

STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL  
PROTECTION



Bureau of Natural Resources  
Division of Forestry

FOREST MANAGEMENT PLAN  
2015 through 2025

Naugatuck State Forest  
Great Hill Block

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## A. Executive Summary

1. The Great Hill Block of Naugatuck State Forest is located in New Haven County, in the western part of Seymour, adjacent to the Oxford town line. It is bordered by Holbrook Road on the north and Rt. 334 on the west. Cemetery Road splits the Block into two parcels; "Compartment 1", (245 acres south of Cemetery Road), and "Compartment 2", (77 acres north of Cemetery Road), for a total of 322 acres in the Block.
2. The Forest is managed on an uneven-aged system using 20 year cutting cycles. 132 acres are scheduled for a selection harvest during the course of this management plan.
3. There is potential for a sugarbush in Stand 1-2. There is a 3-acre reverting field (Stand 1-11).
4. Off road vehicles are a problem in the Forest, causing damage to trails and complaints from neighbors.

## B. History

### 1. Reason For Acquisition And Funding Sources

The property was acquired from Birmingham Utilities, Inc. (BUI) on August 17, 2001 for \$4,338,000 using Recreation and Natural Heritage Trust funding. The land was owned by BUI to protect the watershed of Great Hill Reservoir. When the reservoir was no longer needed as a source of drinking water, the land became available for purchase. Originally, the property was going to be sold for development. However, local citizens convinced the State to buy it for open space, and it was designated as the Great Hill Block of Naugatuck State Forest.

### 2. DEEP Management Unit

The Great Hill Block of Naugatuck State Forest is in the Osbornedale State Park management unit, which is responsible for recreational issues and maintaining gates, roads, culverts, hazardous trees, garbage pickup, etc. The Western District Operations Unit handles maintenance issues that require heavy equipment, such as roadside mowing, road grading, and culvert installation.

### 3. Development Of Resource Prior To Acquisition

Long before state ownership, BUI enrolled its lands in the American Tree Farm Program. As such, it managed its woodlands for multiple uses, such as watershed protection, timber production, recreation, and wildlife habitat. They conducted periodic timber harvests under the direction of consulting foresters, and later under the supervision of their own forester, Skip Hobson.

On the Great Hill Block, the timber sales conducted by BUI appear to have been mostly selection harvests and/or perhaps salvage of dying oaks after the gypsy moth infestation in 1981. BUI also planted white pines along an unnamed stream that feeds into Four Mile Brook, the principal tributary of Great Hill Reservoir.

Gravel deposits on both Compartments were used as a source of gravel before State ownership. The bank in Compartment 1 at one time was also used for a shooting range by the Seymour Police Department.

Many stone walls crisscross the property, indicating that at one time much of the land was used for agriculture. There are scars on the butts of some trees, indicating old fire damage.

During the time of the land sale, a 3.6-acre rectangle was carved out of Compartment 2 and transferred to the Connecticut Department of Transportation (DOT). It is surrounded by a barbed wire fence and is not open to the public.

#### **4. Changes In The Last 10 Years**

Since 2005, there has been one timber harvest in Stands 1-5 and 1-6 on 102 acres (214,578 board feet and 420 cords of hardwood). There has also been firewood cutting using the lottery program along Holbrook Road and Cemetery Road. Three wooden gates and one metal pipe gate have been installed to control access. Gravel from the bank in Compartment 1 was spread on the access roads leading in from Holbrook Road. The road leading from the gravel bank southward was graded by DEEP Support Services to remove the hummocks and hollows created by off road vehicles. Garbage that had been dumped over the years before State ownership was removed as part of a Boy Scout Eagle project. Non-native invasive shrubs in the field in Compartment 1 and in Stands 1-5 and 1-7 have been sprayed. In short, many years of neglect are being rectified.

In the fall of 2004, the Block was opened to bowhunting for deer, turkey, and small game. In 2005, it was opened to spring turkey shotgun, small game, waterfowl, and fall turkey shotgun seasons.

In 2013, several Eastern red cedars in Stand 1-4 were cut down by the Parks staff to rebuild a guard tower at Putnam Memorial State Park, using the same materials as the original for historical accuracy.

## C. Acres and Access

### 1. Acres

Total acreage: 322

Forested acreage: 317

Compartment 1: 245

Compartment 2 is 77

Reverting field: 3

Gravel bank: 2

Ponds/Lakes: None

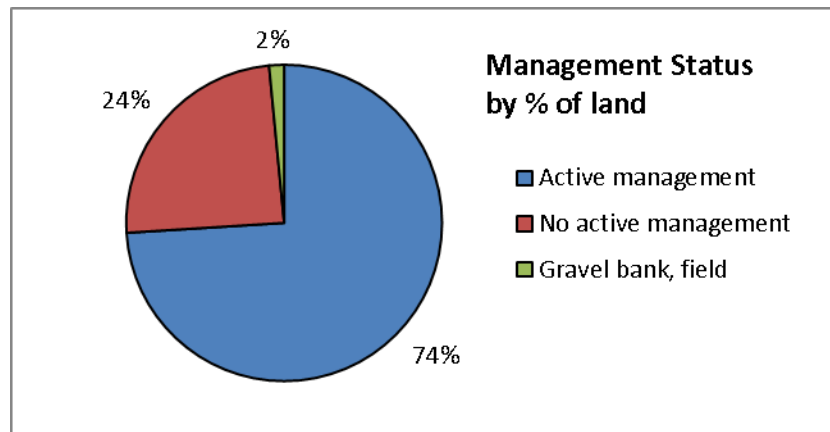


Figure 1.

### 2. Present Access- Roads For Public And Other Roads/Gates

All of the acreage is accessible from town roads. There are no roads open to the public within the Forest. There are several roads that are drivable with Four Wheel Drive (4WD) trucks as described below.

#### Compartment 1

The main road, called Skurat Road, is gated (metal pipe gate), and leads from Holbrook Road to the entrance to the gravel bank for about 600 feet. It then continues for about 1,100 feet, winding its way southerly around the gravel bank before reaching a stream crossing where it is intentionally blocked by logs. The logs keep 4WD trucks from tearing up old logging trails in the interior of the Forest, although All Terrain Vehicles (ATVs) and dirt bikes can go around them and continue to cause damage.

There are two other short roads with wooden gates that come in off of Holbrook Road. Each is only drivable for about 300 feet. Neither one is named.

#### Compartment 2

There is one dirt road that comes in off of Cemetery Road. It is about 400 feet long and is in poor condition. It has a wooden gate. It eventually becomes a trail, probably created by previous logging.

### 3. Inaccessible Areas (acres) And Access Potential

All of the acreage is accessible from town roads.

### **Rights-of-Way**

There is a sanitary sewer easement in favor of the Town of Seymour Water Pollution Control Authority, dated 4/8/96 and recorded in Seymour Land Records, Volume 242, Page 327. This is located in Compartment 2 near the sewage pumping station on Holbrook Road.

Also in Compartment 2, there is a right of way granted to Michael Beletsky, Eudokia Beletsky, and Anna Beletsky, dated 10/23/69 and recorded in Seymour Land Records, Volume 95, Page 133. According to the land records, it provides for the right to pass on an old woods road for the purposes of viewing and inspection of the Grantee's land, farming and raising timber thereon, and removing crops or timber therefrom. From the referenced map, it appears that the "old woods road" in question is the same 600-foot road mentioned above. The "Grantee's" land is now a housing subdivision so the original purpose of the right of way may not be pertinent anymore.

