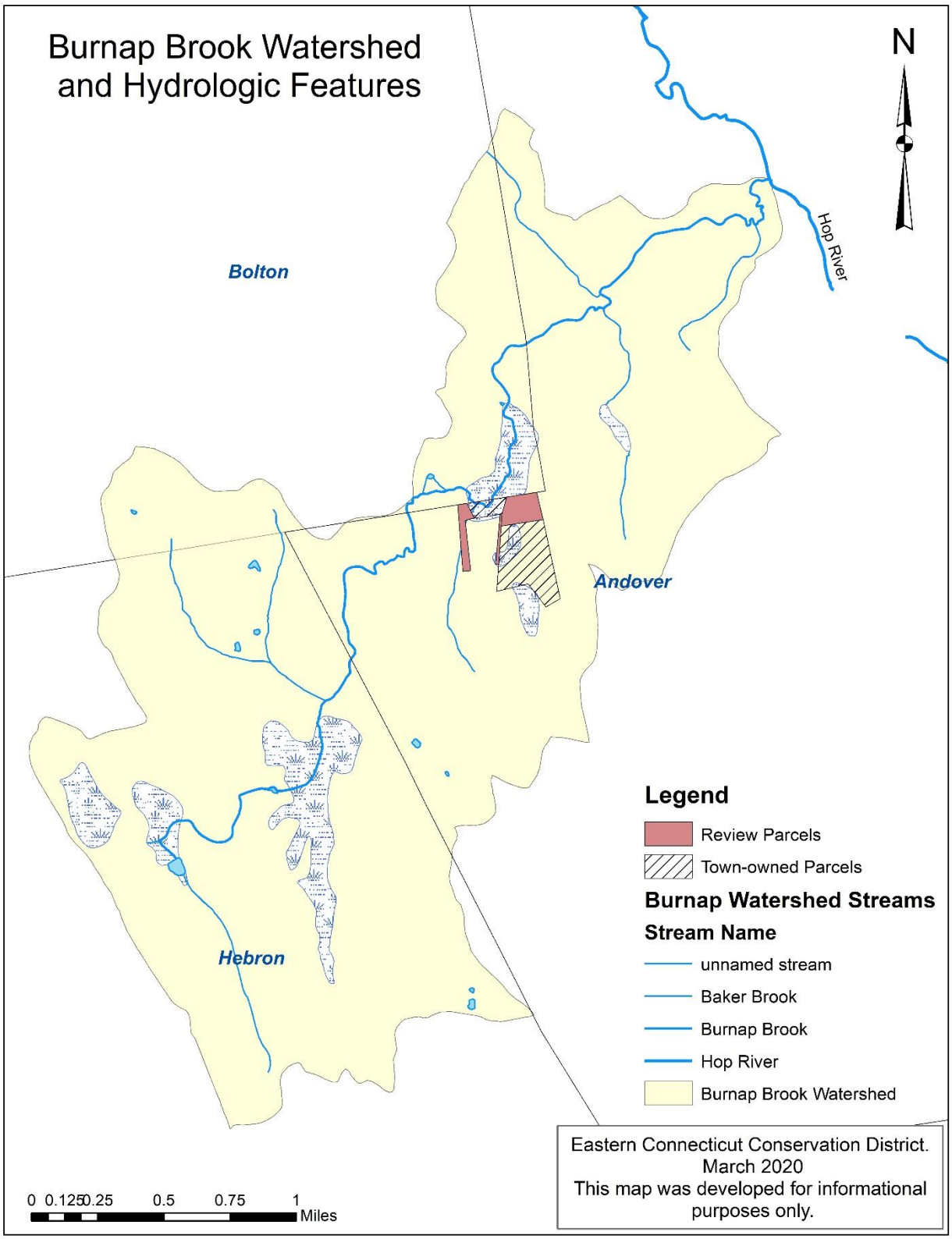
Ground water in the Talbot and NCLT parcels is designated GA. The designated uses for class GA ground waters are existing private and potential public or private supplies of water suitable for drinking without treatment, and baseflow for hydraulically-connected surface water bodies.

SOILS

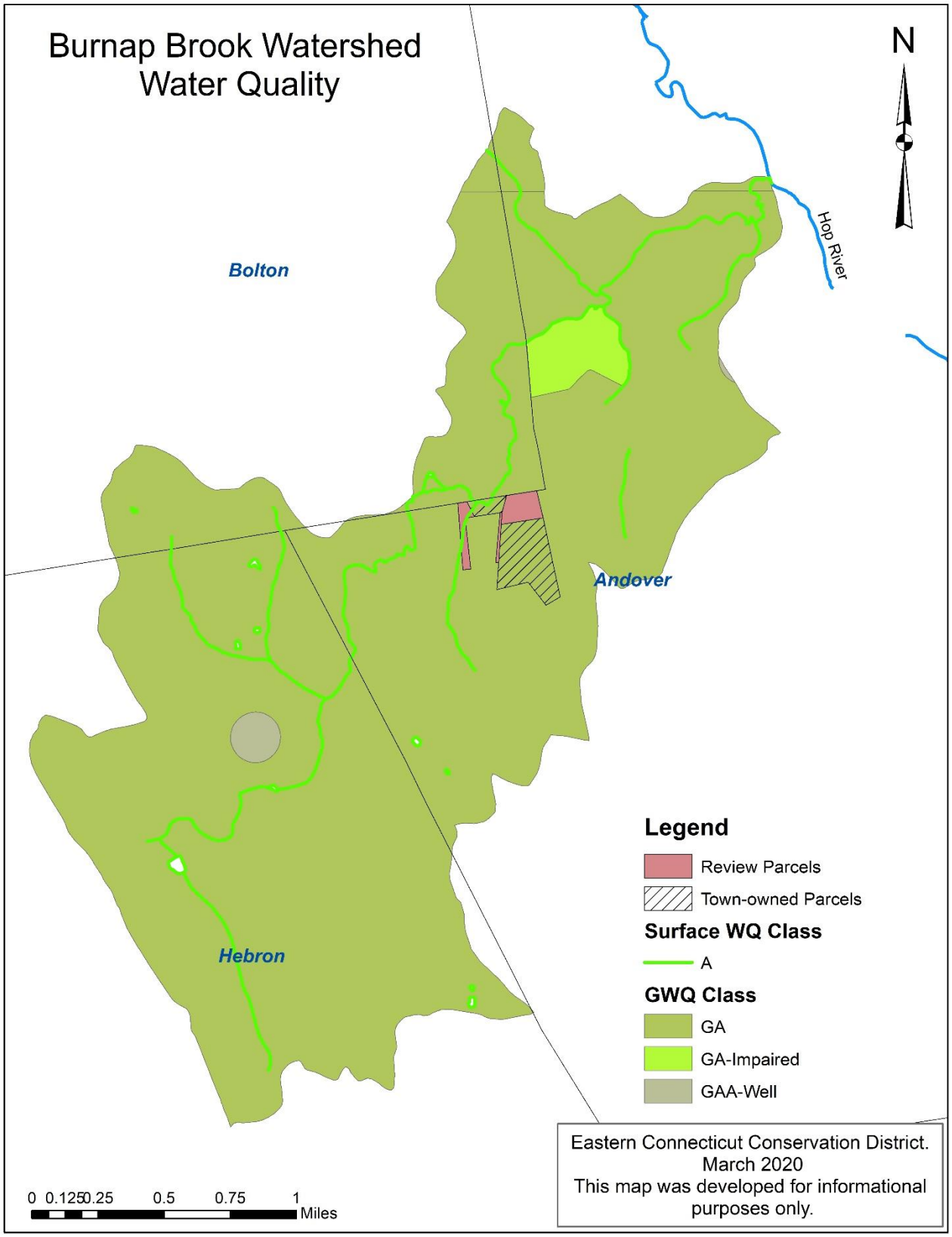
The Town of Andover Plan of Conservation and Development identifies prime agricultural soils as an important criterion for open space preservation. The Talbot and NCLT parcels contain prime farmland soils and farmland soils of statewide importance. Wetland soils on the parcels are associated with the two tributary streams and the large wetland north of the parcels. Wetland soils in the Talbot and NCLT parcels include Timakwa and Natchaug soils, Walpole sandy loam, and Ridgebury, Leicester, and Whitman extremely stony soils.

