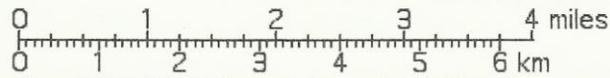


CORNISH TOWN FOREST MANAGEMENT PLAN



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CORNISH TOWN FOREST MANAGEMENT PLAN

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1. THE PURPOSE OF THE MANAGEMENT PLAN

The purpose of the management plan is to describe the purposes and establish goals for the Town Forest for the foreseeable and imaginable future, and to outline general and specific procedures for achieving these goals and protecting the Forest for future generations to enjoy.

It is the management committee's hope that the plan will institute consistent management philosophies and techniques for many generations, so that practices begun now will have a chance to bear fruit over the life span of natural organisms such as trees, without being limited by the life span of a human owner. The plan may also serve as an educational resource for residents and others interested in management of undeveloped land.

2. PURPOSE OF THE TOWN FOREST

The purpose of the town forest is to preserve undeveloped land for the benefit and enjoyment of the residents of Cornish. Benefits include preservation of aesthetic, accessible, natural lands; maintenance (or restoration) of forest, shrub and grass ecosystems; hunting access; development and maintenance of trails for hiking, skiing and mountain biking as well as suitable access for horses and motorized vehicles; access for disabled individuals; opportunities for education about forest and wildlife management, and the ecology, geology and history of the area; preservation of the Connecticut River Valley "scenic corridor"; preservation of water quality; community involvement and management for sustainable forest products.

Specific management priorities include insuring that residents have access to natural, healthy lands; protection and preservation of unique natural habitats such as vernal pools, mesic forests, wetlands and near "old growth" woods; recognition and protection of the existing and potential natural systems of flora and fauna; access and education programs to foster appreciation of these natural resources; and minimum impact sustainable forest harvests in selected areas for improved forest health as well as cash income to finance town forest projects.

In order of importance, timber harvest is last and should be performed only when forest health will not be harmed. It must be done in strict accordance with current best management practices and with meticulous attention to minimizing aesthetic impact.

3. OVERVIEW OF THE CORNISH TOWN FOREST

The Cornish Town Forest is an undeveloped property of about 270 acres. It is located at the southern boundary of the town near the southwest corner, on the south end of the north - south ridge next to the Connecticut River, known as "Wellman's Hill." It is

bounded on the west by Root Hill Road, on the south by the Cornish - Claremont town line, and in part on the east by Tandy Brook Road.

The terrain is hilly and undulating. Forest types include mesic forest and abandoned pasture overtaken by mixed hard- and softwood forest. Other characteristics include many areas of exposed rock ledge, vernal pools, seasonal streams, wetland and about 1/2 mile of Granite State Power Company right of way, which roughly bisects the property. The property was heavily logged in the mid 1970s and has active regrowth with clumps of dense small hemlocks and hardwoods. There are scattered wild apple trees, a few very large trees, and multiple areas of medium aged (8 to 12 inch DBH) mixed growth of white pine, hemlock, oak, red maple, ash, birch, sugar maple, poplar, beech, and cherry. Various types of wildlife browse, den trees, and snags abound.

Elevations range from about 570 feet above sea level at the entrance of Root Hill Road from Claremont and at the low point on Tandy Brook Road, to about 1,110 feet at a ledgy overlook with westward views of Mt. Ascutney near the northwest corner of the forest.

When considered with abutting properties, the Forest comprises part of an approximately 1800-acre area of currently undeveloped woodland.

4. GEOLOGICAL ATTRIBUTES

A. Topography

The topography of the property is generally hilly. The flattest areas are the central and southwest portions where undulating terrain ranges from 0% slope in very small areas to 15% slopes. Steep slopes of 25-50% occur along Tandy Brook road (the eastern edge of the property) and on either side of the seasonal stream, which parallels Root Hill Road (in the western quarter of the property). More moderate slopes of 15-25% extend from the height of land near the northwest corner of the property south and east towards the power line and the southern boundary of the forest.

B. Aspect

The predominant aspects are southerly, with eastern aspects along Tandy Brook Road and Root Hill Road, and a steep slope descending to the west from the highest elevation at the northwest corner of the property.

C. Geological History

In essence, the character of the land in the Cornish Town Forest is due to three major geologic processes: the initial bedrock formation, its transformation by plate tectonics, and finally weathering and scouring by glaciers and erosion.