#### **4. Boundary Conditions And Total Miles of Boundary**

There are 5.3 miles of boundaries on the Block. Almost all of the boundaries that did not consist of road frontage were repainted in November 2014 (3.1 miles). There were some encroachments in the backyards of houses along Glen Circle and Mountain Road, mostly brush dumping, in some cases large amounts. These issues have been reported to Encon Police and neighbors were notified of the encroachments.

#### **5. Known boundary problems**

There are no major problems in locating the boundaries. Sometimes boundary pins are buried under disposed brush from neighboring backyards.

## **D. Special Use Areas**

### **1. Lakes And Ponds**

There are no lakes or ponds in the Block.

### **2. Rivers and Streams**

The only significant, permanent stream is in Compartment 1. It is a tributary to Four Mile Brook and does not have a name.

Fisheries information (from Donald Mysling, DEEP Senior Fisheries Biologist)

The following is an evaluation of the unnamed stream that is a tributary to the Four Mile Brook; a reach of nearly 1-mile flows through the Great Hill Block. The watercourse is a premier example of a cold-water stream found in Connecticut. The stream transitions notably from a steep gradient channel to a low to moderate gradient channel as it traverses east to west across the Block. The stream channel is approximately 15 feet wide and 9 to 12 inches in normal flow depth through the entire

reach. Surface flow is a nearly equal mix of pool and riffle. The streambed material is composed of boulder, cobble, gravel, coarse sand, and silt-fines. Dense growths of conifers, hardwoods, and shrubs predominate as riparian vegetation and provide a nearly complete canopy over the river channel. Physical instream habitat is provided primarily by water depth in pools, boulders, undercut banks, and fallen or overhanging vegetation.

Young-of-the-year and adult-aged brook trout were observed in the stream.

The habitats and fisheries resources had long been protected because the Block was maintained as a municipal water supply watershed. To protect the habitats and fisheries resources, forest operation plans for timber harvests will be done in accordance with current State Forest Lands Standard Operating Procedures.

### 3. **Cultural Sites**

There are no known cultural sites.

### 4. **Recreation And Scenic Sites – Trails And Signs**

There are several informal trails (old logging trails) that are used by hikers, ATVs, and dirt bikes.

### 5. **Critical Habitat (State Listed Rare or Endangered Plants and Animals)**

A review by the Natural Diversity Data Base, dated February 23, 2015, stated that “according to their records, there are known extant species that occur either within or in close proximity to the property. These species include State Threatened *Haliaeetus leucocephalus* (bald eagle), State Special Concern *Lasiurus borealis* (red bat), and *Terrapene carolina Carolina* (box turtle)”.

### 6. **Natural Areas**

There are no State Natural Area Preserves on the property.

### 7. **Old Forestland Management Sites**

There are no Old Forestland Management Sites on the Block.

### 8. **Research Areas**

There is a US Forest Service Forest Inventory Analysis plot in Compartment 1. This is part of their nationwide program to monitor long term changes in our country’s forests. The plot is re-measured every 10 years. There are no restrictions on cutting trees in the plot. In fact, the Forest Service does not reveal its location so as not to influence forest practices. The plot was discovered while marking a timber sale.

9. **Miscellaneous- Sugarbush, Water Mains, Aqueducts, Gravel Banks, etc.**

The gravel bank in Compartment 1 appears to be sandy, without many rocks. Less than an acre of the bank has been opened up. According to the Soils Survey, there may be a total of 13 acres of gravelly soils in this vicinity.

There is potential for creating a sugarbush in Stand 1-2 off of Holbrook Road.

## **E. Extensive Areas of Concern**

1. **Trails and Signs**

In May, 2015, a Boy Scout finished installing an informational sign at the Skurat Road entrance off of Holbrook Road for an Eagle project. Maps of the Forest and information about allowable uses have been posted.

There is potential to connect the informal trails in the Block with trails in the Town of Oxford Open Space across the street.

2. **Wetlands and Vernal pools**

Two vernal pools were identified during the forest inventory. One is located near the southern boundary of Compartment 1, near the adjacent residential area. The other pool is in Compartment 2, near the southeast boundary off Cemetery Road. Another potential vernal pool is located in Compartment 2, next to Cemetery Road near the intersection of Holbrook Road, although its quality is suspect because it is adjacent to the road and receives runoff.

The largest wetlands are in Stands 1-2a, 1-9, and 1-10. They are red maple lowlands.

3. **Unauthorized or Illegal Activity**

ATVs and dirt bikes abuse the Forest. "Closed to Motor Vehicles" signs have been repeatedly installed and torn down. Recently, in Compartment 2, new illegal ATV trails were illegally created and blazed. DEEP Law Enforcement has patrolled and caught offenders. A neighbor adjacent to Compartment 2 on Cemetery Road started new ATV trails from his yard. DEEP Law Enforcement is investigating.

In the fall of 2014, a neighbor off of Glen Circle was ticketed by DEEP Law Enforcement for driving a skid steer from his backyard and knocking over trees in Compartment 1.

There is also unauthorized use near the residential area north of Compartment 2 off of Titus Lane. Piles of brush have been dumped. A large pile of brush was discovered on State land behind a property on Mountain Road. DEEP Law Enforcement contacted the owner, who removed it.



## **F. Wildlife Habitat – input by DEEP Wildlife (Peter Picone)**

### **1. Investment in Habitat Improvement**

Since the last management plan was written, there have been no formal habitat improvement projects such as mowing or prescribed burning.

### **2. Existing Diversity**

Most of the Block is composed of hardwood sawtimber, providing habitat for a variety of birds such as woodthrush, red-eyed vireo, hermit thrush and ovenbird, which all benefit from older forest conditions.

#### **A. Early Successional Habitat**

There are approximately 3 acres of reverting fields at the entrance off of Holbrook Road that benefit a variety of wildlife including pollinating insects and wild turkey poults. Old fields and agricultural fields have wildlife values that are unique and ephemeral. The Wildlife Division is interested in managing and maintaining these kinds of habitats on state land. See *Section M. Work Plans* for more information.

The carved out DOT land (3.6 acres) also serves as early successional habitat. It is herbaceous and periodically mowed by DOT, but is not maintained as a lawn. Turkeys have been seen feeding in this field.

#### **B. Conifers**

There is about 1 acre of sawtimber white pine along the unnamed tributary to Four Mile Brook and approximately 3 acres of Eastern redcedar and hardwood poles on the undisturbed portion of the gravel bank, although much of the cedar is being shaded out by the hardwoods. The cedars could be released with cordwood cutting.

### **3. Landscape Context - Wildlife Habitat Conditions and Improvement Possibilities**

The northern, eastern, and southern portions of the Block border residential areas, presenting challenges such as the spread of non-native invasive plants and illegal dumping. The western portion along Holbrook Road is across the street from 594 acres of woodlands that were sold by BUI to the towns of Oxford and Seymour. About 500 acres are in Oxford, called the Rockhouse Hill Sanctuary. 94 acres are in Seymour, designated the Keith Mitchell Forest. Both lands are not open to hunting.