LAND COVER

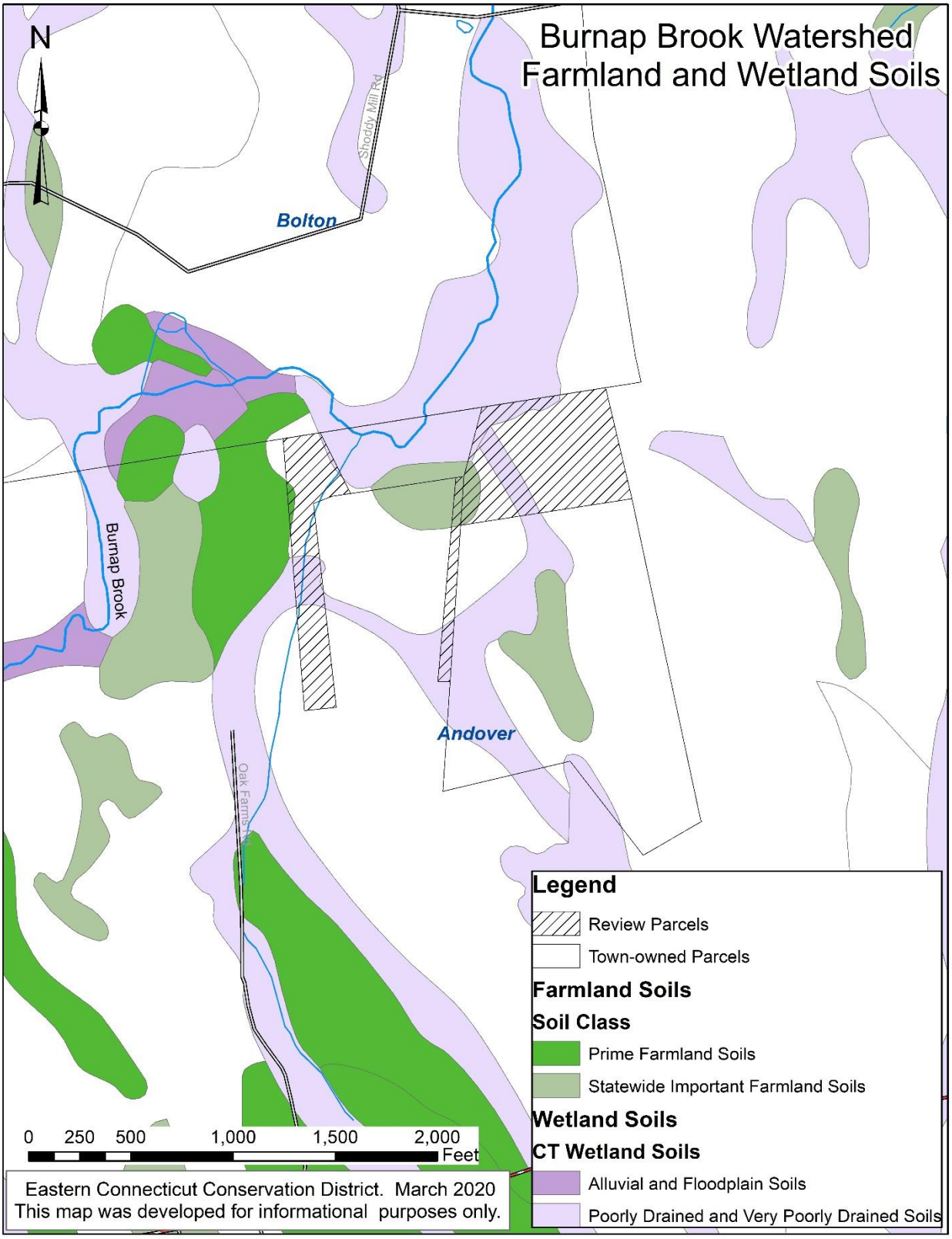
The most prevalent land cover on the Talbot and NCLT parcels is deciduous forest (~12.7 acres). The westerly NCLT parcel is located near a farm field and may contain important edge habitat. The easterly NCLT and Talbot parcels are located in core forest, which is an important habitat for many woodland species, and which is under threat of fragmentation by development. The Talbot parcel also contains approximately 2.7 acres of forested wetland and the westerly NCLT parcel contains about 0.25-acres of turf grass.



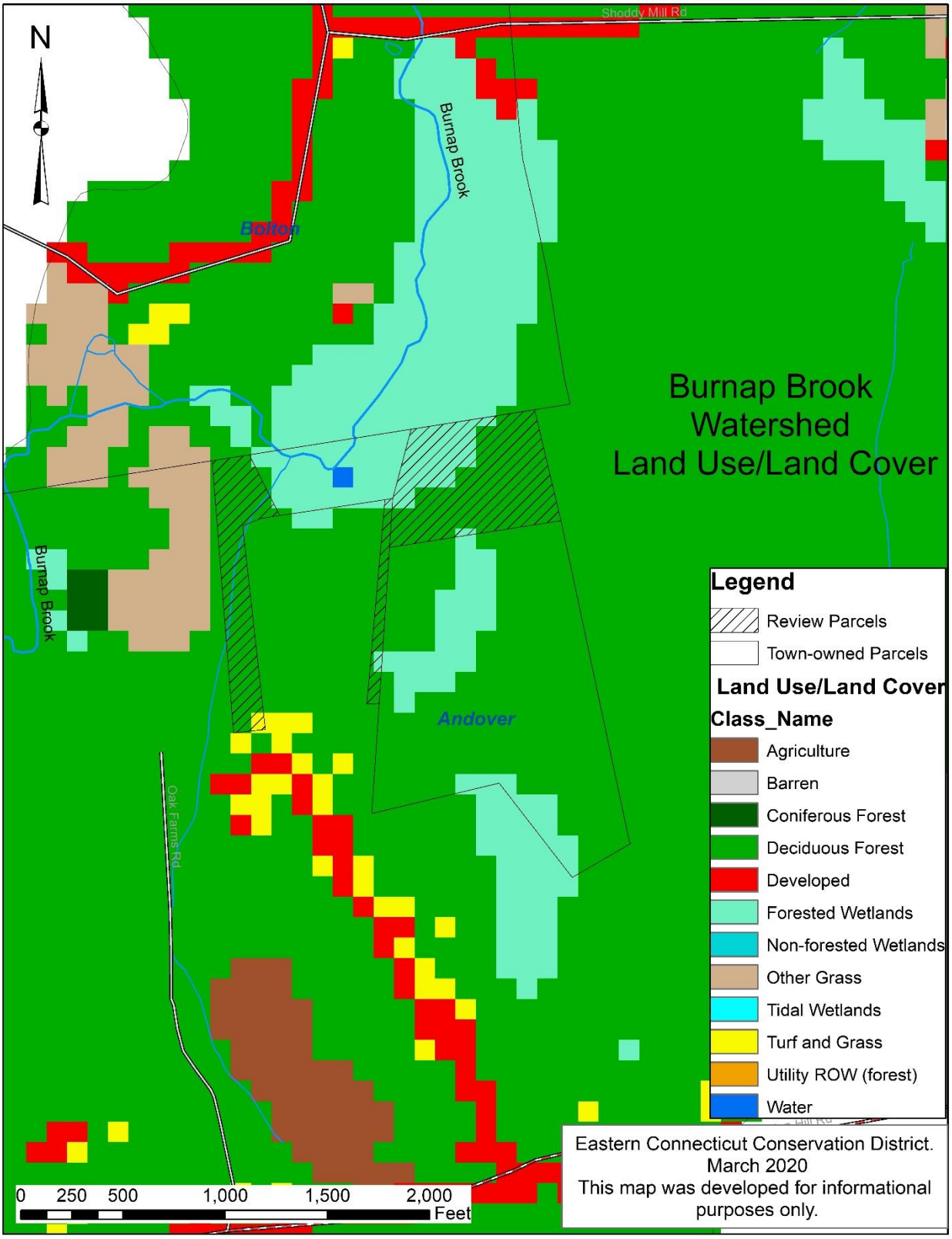
Burnap Brook Watershed hydrologic features in the vicinity of the Northern Connecticut Land Trust and Talbot parcels include Burnap Brook and several forested wetlands.