1. Formation of the bedrock

1300 million years ago the landmasses of the earth formed a single continent. This supercontinent split apart about 650 million years ago, leaving a “proto - Atlantic” ocean between the land pieces. The soil washed off these ancient continents accumulated as sediment on the ocean floor.

Much of what eventually became New York State and western New England existed at this time but was under water.

2. Plate tectonics

According to the theory of plate tectonics and continental drift, 415 million years ago the proto continents began to come back together, squashing the silty crust of the ocean bottom in the narrowing space between them. Eventually, the inexorably merging continents smashed completely together during the period from 445 to 335 million years ago, forging the supercontinent called Pangea.

The exposed bedrock in the Cornish Town Forest is a remnant of the ancient mountain range created by this collision. The fine grained mud silts laid down on the ancient ocean floor were transformed and lifted up by the pressure of the continental collision into metamorphic rocks, specifically slates and pyllites. The north - south orientation of the rock ridges in the town forest shows that this area was formed by the east - west tectonic compression of the colliding continents. The rock ridges poking out of the soil in the town forest can be compared crudely to the wrinkles in a rug that is pushed aside when we move furniture - - in this case the “furniture” of the African continent pushing the old ocean bottom against the “wall” of the North American continent, leaving “rug folds” that run north and south.

Similar rock outcroppings are exposed in cross section along Route 12A, north of the Cornish - Windsor Covered Bridge.

Strips of softer or cracked rocks within this bedrock have eroded over time, leaving the depressions between rock ridges that, in the case of the town forest, catch water and have become vernal pools, seeps and seasonal streams.

After a period of erosion and tectonic inactivity, continental movements eventually reversed and about 150 million years ago Pangea began splitting up. The new break line resulted in part of Africa being left behind on the North American land mass (what is now parts of Maine and Eastern New Hampshire).

The Connecticut River Valley is positioned along what some geologists believe to be the collision zone between the original North American and African tectonic plates. Evidence of this collision can be seen in road cuts along I-91, where rocks stand in a near vertical position and are also severely crumpled. Fracturing along the collision zone weakened the rocks so that weathering and the resulting breakdown of the rocks was more pronounced along the collision zone. The result of this selective weathering process was the development of a long, north - south linear trough that eventually became the Connecticut River Valley.

3. The glaciers

Much more recently, from 2 million to 6,000 years ago, all of Vermont and New Hampshire was sculpted by glaciation. Exposed high rock ridges in the Town Forest show north - south grooves left by the abrasion of stones carried by the southward advance of glacial ice. The grinding action of the glaciers scoured mineral particles from the bedrock and pulverized rocks, creating the typical Cornish area soil mixtures of loam, sand, stones and boulders. Due to glacial scouring, the soil depth is also relatively shallow (compared to the deep soils of Iowa, for instance). Soil maps of the area classify the resulting soils by the specific types of soil particles (silt, sand, and clay content), sizes of soil particles (fine, coarse, gravelly), depth of various soil layers, the slope of the surface and the degree of wetness.

The last great glacier, the Wisconsin Stage Ice Sheet, disappeared 10,000 to 20,000 years ago. As the glacier melted, the western margin of Cornish was temporarily inundated by a deep pool of water, Lake Hitchcock, which extended from near Middletown, Connecticut to the Canadian border. The relatively flat, fertile "river bottom" land along the Connecticut River is sediment deposited on the bottom of Lake Hitchcock. Finally the glacial ice melted completely and unplugged the outlet of Lake Hitchcock. The escaping water carved the Connecticut River bed and left high terraces of sediment, such as those found to the east and west of Platt Road. Although the Cornish Town Forest lands were within the Lake Hitchcock watershed, these forestlands were probably shoreline property, and not under the lake's waters.

4. Today

Since the departure of the last glacier, the land continues to change slowly due to a number of influences, including barely measurable continental movement, erosion, freeze - thaw action, accumulation of decaying plant material and the activities of man.

D. Soils

The U.S.D.A. Conservation Service map shows six different soil types in the Cornish Town Forest (see Figure 1). The majority of soil types are shallow to moderately deep stony loam of steep to moderate slope. This holds true for all except the southwest corner and several small areas in the central part of the Cornish Town Forest where the

slope ranges from 0-3%. In these low-lying areas the soils tend to be deep, but poorly drained.