Wildlife diversity in the Great Hill Block and the immediate region surrounding it will benefit greatly from science-based management of its forest resources. This forest can be managed to provide a variety of habitats for a diversity of wildlife species including interior forest birds, early successional habitat-dependent species and migratory corridors for songbirds and habitat for amphibians, reptiles and beneficial pollinating insects. It also provides forest habitat for mammalian species such as deer (*Odocoileus virginianus*), bobcat (*Felis rufus*), black bear (*Ursus americanus*) and fisher (*Martes*

*pennanti*). Wildlife diversity can be enhanced through forest management. Wildlife research has shown that manipulation of tree size-classes promotes wildlife diversity (Scanlon 1992).

### **Effects of Planned Forestry Operations**

Forestry activities that promote the vertical stratification of the forest will benefit interior forest birds. Timber harvests that mimic natural disturbances such as hurricanes, tornadoes, lightning strikes, and fire should be considered.

### **Snags, Den Trees, and Coarse Woody Material**

Dead or dying trees, both standing and downed, are important components of wildlife habitat. A minimum of three snags of at least 12 inches diameter breast height (dbh) should be left per forested acre. As many snags as possible should be left within 100 feet of wetlands and streams. At least one den tree should be left per acre. Potential snags or den trees should be left whenever practical.

Coarse woody material can be enhanced by leaving some large logs (at least 12" dbh) on the ground for potential use by Ruffed grouse, small mammals, reptiles, and amphibians.

### **Log landings as Temporary Herbaceous Openings**

Log landings should be seeded with a mixture of clover, annual rye and/or winter rye (Conservation Mix with no invasive plant material). If practical and budgets allow, native grasses such as little bluestem, deer tongue, and big bluestem should be seeded also. These areas can become valuable foraging/sunning locations for wild turkey poults and Eastern box turtles (*Terrapene c. Carolina*). Selective cutting of trees on the southern sides of these sites will improve herbaceous growth.

## **4. Wildlife-Based Recreation**

Harvesting renewable natural resources provides supplemental food and outdoor recreation for hunters. Small game hunting can be improved by creating and enhancing habitats through forestry operations. Creating early successional forest patches, old field management, and enhancing log landings helps improve conditions for harvestable species such as cottontail rabbits, wild turkeys and American woodcock. Releasing mast trees, creating vertical stratification of the forest, and daylighting roads also can improve conditions for harvestable species such as gray squirrel and deer.

### **Birdwatching opportunities**

All State Forests have the potential for bird watching. In this case, a birder can see interior forest bird species such as oven birds, wood thrushes, and red-eyed vireos.

### **Literature Cited**

Scanlon, J.J. 1992. Managing Forests to Enhance Wildlife Diversity in Massachusetts. Northeast Wildlife. Vol. 49. Pages 1-9.

## G. Vegetative Condition

### 1. Silviculture- Rotations and Cutting Cycles

The Forest is managed on an uneven-aged basis using 20-year cutting cycles.

### 2. Forest Size Classes by Forest Type on the Entire Forest (acres)

Forest Types	Size Classes				
	Sapling	Poletimber	Sawtimber	Nonforest	Total
Mixed Upland Hardwoods	0	0	266	0	266
Sugar Maple-Beech-Yellow Birch	0	0	10	0	10
Red Maple lowlands	0	0	19	0	19
Red Maple uplands	0	0	18	0	18
Scarlet Oak	0	4	0	0	4
Shrubland – mixed types	3	0	0	0	3
Developed	0	0	0	2	2
<b>Total</b>	<b>3</b>	<b>4</b>	<b>313</b>	<b>2</b>	<b>322</b>

Figure 2.

### Forest Cover Types by Acres

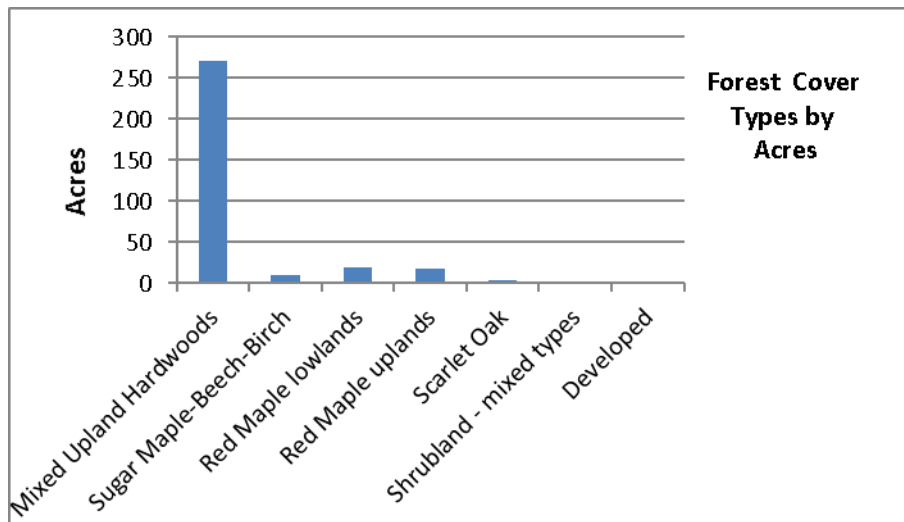


Figure 3.

**Forest Cover Types by Percentage**

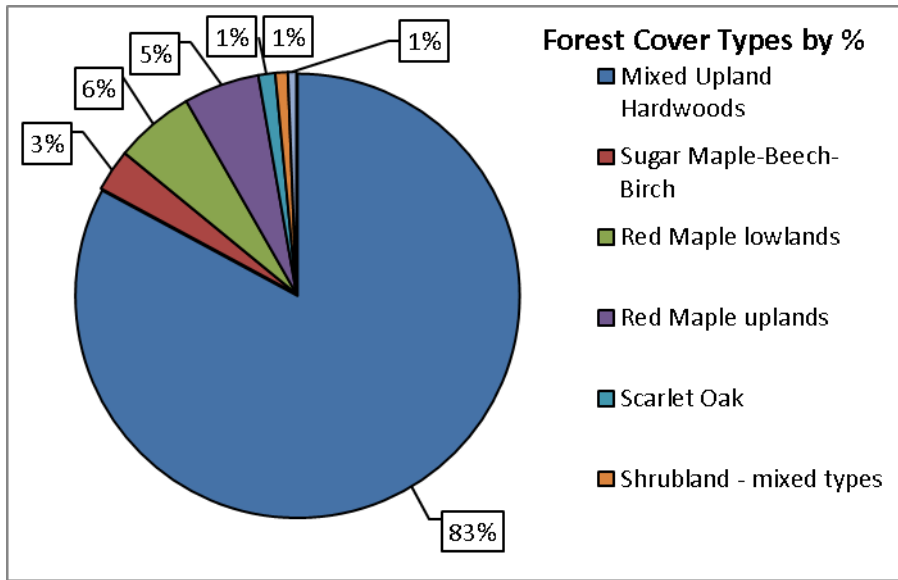


Figure 4.

**Forest Cover Type, Size Class, and Condition Class on Areas to be Managed (acres)**

Forest Cover Type	Selection Harvest	Thinning	TSI*	Allow to Grow	Total
Mixed Upland Hardwoods					
Sawtimber	122	0	4	102	228
Sugar Maple- Beech-Birch					
Sawtimber	10	0	0	0	10
Scarlet Oak					
Poletimber	0	0	4	0	4
<b>Total</b>	<b>132</b>	<b>0</b>	<b>8</b>	<b>102</b>	<b>242</b>

\*Timber stand improvement

Figure 5.