Water quality in the Burnap Brook Watershed. In the vicinity of the Northern Connecticut Land Trust and Talbot parcels, groundwater is classified as GA and surface water is classified as A.



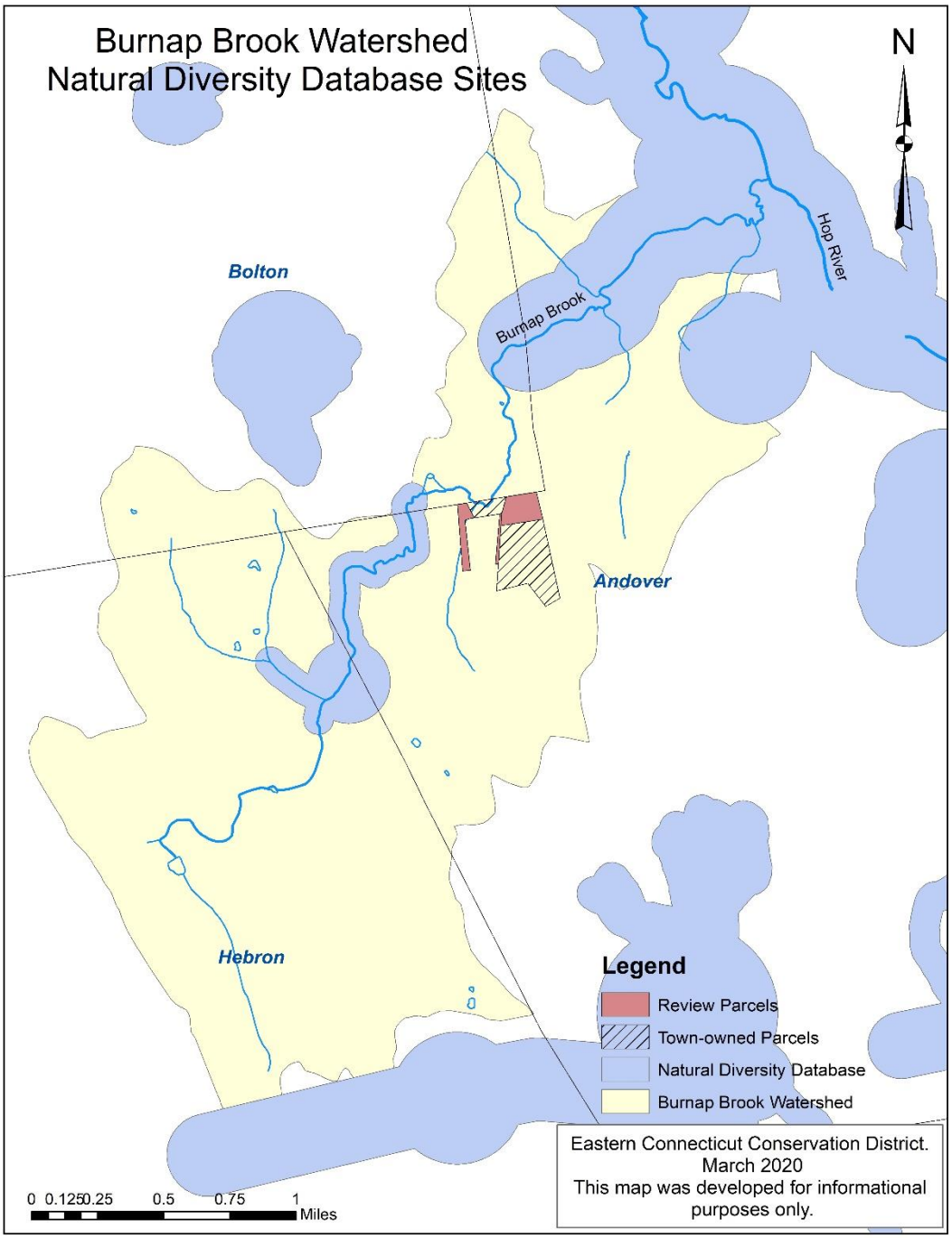
The Burnap Brook Watershed soil map depicts farmland and wetland soils in the watershed and in the vicinity of the Northern Connecticut Land Trust and Talbot parcels.



The *Burnap Brook Watershed land use/land cover map depicts the land cover in the Northern Connecticut Land Trust and Talbot parcels.*

ENDANGERED SPECIES/CRITICAL HABITAT

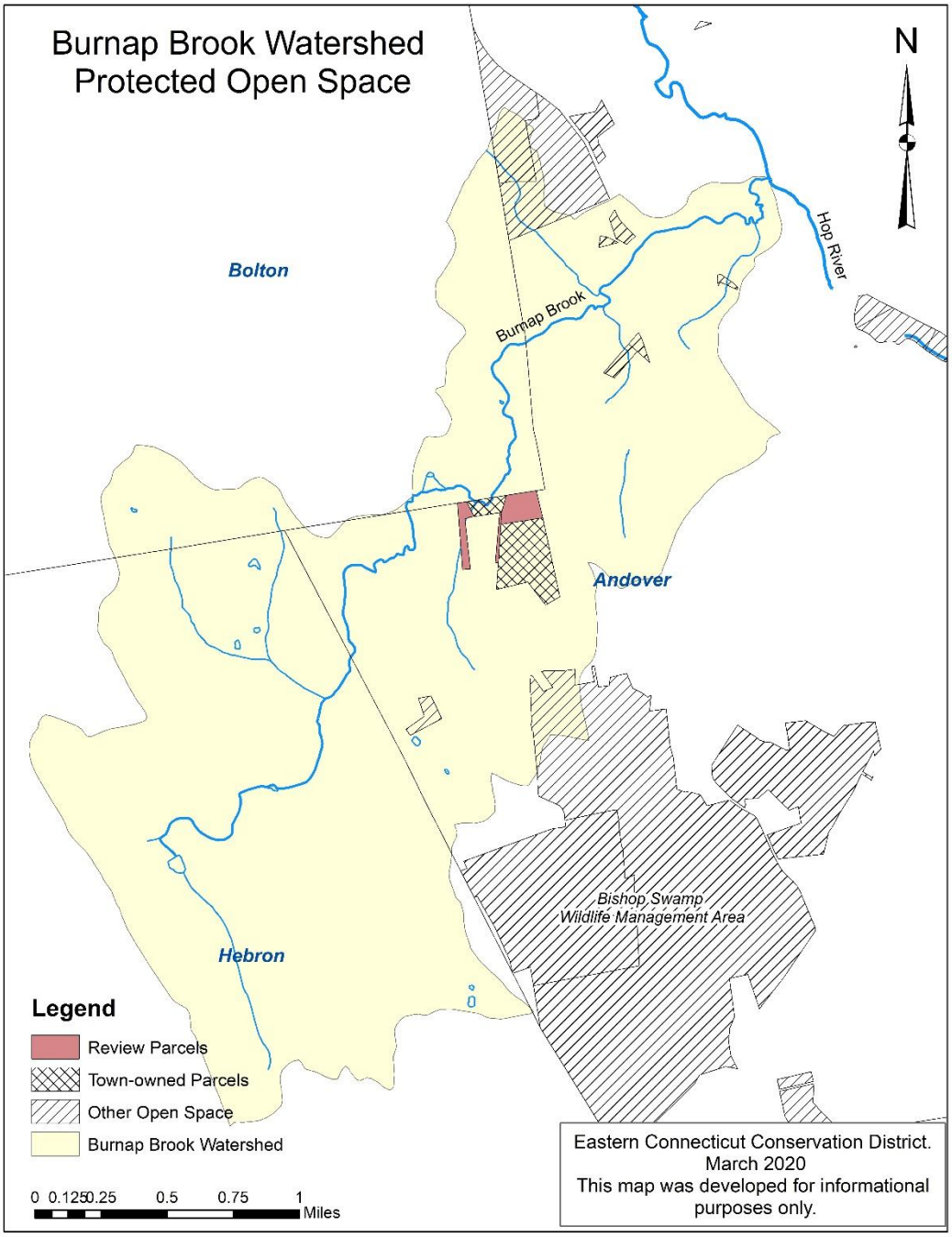
A review of the most recent Natural Diversity Database (NDDB) geographic information system (GIS) data layer (CT DEEP, December 2019) does not depict any NDDB sites on the Talbot and NCLT parcels. However, there are a number of polygons in the vicinity of the three parcels that indicate the presence of threatened or endangered species. The identity of the endangered species is unknown, but it is possible that those species could either be present on or utilize the parcels. No critical habitat has been identified on or near the review parcels.



The Burnap Brook Watershed Natural Diversity Database Sites map depicts the location of threatened and endangered plant and animal species in the vicinity of the Northern Connecticut Land Trust and Talbot parcels.

PROXIMITY TO OTHER EXISTING OPEN SPACE

The Talbot and NCLT parcels are adjacent to existing open space owned by the Town of Andover. The parcels are also in proximity to large protected open space including the State of Connecticut Bishop Swamp Wildlife Management Area, Meshomasic State Forest and Gay City State Park.

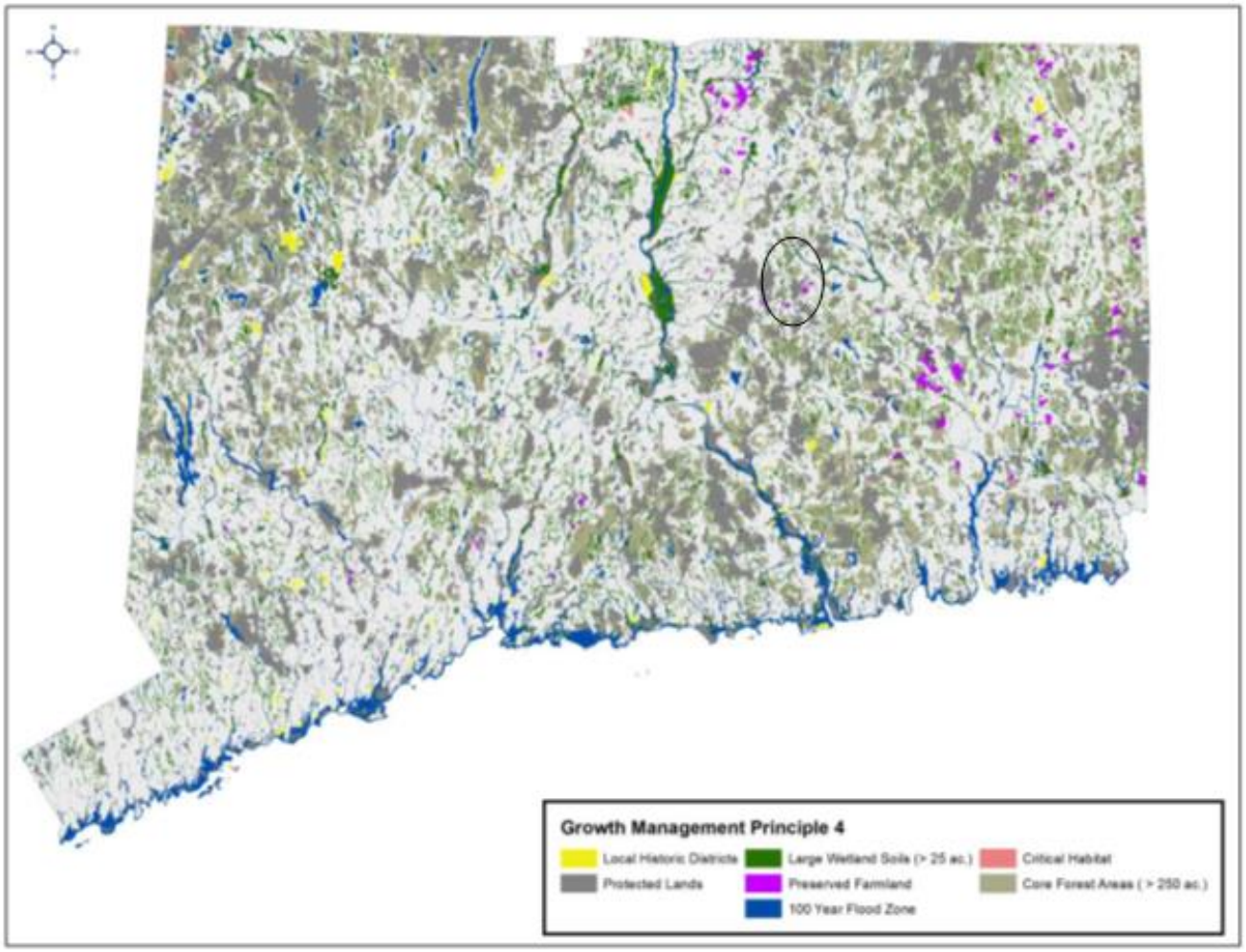


The Burnap Brook Watershed Open Space map depicts protected open parcels in the vicinity of the Northern Connecticut Land Trust and Talbot parcels.

OPEN SPACE PRESERVATION POLICIES

State of CT Conservation and Development Polices: The Plan for CT 2013-2018:

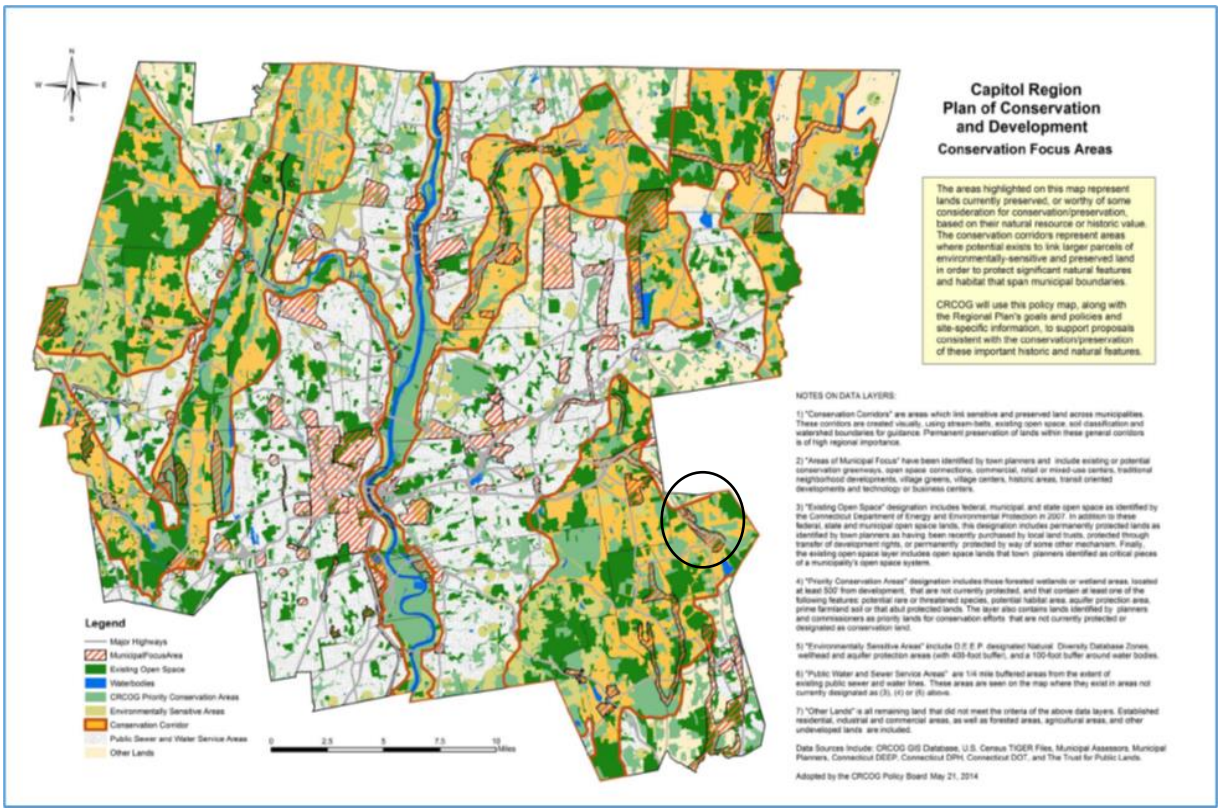
The State of Connecticut plan of conservation and development identifies growth management principles that guide state-level planning and inform planning on regional and local levels. Growth Management Principle #4, which includes the conservation and restoration of "…the natural environment, cultural and historical resources, and traditional rural lands" identifies elements that pertain to the parcels under review in this ERT. These include critical habitat, protected open space, large wetlands (>25 acres), preserved farmland, core forest areas (>250 acres), local historic districts and 100-year flood zones. Features in or in close proximity to the Andover parcels include core forest, large wetland soils and protected open space. A geographic depiction of Growth Management Principle #4, with the approximate location of the Talbot and NCLT parcels is included at the end of this section