**3. Forest Health**

**Insects and Diseases**

Nectria canker, a disease that disfigures birch stems, is fairly common in some areas. Emerald Ash Borer (EAB), an exotic invasive insect pest, has not been identified in the Block but it has been found in Seymour and nearby towns. It will likely be present in a couple of years. It will probably kill every white ash in the Block. Hemlock woolly adelgid, another exotic invasive insect, was identified during the forest inventory. The few hemlocks on the Forest exhibit the sparse canopies symptomatic of infestations.

No other insects or diseases appear to be having a significant impact on the health of the forest.

### **Exotic Invasive Plants**

Exotic invasive plants can reduce the biodiversity of an area by usurping the nutrients and sunlight that the native plant community needs. Japanese Barberry and Oriental bittersweet are most common on the moister soils along Holbrook Road that were probably in agricultural use at one time. The reverting field has some invasives such as autumn olive, Japanese barberry, multiflora rose, and Oriental bittersweet on the perimeter.

### **The Impact of Deer on Forest Health**

The regeneration after previous timber harvests by BUI has resulted in species that are not favored by deer, such as beech. A browse line is evident in some areas in which there is little or no understory from the ground to about 5 feet in height. In the adjacent residential area, there is heavy browse damage on arborvitae hedges, indicating a high deer population.

A bowhunting season for deer was implemented in 2004. It is hoped that the population will be reduced enough to obtain satisfactory regeneration after future timber harvests. The regeneration after each harvest will be monitored.

## **H. Landscape Context – Forestry – adjacent land uses**

The Great Hill Block is one of five Blocks of Naugatuck State Forest that total approximately 5,100 acres scattered around New Haven County. The Block is surrounded by residential land or protected open space consisting of mature hardwood forests. As stated earlier, there are 594 acres of town-owned open space across the street. On the Oxford property, invasive plants such as Japanese barberry and Oriental bittersweet are periodically cut and sprayed. There does not appear to have been any other management activities on these parcels other than building trails. There might be an opportunity for the Division's Private and Municipal Service Forestry Program to approach the towns about their management options.

## **I. Specific Acquisition Desires**

There are few, if any, parcels adjacent to the Forest that would be available for sale to add to the State Forest.

## **J. Public Involvement**

A copy of this plan was sent to the Seymour Conservation Commission for their review. No comments were received.

## K. Adaptive Management

1. Forests are dynamic landscapes, always changing in response to severe weather events, native biological factors such as insect and disease infestations, forest fires, and invasive exotic plants, animals, insects, and fungi. A long term forest management plan must have a degree of flexibility to deal with these variables. Staffing levels in the Division of Forestry and other Divisions in the Department could affect the ability to accomplish work in the planned time frame. The Division of Forestry and our colleagues in Parks, Wildlife, Fisheries, and Agency Support, will evaluate circumstances and adapt management plans accordingly to deal with changing conditions.

## L. 10 Year Goals

The DEEP, as stewards of public land for present and future generations, must maintain soil productivity, keep streams free of sediments and pollutants, and maintain vegetative diversity and viable populations of wildlife. We must carefully match management activities and public use to the natural characteristics and suitability of the land. We will protect all known threatened, endangered, and species of special concern and their habitats. All plans for timber harvests are sent to the DEEP Natural Diversity Database for review. We will protect any known cultural features and try to research their history to provide information to the public.

Timber will be harvested to provide diverse wildlife habitat, a sustainable supply of forest products, and improve forest health. This continues one of the traditional uses of the Forest begun by BUI.

1. 242 acres will eventually undergo forest management. This does not include 3 acres of fields that may periodically be burned or mowed.

80 acres will not be actively managed because of poor access, operability, or environmental constraints. These areas will be left in a “natural” state. In these areas, tree cutting will be limited to reducing potentially hazardous situations along recreational trails or property lines. Commercial salvage (because of fire, storm damage, disease or insect outbreak) in these areas is not likely because of steep terrain, ledge outcrops, or wetlands.

2. UNEVEN-AGED MANAGEMENT –242 acres

The harvesting conducted by BUI in the past has to some degree dictated the forest management in the future. Regeneration in many of the harvested areas resulted in the growth of shade tolerant species (such as beech, red and sugar maple, and black birch) that are now well established. These will respond readily to any openings in the canopy created by future cutting.

As a result, management of the entire Block will be geared toward uneven-aged management. Harvests will use single tree and small group selection techniques in which openings in the canopy will generally be less than ½-acre. This should provide enough sunlight for some shade intolerant species to regenerate, although intermediate and shade tolerant species will eventually become most abundant.

- Roughly 1/3 of the timber volume on a given area will be removed with each harvest, to be repeated on a 20-year cutting cycle.
  - 242 acres of manageable sawtimber stands divided by a 20-year cutting cycle yields 12 acres per year that can be sustainably cut.
  - Over the course of this 10-year management plan, roughly 132 acres will undergo a selection harvest.
  - From 2005-2015, 102 acres underwent a selection harvest, balancing the 132 acres recommended in this management plan.
3. Control invasive exotic plants.
  4. Offer cordwood for sale to the public as part of the DEEP cordwood program on State Forests.
  5. Investigate the potential for creating a sugarbush in Stand 1-2.
  6. Release eastern redcedar from competition with taller hardwoods when possible.
  
  7. Maintain and manage the reverting fields off of Holbrook Road.

## M. Work Plans

### 1. Silvicultural Activity

- Begin converting even-aged stands to uneven-aged management

Stand Number	Acres	Activity
1-1	37	Selection harvest
1-2	10	Selection harvest
1-3	10	Selection harvest
1-4	10	Selection harvest
2-1	65	Selection harvest
Total	132	Selection harvest

### 2. Road Maintenance and or Construction

Box out old woods road entrance off of Holbrook Road (Stand 2-1). Install culvert in drainage ditch. Spread crushed stone. Install wooden gate. Consult with Seymour Public Works beforehand.

3. **Boundary Marking**

Remark boundary lines by 2022. Inspect property lines next to residential areas for hazardous trees.

4. **Recreation or Scenic Site Work**

If there is interest by the towns of Seymour and Oxford, we will help plan a loop trail that goes through the Town Open Space Lands and the Forest. The trail would have to undergo the DEEP's trail approval process to ensure that a responsible group will maintain it. The trail would have to be built on suitable soils and terrain, not necessarily just following existing paths, and be compatible with other uses of the Forest.

5. **Wildlife Habitat Improvement**

The Wildlife Division will mow the 3-acre reverting field with a skid steer mounted drum chop mower in 2015. Eastern redcedars will be day-lighted whenever feasible in and directly adjacent to these fields.

In addition, nonnative invasives will be treated with herbicide in 2015, and monitored and treated when needed thereafter.



## Appendix A - References

### References

Many references were used in creating this plan. Some of them include:

- CT DEEP, Division of Forestry, Standard Operating Procedures for State Forest Management, rev. August 2012.
- DeGraaf, et al. 1992. New England Wildlife: Management of Forested Habitats, U.S. Forest Service.
- DeGraaf and Rudis, 1983. New England Wildlife: Habitat, Natural History, and Distribution, General Technical Report NE-108, USDA Forest Service.
- Devine, Buzz. Important Bird Area Conservation Plan, Naugatuck State Forest. Audubon Connecticut. 2009.
- Kelty, et al. 2003. The Conversion of Even-Aged Stands to Uneven-Aged Structure in Southern New England, Northern Journal of Applied Forestry.
- McShea, William, and Healy, William, 2002. Oak Forest Ecosystems-Ecology and Management for Wildlife, Johns Hopkins University Press.
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- Reynolds, Charles. 1979. Soil Survey of New Haven County, Connecticut. USDA Soil Conservation Service.
- Twery, Mark J.; Knopp, Peter D.; Thomasma, Scott A.; Rauscher, H. Michael; Nute, Donald E.; Potter, Walter D.; Maier, Frederick; Wang, Jin; Dass, Mayukh; Uchiyama, Hajime; Glende, Astrid; Hoffmann, Robin E. 2005. NED-2: A Decision Support System for Integrated Forest Ecosystem Management.

## Appendix B - Definitions

### Forest Stand Size Classes

Sawtimber – trees of 12-inch dbh (diameter breast height or 4.5 feet off the ground) and larger, and that contain at least one 8-foot sawlog.

Poletimber- trees between 5 and 11 inches dbh. These trees are too small for sawlogs, but could be sold as pulpwood, fuelwood, chips, or other small products where such markets exist.

Saplings - trees 1 to 5 inches dbh.

Seedlings - Trees less than 1 inch dbh.

Stand – an area of trees of a certain species, composition (cover type), age class or size class distribution and condition (quality, vigor) usually growing on a fairly homogeneous site.

An **even-aged** stand contains trees in the main canopy that are within 20 years of being the same age. Even-aged stands sometimes are designated by age-class (e.g. a 40- year old stand) or broad size-class (e.g. seedling/sapling, poletimber, sawtimber).

An **uneven-aged** stand contains trees of several 15-20 year age-classes. These stands generally contain trees of many sizes (seedlings through sawtimber) due to the range in ages and the differences in growth rates among species.

Selection harvest- used in uneven-aged management; involves the removal of trees singly or in groups of 2 or 3, or in patches of up to 1/2 acre, maintaining a fairly continuous canopy.

Timber Stand Improvement (TSI) – practices that are usually non-commercial in nature, such as pruning, thinning of pole stands, controlling invasive plants, etc.

Shelterwood Harvest- used in even-aged management to create a new stand of trees over the course of two or three harvests. The first cut is designed to create conditions to establish regeneration under the partial shelter of the residual trees. The second or third cuts occur a few years after the establishment cuts to release the regeneration from the overtopping canopy.

- **Forest Types (U.S. Forest Service)**

Forest Type is based on species composition of the overstory. Species composition is based on the proportion of the total stand basal area represented by each species or species group.

**Mixed Upland Hardwoods:** Any mixture of hardwood species typical of the upland central hardwood region, includes at least some oak. Sites - wide variety of upland sites.

**Sugar maple-Beech-Yellow birch:** Associates: red maple, red oak, white ash, sweet birch, black cherry. Sites – fertile, moist, well drained sites.

**Red Maple uplands:** Associates- the type is dominated by red maple and some of the wide variety of northern hardwoods like sugar maple, beech, and birch. This type is often man-made and may be the result of repeated cuttings. Sites - uplands.

**Red Maple lowlands:** Associates- elm, black gum. Sites – wetlands.

**Scarlet Oak:** Associates – black oak, white oak, hickory. Sites – dry ridges or gravelly soils.

Western District comments for Naugatuck SF, Great Hill Block, 2015 Management Plan

Tammy Talbot, Outdoor Recreation

The plan is good with me. Do you expect Skip's crew to handle any road or parking improvements needed?

*Reply: Yes, Skip's crew will install the driveway off of Holbrook Road. The Osbornedale crew can install a wooden gate.*

Skip Kearns, Support Services

There are no Support Service concerns with this plan, the roadway/ parking area improvements will be completed by Support Service personnel and coordinated with Jerry.

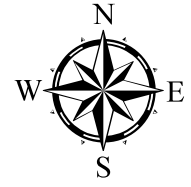
Wildlife Comments by Pete Picone- were incorporated into the plan (under Wildlife Habitat).

Fisheries Comments by Don Mysling were incorporated into the plan (under Rivers and Streams)

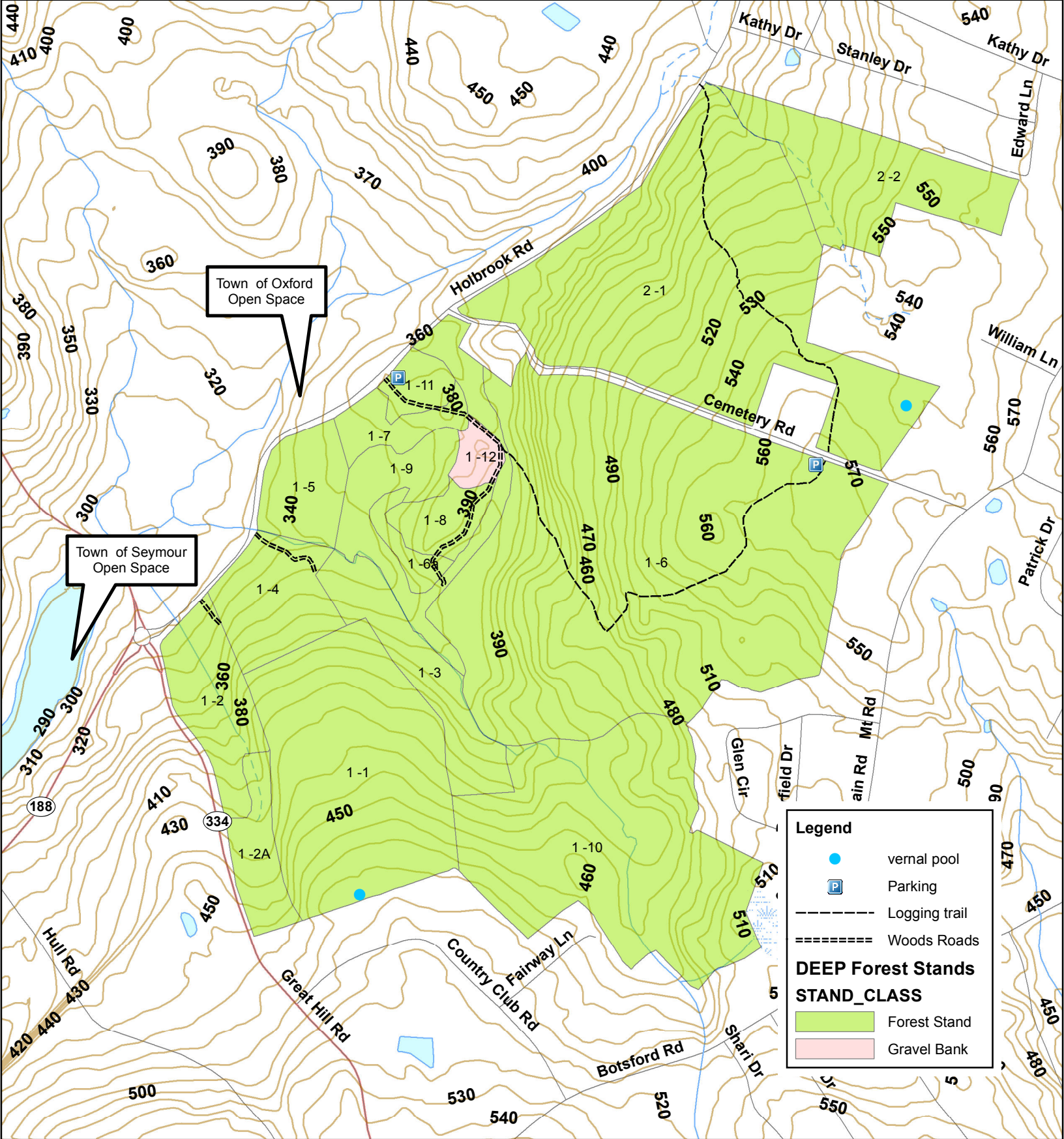
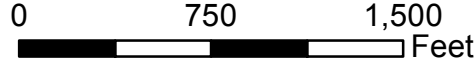