Geographic depiction of the State of Connecticut Conservation and Development Polices: The Plan for CT 2013-2018 Growth Management Principle #4. The approximate location of the Andover parcels under review for acceptance by the Town of Andover is located in the black circle. Features in or in close proximity to the Andover parcels include core forest, large wetland soils and protected open space.

Capitol Region Council of Governments Regional Plan of Conservation and Development 2014:

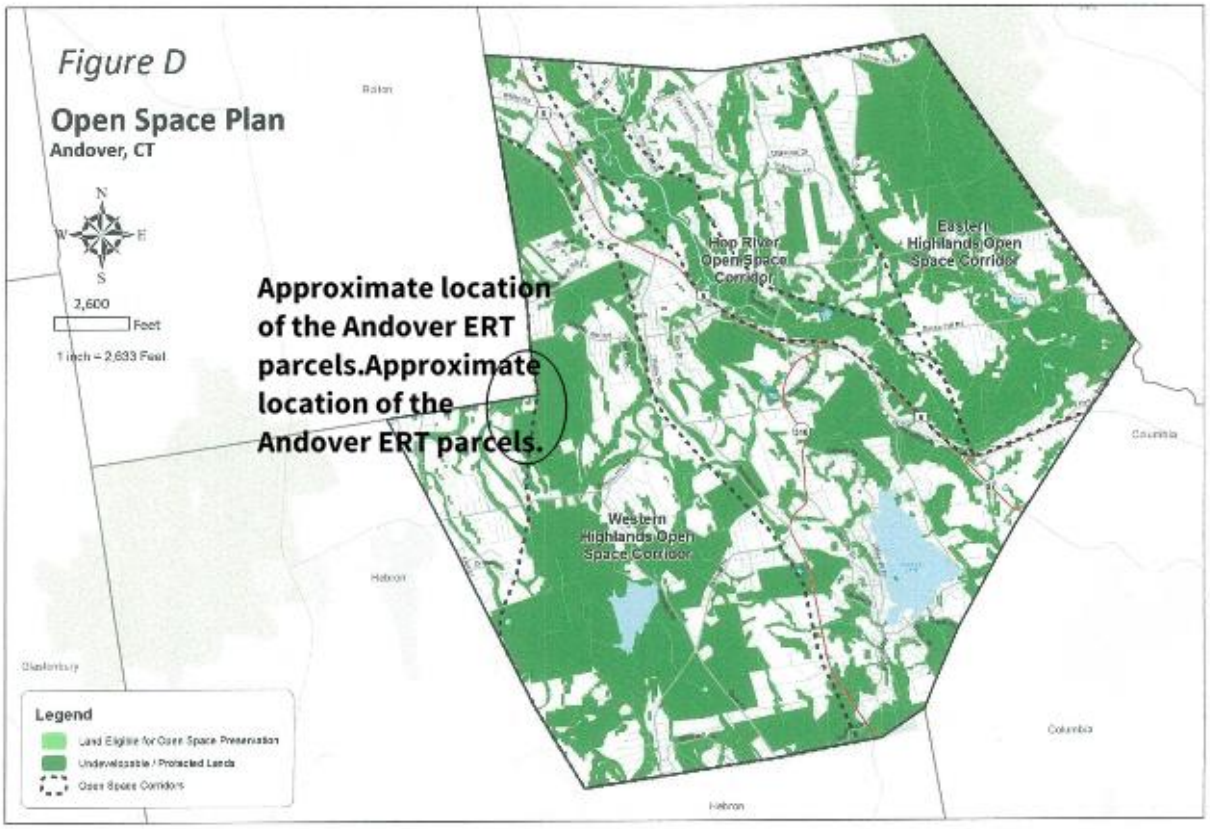
The Capitol Region Council of Governments Regional Plan of Conservation and Development is a general guide for conservation and development in the Capitol Region. The Plan supports the preservation of open space, including the preservation of important open space areas by municipalities. The area in which the Talbot and NCLT parcels are located is identified as a priority conservation area on the Capitol Region Land Use Policy and Conservation Focus Area maps included in the POCD. According to the Conservation Focus Area map notes, Priority Conservation Areas are those that include "…those forested wetlands or wetland areas, located at least 500' from development, that are not currently protected, and that contain at least one of the following features: potential rare or threatened species, potential habitat area, aquifer protection area, prime farmland soil or that abut protected lands. The layer also contains lands identified by planners and commissioners as priority lands for conservation efforts that are not currently protected or designated as conservation land."



The Capitol Region Plan of Conservation and Development Conservation Focus Areas map depicts the area in the vicinity of the Northern Connecticut Land Trust and Talbot parcels (located within the black circle) as being located in a Priority Conservation Area.

Andover Plan of Conservation and Development 2015:

The Andover 2015 Plan of Conservation and Development promotes the permanent protection of open space to "…enhance existing open spaces, protect important wildlife habitat, provide for both passive and active recreational opportunities for its residents, preserve prime agricultural soils, and, most importantly, to preserve Andover's rural character." The Plan identifies the Burnap Brook stream corridor, located in the Western Highlands Open Space Corridor, as an important wildlife travel corridor and habitat, which provides connection to other open spaces areas, and which holds "…tremendous recreational potential."



Open Space Plan map from the Town of Andover, CT Plan of Conservation and Development. The approximate location of the parcels under review for acceptance by the Town of Andover are located in the black circle. The parcels are located in the Western Highlands Open Space Corridor. Features in or in close proximity to the Andover parcels include core forest, large wetland soils and protected open space.

SUMMARY RECOMMENDATION

The parcels under consideration by the Town of Andover contain significant natural resource value and would enhance existing open space already owned by the Town. The parcels are located in core forest, contain important agricultural soils, contain and are adjacent to significant wetland resources, and are in the vicinity of sites where threatened or endangered species have been documented. The parcels are adjacent to and in proximity to other protected open space; their preservation would enhance those spaces and contribute to the expansion of the Town of Andover Western Highlands Open Space Corridor.