# Map A - Topographic Map Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

- vernal pool
- Parking
- Logging trail
- Woods Roads

**DEEP Forest Stands**

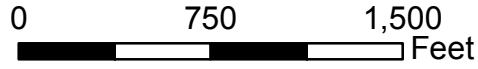
**STAND\_CLASS**

- Forest Stand
- Gravel Bank

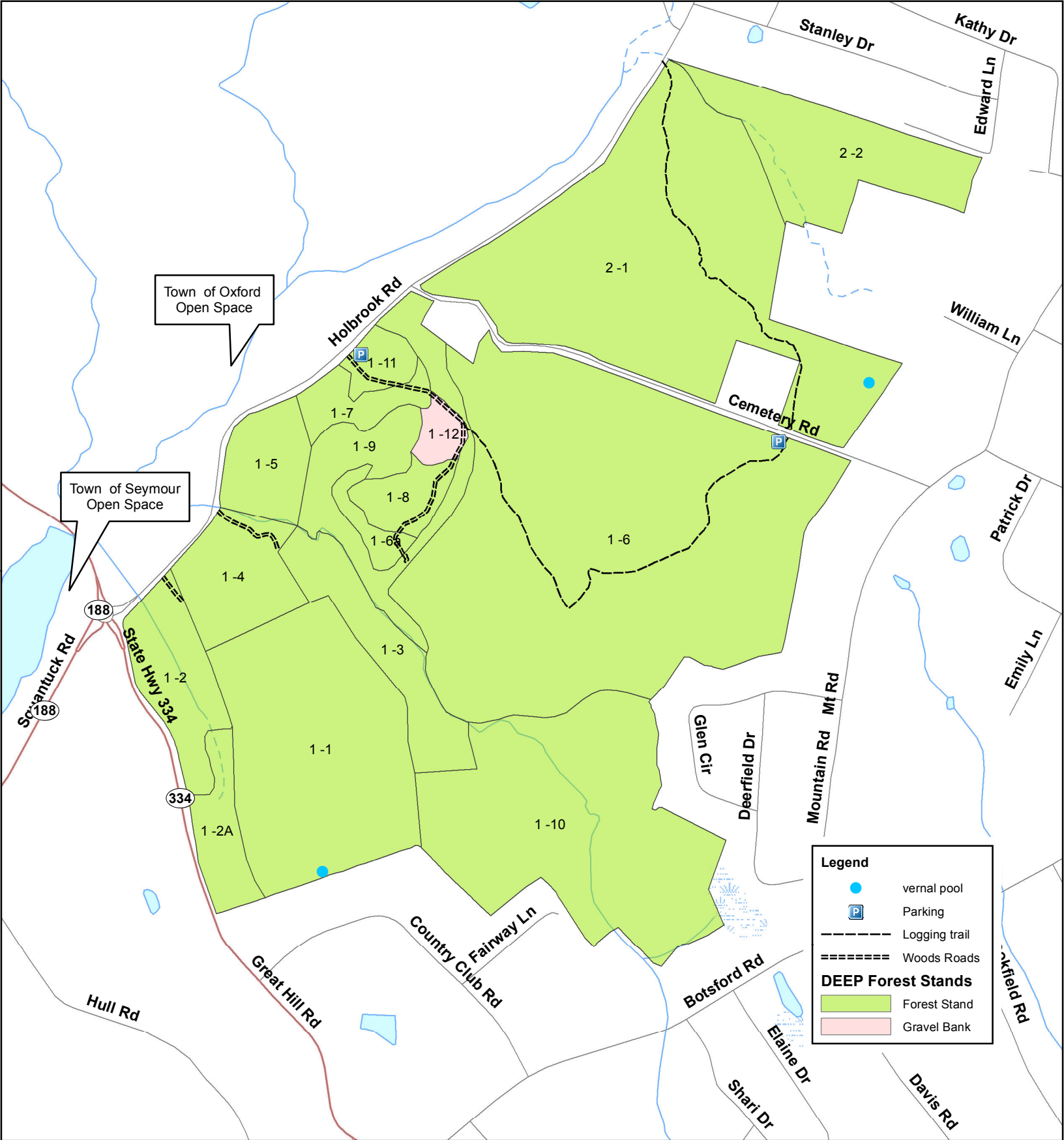


# Map B - Base Map Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

- vernal pool
- Parking
- Logging trail
- Woods Roads

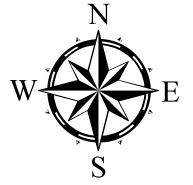
**DEEP Forest Stands**

- Forest Stand
- Gravel Bank

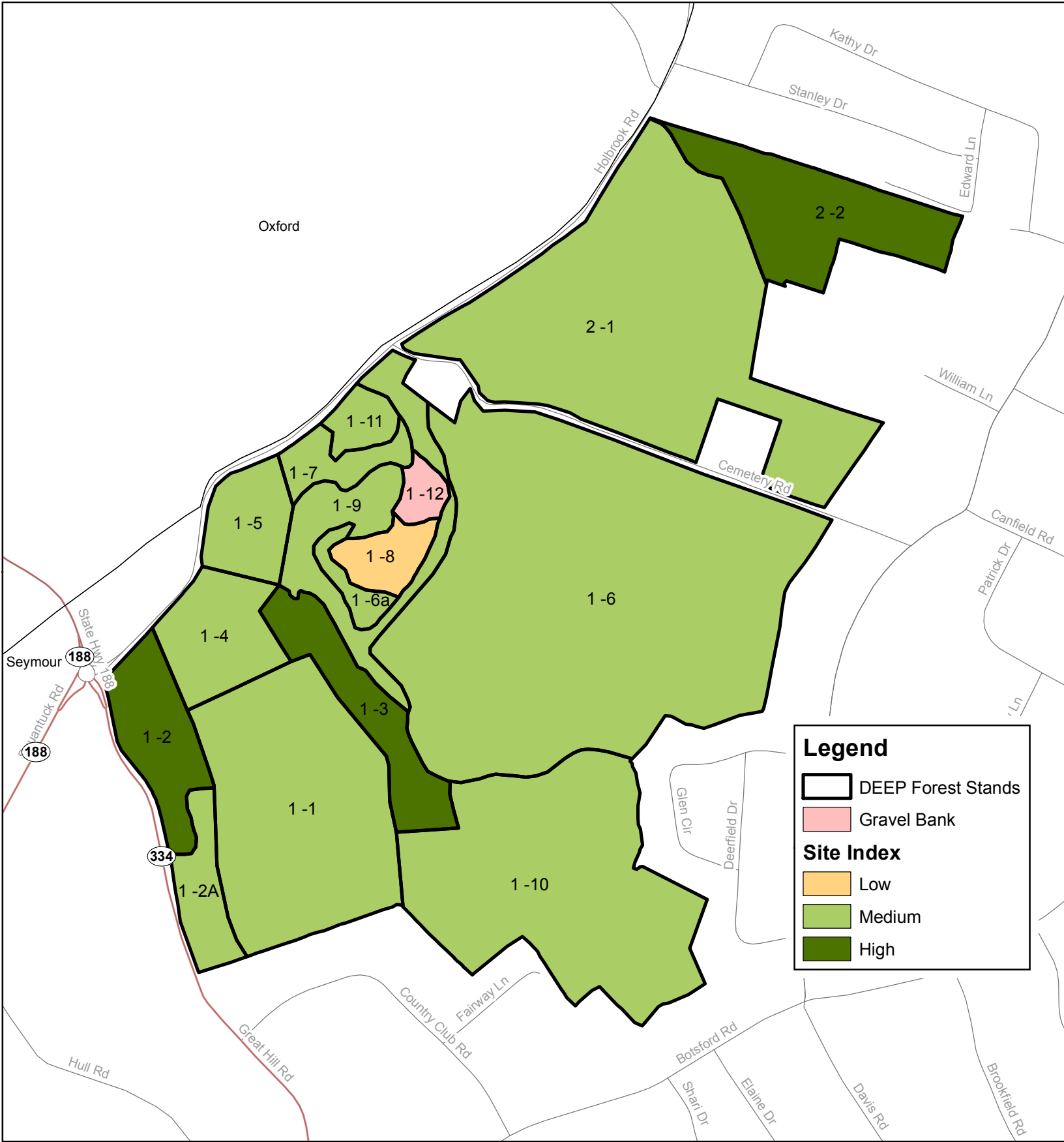
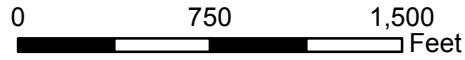


# Map C - Site Quality Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

- DEEP Forest Stands
- Gravel Bank

**Site Index**

- Low
- Medium
- High

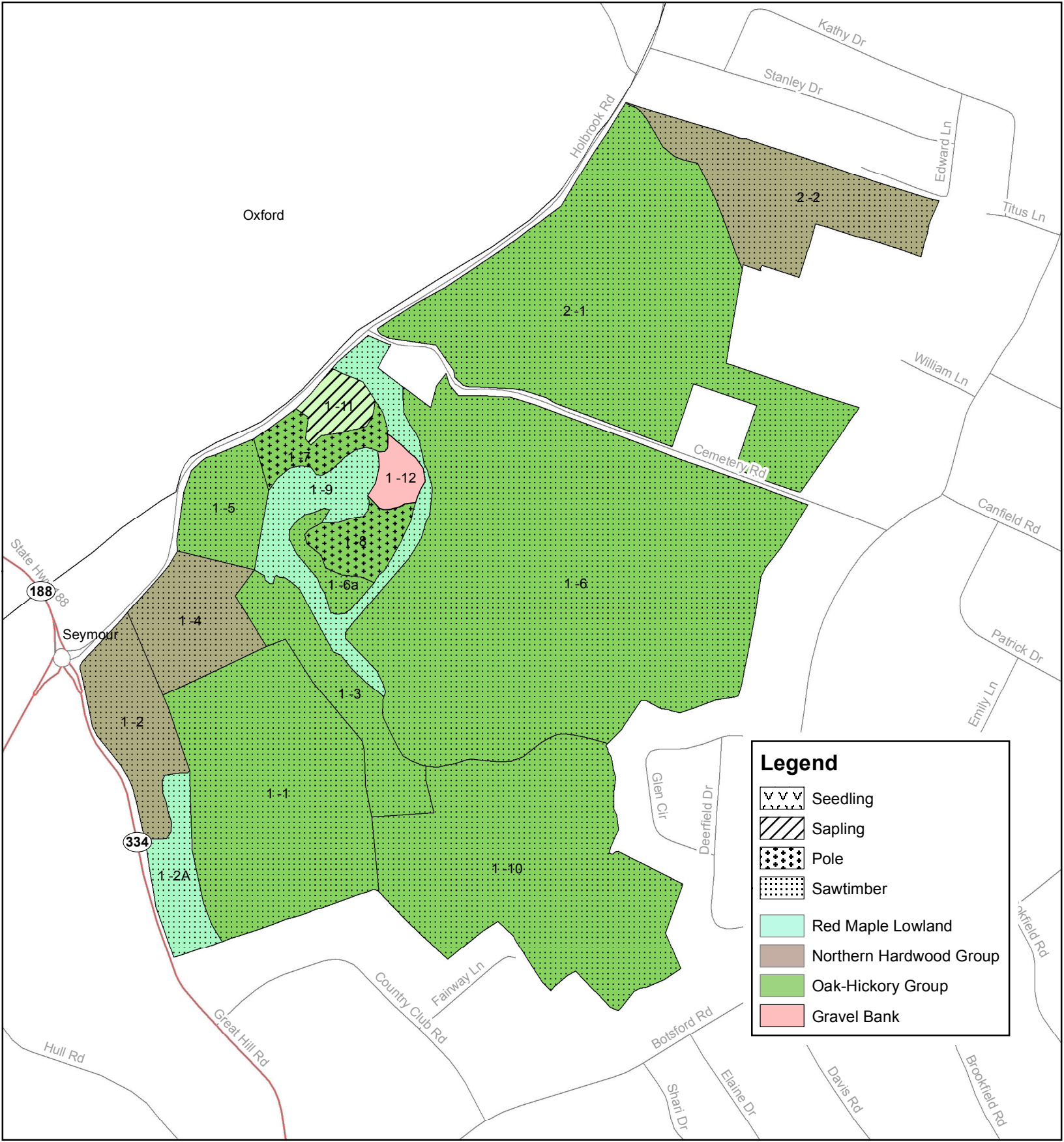
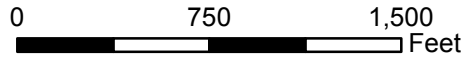


# Map D - Forest Type & Size Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

- Seedling
- Sapling
- Pole
- Sawtimber
- Red Maple Lowland
- Northern Hardwood Group
- Oak-Hickory Group
- Gravel Bank