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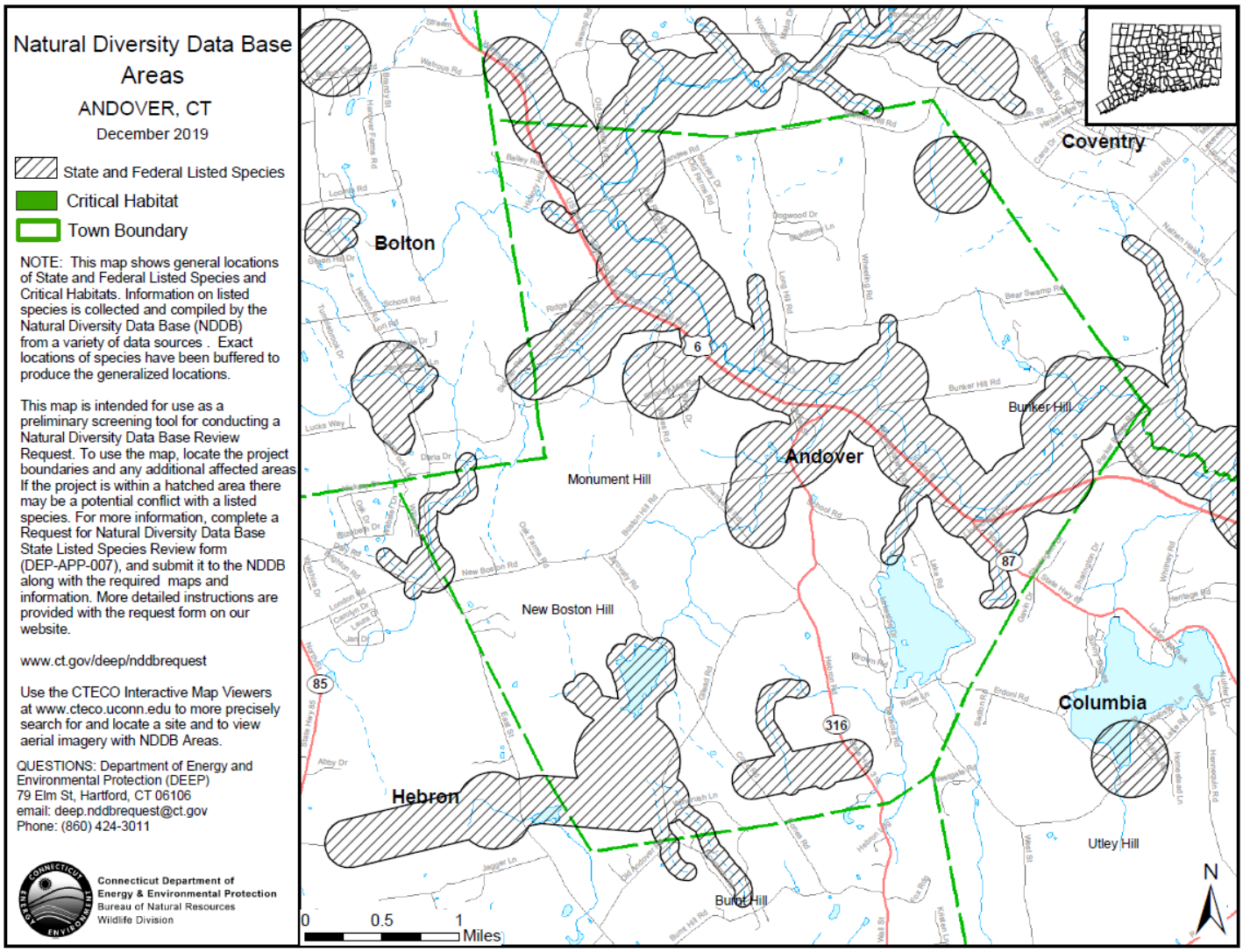
CTDEEP Natural Diversity Data Base Determination

Shannon B. Kearney - Wildlife Biologist

CTDEEP-Natural Diversity Database



Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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May 21, 2020

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NDDB DETERMINATION NUMBER: 202005849

Project: Species recommendations for land acquisition/protection; Environmental Review Team report: Talbot Property, interior lot north of Boston Hill Road in Andover, CT

Expiration: May 21, 2021

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding this project. According to our records, there are State-listed species (RCSA Sec. 26-306) documented within or nearby the proposed project area.

Wood turtle (*Glyptemys insculpta*)- State Special Concern
Individuals of this species are riverine and riparian obligates, overwintering and mating in clear, cold, primarily sand-gravel and rock bottomed streams and foraging in riparian zones, fields and upland forests during the late spring and summer. They hibernate in the banks of the river in submerged tree roots between November 1 and April 1. Their summer habitat focuses within 90m (300ft of rivers) and they regularly travel 300m (0.2 mile) from rivers during this time. During summer they seek out early successional habitat: pastures, old fields, woodlands, powerline cuts and railroad beds bordering or adjacent to streams and rivers. Their habitat in Connecticut is already severely threatened by fragmentation of riverine, instream, riparian, and upland habitats, but is exacerbated by heavy adult mortality from machinery, cars, and collection. This is compounded by the species late maturity, low reproductive potential, and high nest and hatchling depredation rates.

Spotted turtle (*Clemmys guttata*)- State Special Concern
Individuals of this species are associated with wetlands and are vernal pool obligates. Over the course of a season and lifetime, individuals will travel large distances (up to 1km) over upland forest and fields between multiple wetlands. They overwinter burrowed into the mud in wetlands between Nov 1- March 15. They do not begin to reproduce until 7-10 years old and adults can live at least 30 years. This species is threatened most by any activities that reduce adult survivorship including road kills, commercial and casual collection, increased predation in areas around commercial and residential development, mortality and injury from agricultural equipment or other mechanical equipment.

Turtle Protection Measures:

- If warm season mowing or management is necessary, leave a buffer at edge of fields that are only maintained in winter. Use late season crop varieties that require harvest in October rather than August.
- Where feasible, mow or clear existing fields, if necessary, during the cold months.
    - Best times to mow: (Nov 15- March 15).

- Worst time to mow: May 15-August 30. This is when turtles are most likely to be away from stream buffers and get killed under your vehicle.

Any fragmentation of habitat within 300m (0.2mile) of occupied streams has been demonstrated to reduce wood turtle survival through crushing of turtles under cars or mowers, collection of turtles by public, introduced predators (raccoons, skunks, chipmunks etc) that increase with housing development. New development, increased traffic, new agricultural practice that will use motorized vehicles, new or enhance recreational trails, or other removal or fragmentation of habitat within 90m buffer of occupied streams will cause increased adult mortality.

Work with biologists to plan your development to protect (buffer) and connect critical habitat. Presence of bird seed, pet food, and garbage in and around residential areas can increase the threat of predators. Predation activity from species like racoons and skunks can destroy the majority of this species reproductive output each year.

- Landscape Planning: Use partnerships and landscape scale planning to protect the 300m buffer of important streams.
- Nesting Area Management: Identify and protect instream features such as point bars, sand and gravel bars, beaches, and cutbanks.
    - Manage and create new nesting opportunities through vegetation control near riparian areas (vegetative removal work should be conducted in dormant period between Nov 1 and March 31).
- Predatory control: Managers should consider creative options ranging from predator control, and nest protection.

Smooth green snake (*Opheodrys vernalis*)- State Special Concern
Smooth greensnakes favor moist, open habitats, such as old fields, meadows, pastures, fens, coastal grasslands, and edges of wetlands. Occasionally, this snake may inhabit sparsely forested areas with scattered shrubs and trees, such as mountaintop balds. Rural, undisturbed locations appear to be preferred, but smooth greensnakes have been found in urban and suburban areas as well. Greensnakes can be found basking on rocks, logs, or other debris. Smooth greensnakes are insectivores; they feed on a variety of insects and spiders. Preserving pastures and fields will benefit this species.

Silver-haired bat (*Lasionycteris noctivagans*) - State Special Concern
Red bat (*Lasiurus borealis*) - State Special Concern
Hoary bat (*Lasiurus cinereus*) - State Special Concern

Silver-haired bats are primarily associated with "Old Growth" forest because of their roosting requirements. They may be limited by tree cavities and small hollows. Maternity colonies have been observed to move during the breeding season, and solidary bats will move frequently through the summer season. It is estimated that these bats require snag densities of 21 per hectare to meet their needs for roosting, preferably on South and West facing slopes. Roost trees are typically larger than average in diameter, and taller than surrounding trees. Areas around roost trees should be open and uncluttered. This bat migrates south in the winter and return to Connecticut in spring to breed. During migration bats may utilize a variety of tree species and manmade structures in natural and developed areas.

Red bats are a migratory "tree bat" species that is found throughout Connecticut between April- October in a variety of forested habitats. They roost out in the foliage of deciduous and coniferous trees, camouflaged as dead leaves or cones. Red bats are primarily solitary roosters. They can be found roosting and feeding around forest edges and clearings. Typically, larger diameter trees (12-inch DBH and larger) are more valuable to these bats. Additionally, trees with loose, rough bark such as maples, hickories, and oaks are more desirable than other tree species due to the increased cover that the loose bark provides. Large trees with cavities are also utilized by this species.

Hoary bats are found in Connecticut during the spring and summer seasons and migrate south to overwinter. They prefer to roost in large diameter coniferous and deciduous trees. They forage in openings and around water.

These species may be at risk from wind development. Silver-haired, hoary, and red bats account for the majority of bat fatalities from wind turbines.

The following activities will benefit bats:

- Preserve natural roosting resources (safety permitting) including snags, trees with cavities, cracks or crevices, trees with exfoliating bark (e.g. shagbark hickory), coniferous trees (e.g. tamarack, hemlock, white pine) as well as preserving talus slopes
- Identify and protect summer roosts in man-made structures, such as barns
- Provide artificial roost structures (i.e., bat houses) and promote their use in the surrounding community
- Minimize erosion and maintaining clean and open water resources free of siltation
- Protect native vegetation which promotes insect availability and diversity
- Avoid the use of pesticides that will affect their invertebrate food source
- Preserve open, edge of forest habitat corridors to allow bats to freely move among roosting, watering and foraging areas

Other GCN resources:
This area is included in a Core Connector in the HUC6 Terrestrial Core-Connector Network (McGarigal et al 2017). You can access the report and spatial data for Nature's Network here:
http://naturesnetwork.org/
https://nalcc.databasin.org/maps/522735111d19494a83b0a3badc710319

This is determination is valid for two years. Please submit an updated NDDB Request for Review if the scope of the proposed work changes or if work has not begun by expiration date. Please report any observations or reports that document these or other state listed species to **deep.nddbrequest@ct.gov**.

Natural Diversity Database information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Bureau of Natural Resources and cooperating units of DEEP, independent conservation groups, and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDB should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to

Land Use Context and Site Access

Jeanne Davies, AICP Accredited Planner
Connecticut Resource Conservation & Development

OVERVIEW OF SITE

Evaluation of future land use and site access is predicated on formative recommendations from the ERT Team. In support of the advice provided by ecology and conservation professionals who contributed to this natural resource inventory, there are several options of future land considerations and access for the Town of Andover to explore if the municipality is to acquire the subject properties, especially the Talbot property.

POTENTIAL FOR FUTURE LAND USE

The properties under review and adjacent properties are zoned Andover Rural Design District (ARD) which allows for the following uses:

By Right subject to regulations:

- Dwelling, single-family - Farming and agriculture - Accessory uses and buildings - Accessory Apartments - Public parks, playgrounds, and athletic fields - Home Occupations - Removal of surplus materials in conjunction with construction of structures and related structures for which a building permit has been issued - Removal of surplus materials in conjunction with landscaping and agricultural operations - Trenching, earthmoving or excavation in conjunction with the construction of an approved subdivision or other development plans - Any other similar type operation which, in the opinion of the Commission, does not require prior approval.

By Special Permit Use subject to regulations:

- Schools - Churches – Libraries - Cemeteries - Golf courses – Hospitals - Convalescent homes - Riding Stables - Veterinarian and Small Animal Hospitals – Kennels - Child care centers - Wayside stands for the sale of agricultural or horticultural products - Private Recreational Areas - Bed & Breakfast Establishments - Any sand or gravel pit, peat bog, or earth, loan, clay, silt, rock, stone or other material removal operation.

The three subject properties are currently land locked and access to the properties is allowed through permission from adjacent property owners. Currently, this aspect for the Talbot property provides some protection of the identified pristine ecology and natural resources on site. The adjacent property to the east which encompasses 162+ vacant acres including Monument Hill (see Figure A), referenced by ERT contributors, contains frontage on Shoddy Mill Road. A property directly south with a total land area of 39 acres had frontage on Boston Hill Road (Figure B).

For residential development, both parcels possess topography and land characteristics that would make subdivision for residential housing lots based on septic system design costly and challenging. That said, with creative septic and road access design, there may be opportunities for a developer to create single family homes, priced for optimal viewsheds (See Figure C).

The other use that may be evaluated by the property owners or a potential buyer is for earth material extraction or forestry. As there are few avenues to currently restrict this use, even with special permit conditions, earth extraction operations on adjacent properties are of the most serious concern for preservation of this unique ecological habitat area. (See Figure D)

Consideration might be given to rezoning the current vacant land to a more protective zoning district to prohibit earth extraction on properties within this area of the Burnap Brook Watershed. Similar rezoning has occurred in special areas of concern in other Connecticut municipalities to protect critical resources. With allowance for reasonable use of the property and reference to the municipal and regional plan of conservation and development, such rezoning has been upheld in challenged legal proceedings.

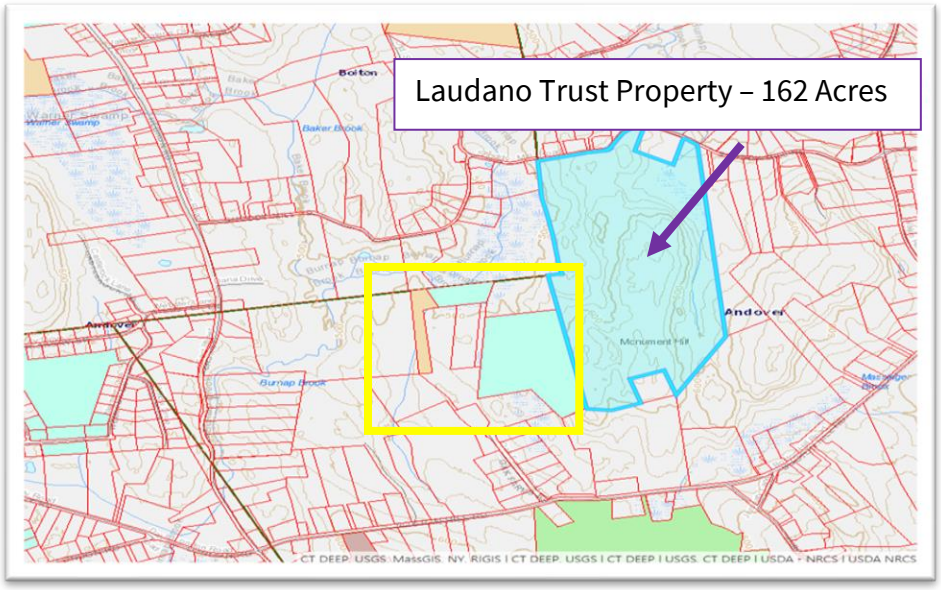
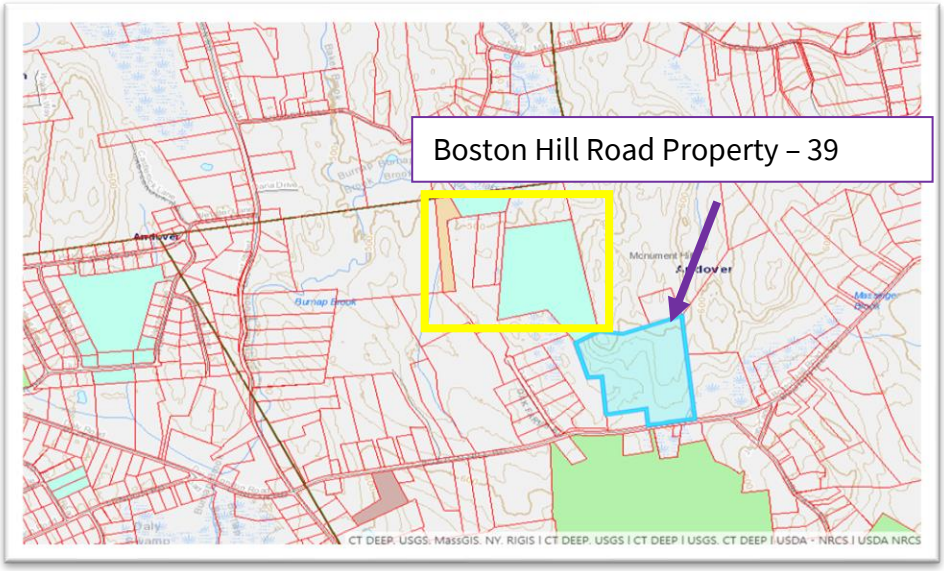