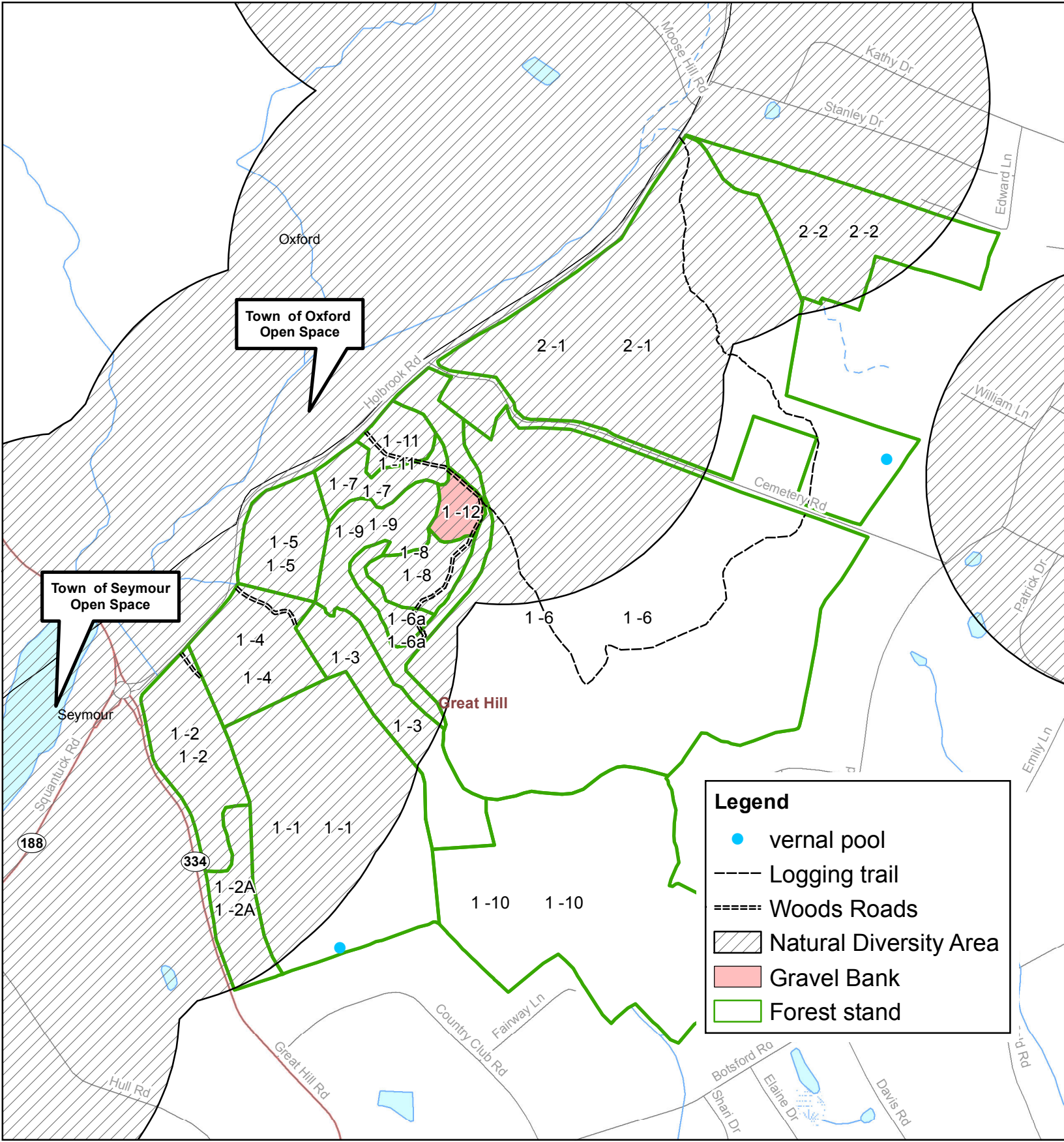
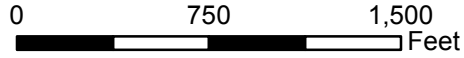


# Map E - Special Features Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

- vernal pool
- Logging trail
- ==== Woods Roads
- Natural Diversity Area
- Gravel Bank
- Forest stand

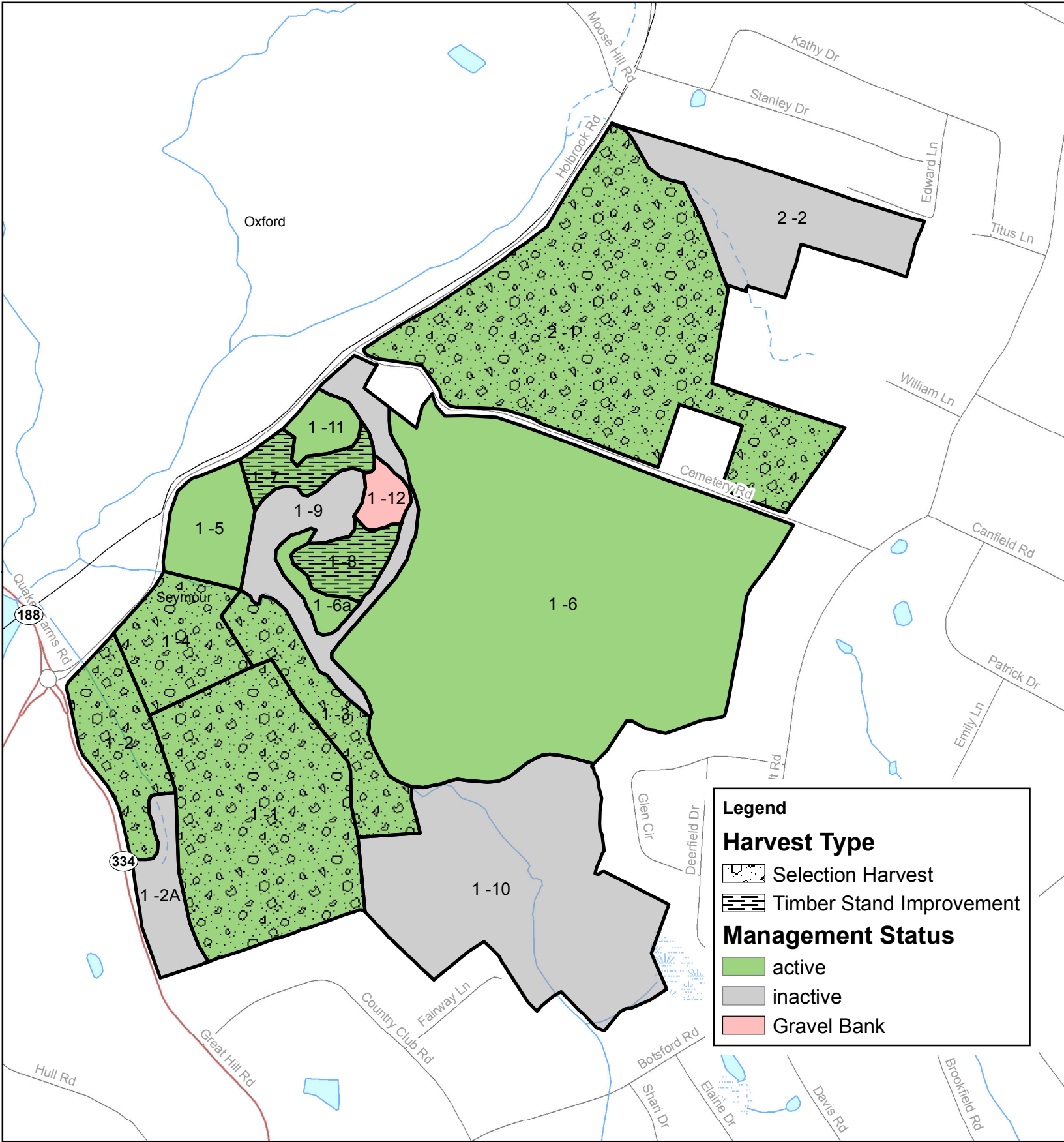
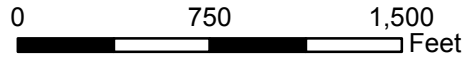


# Map F - Work Plan Naugatuck State Forest Great Hill Block

Seymour, CT  
322 acres



October 21, 2015



**Legend**

**Harvest Type**

- Selection Harvest
- Timber Stand Improvement

**Management Status**

- active
- inactive
- Gravel Bank