Figure A – 162 Acre property (Including Monument Hill) to the East of Talbot and Town Property with frontage on Shoddy Mill Road

Map base- CRCOG Regional GIS

Figure B – 39 Acre property to the south of Talbot and Town Property

Map base- CRCOG Regional GIS



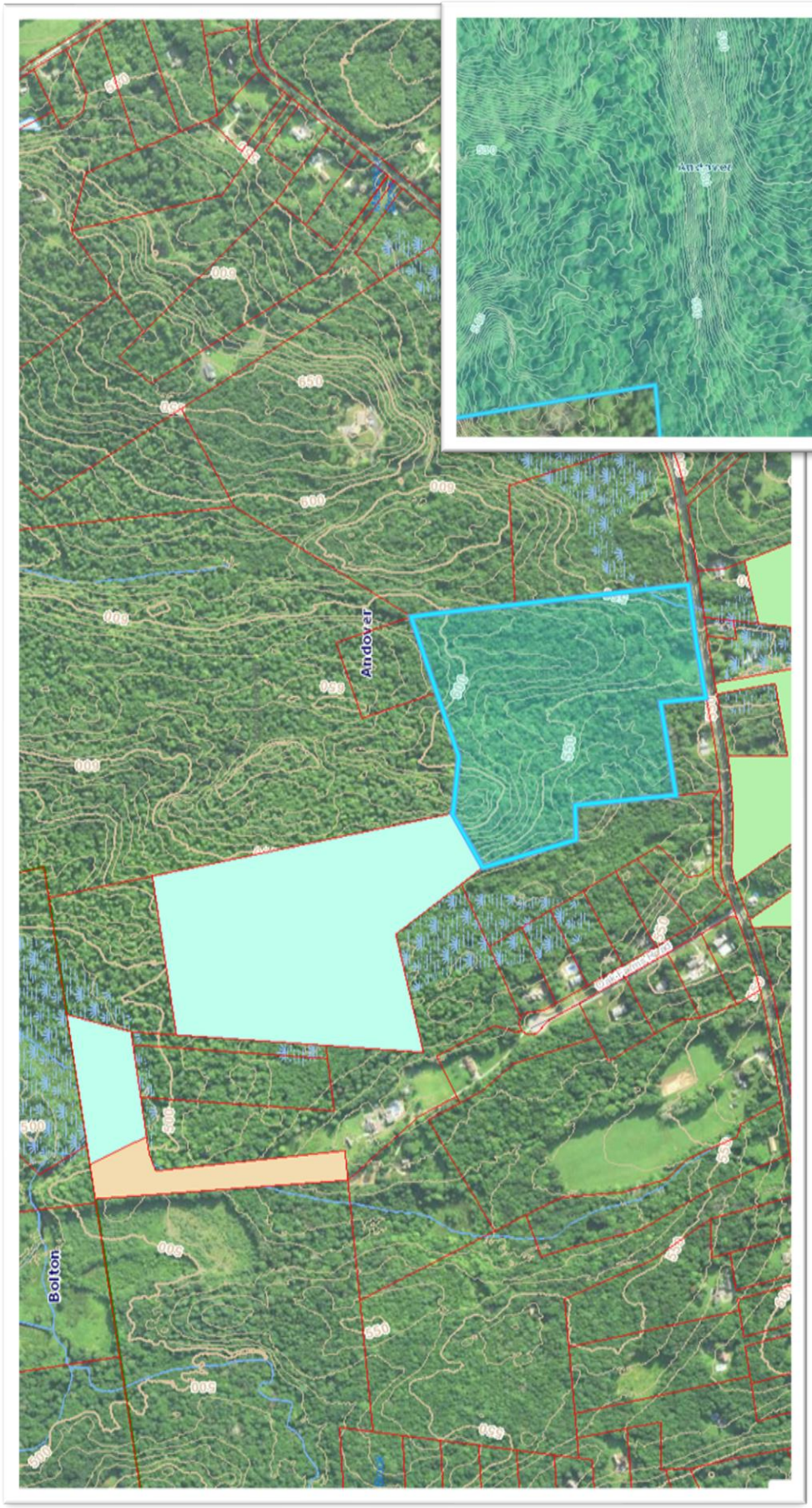


Figure C – 39 Acre from Boston Hill Road leading to 162 Acre Laudano property with topography depicts limitations due to slope-fill/cut for road construction and septic layout.

Map Base – CRCOG Regional GIS

Figure D – Extensive siltation in Burnap Brook from low density upstream development

ACCESS TO ACQUIRED PROPERTY

For ease of public access and assurance of road maintenance to access frontage, an accessway via a small parking area from State Route 603 (Boston Hill Road) would ideal. The highway is designated as an eligible route for CTDOT-CRCOG State Transportation Improvement Program funds, so the town can be assured that the road will be maintained for access. The limitations to this access route is the lack of vacant land with direct access from Boston Hill Road to the subject property. (See Figure E)

Figure E
Route 603 – State Highway
Boston Hill Road

Google Map/Street View

The other avenue of access is through Shoddy Mill Road and over the 162 acres Laudano Trust Property with a similarly constructed small parking area with trail access. The advantages to this access point include the "lack" of visibility to the general public to a protected site, as recommended by professional reviewers in this ERT report.

Figure F

Shoddy Mill Road
Town owned and maintained rural route

Google Map/Street View

Should the town acquire the Talbot property and form a landlocked horseshoe block with properties of the Northern CT Land Trust and town-owned open space, recommended points of access from either Boston Hill Road and/or Shoddy Mill Road could be obtained through the following methods:

- Easement from abutting property owner:
    - A "fee simple" conveyance means the property owner give up all rights to the strip of land deeded to the town for access. The owner no longer had the right to occupy or even go onto the property and does not have the obligation to pay taxes, to pay for insurance, and to maintain the property.
    - A conservation easement where some rights to the property are retained by the property owner. They still own and occupy the property and/or farm the property, but they also pay taxes on the property.

- Purchase of 162 and if possible, a portion of the 39 acre property acre property to support access, with support by application for funding from the CTDEEP open space acquisition fund, using this ERT report and another natural resource assessment of the "to-be-acquired" property. This has potential given the proximity and potential for habitat connection between two CTDEEP open space properties to the south and north; the Bishop Swamp Wildlife Management Area (630 Acres) and the Hop River Trail (Linear Rail Trail Connecting to the Air Line Trail). The Trust for Public Land is an organization which will assist communities with appraisal and acquisition toward funding from CTDEEP and other fundraising methods. The Town of Andover may benefit from participation in the Air Line Trail Master Plan process in progress 2020 to evaluate options for optimizing economic assets of a regional environmental assets. (See Figure G)

- Management of property development to require property access to landlocked parcels as part of subdivision or site plan/special permit approval. Review current zoning regulations to ensure that the requirement "to promote access to town owned open space" are listed within special permit conditions and subdivision regulations.

Figure G

Hop River Trail – a former railroad line is now a trail that winds 20.2 miles through the towns of Manchester, Vernon, Bolton, Coventry, Andover, and Columbia. Like a pathway through time, this serpentine path passes among modern subdivisions and crosses roads, but mostly takes the trail user along a remote, quiet and long unused path through the eastern Connecticut countryside and links to the Air Line State Park Trail.

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The Environmental Review Team (ERT) Program is reliant on volunteers who are experts in their field. The recommendations in this report are advisory only. The ERT program is partly funded by the Connecticut Department of Energy and Environmental Protection (CT DEEP) Passport to Parks Program. We are so grateful for our dedicated volunteers and partners.

Thank you!

- CT RC&D ERT Program Staff