While white pine is present throughout the forest, the more sloped and rocky areas are suitable for northern hardwood species as well. The poorly drained, low-lying areas are more suited for red maple, spruce, and balsam fir.

Overall, the soil types found in the Cornish Town Forest are best suited for stands of timber (rather than other agricultural uses). While the moderately sloped areas do have some potential as pasture, their rocky nature makes this impractical. In fact, these sites on moderate to moderately steep (8-25% slope), well-drained soils have excellent woodland productivity potential. The steeper slopes of the northwestern region (25-50% slope) have low timber management potential due to proximity of bedrock to the surface, droughtiness and difficulties with mechanical access. Only water tolerant tree species will grow in the low lying areas of the southwest portion and access is limited in a number of other areas due to steep slopes and patchy wet areas (vernal pools). Because of these factors and the relatively good soil productivity (which is reflected in the trees currently growing on the property) the area is particularly well suited to wildlife habitat and recreation.

Please see Appendix 1 for descriptions of each soil type found on the property, the species of trees most commonly growing on those soils and other woodland characteristics.

E. Wetlands

There are two seasonal streams. The largest one flows in all but the driest seasons and runs roughly from north to south, more or less parallel to and about 100 yards east of Root Hill Road. Near the intersection of the logging road with Root Hill Road, this watercourse expands into an approximately 1 1/2 acre marsh, which is the largest wetland on the property. The east - west causeway of the logging road has probably acted as a dam to increase the pooling of water in this area. After draining through a culvert in the causeway, this stream is joined by the second stream near the southwest corner of the property.

The second stream arises near the middle of the property, just west of the power line right of way and north of the northernmost point of the logging loop road. It is fed by a number of small seasonal trickles, seeps and marshy areas on both sides of the power line. This stream runs southwest and joins with the first stream, then flows south by southeast across the town forest boundary into Claremont to join Walker Brook, which reaches the Sugar River shortly before its confluence with the Connecticut River.

The eastern half of the property contains numerous vernal pools and several marshes. These wetlands range in size from about 25 square feet to 1/2 acre. Most are

located in the low spots between the north south oriented rock ridges. There are at least half a dozen vernal pools, which support active amphibian populations (wood frogs, spotted salamanders and spring peepers).

A very small, southerly flowing seasonal stream drains the eastern-most vernal pool overflow and several low boggy spots along the southeastern border of the forest. This water eventually flows into a large wetland just north of Hewitt Road in Claremont, which contributes to Walker Brook.

5. FOREST HISTORY

Much of this property appears to have been farmed, as evidenced by the substantial cellar hole and associated labyrinth of stone walls in and around the logging road loop. Based on similar parcels of land with better known history, the land may have been cleared (except for a few widely scattered hardwood trees, and the very steep slopes west of the highest point) in the early 1800s, then abandoned toward the end of that century. Forest quickly reclaimed the land, which was then logged at least twice. The 1997 timber cruise estimated that the most recent cutting occurred 25 years previous to the cruise and encompassed the entire property except the steepest slopes.

More specific information about the past ownership of the farm and uses of this property is obscure and would make a good future research project. (*See Footprints of the Past: Images of Cornish, New Hampshire* for the history of the naming of Wellman's Hill).

The power line right of way was cut in 1947. Since then it has been maintained by aerial and hand application of herbicides and manual cutting.

In 1972 the property was owned by Davis Forest Industries, a subsidiary of Davis Alaiyo Corporation, which performed a survey and laid out an 18-lot subdivision. In 1995 Davis Forest Industries sold the property to Stanley C. Olsen, a developer from Crystal River, Florida (Olsen Family Partnership IV LTD).

Construction of the housing development hinged on road access from the south through Claremont. Permission from the city of Claremont was required to upgrade Root Hill Road; it was denied.

Around late 1997 or early in 1998, an aging Stanley Olsen followed his son's recommendation to sell the family corporation's holdings of 3,000 acres of New Hampshire land to the Society for the Protection of New Hampshire Forests. This land sale included 150 acres adjacent to the Yatsevitch Forest in Cornish, and 270 acres on Wellman's Hill (now the Cornish Town Forest). Mike Yatsevitch alerted the Cornish

Conservation Commission to the fact that SPNHF would be reselling the Wellman's Hill Property.

The Wellman's hill property had a 1990 current use assessment of \$166,100 (as of 1998 annual taxes were \$596). The liquidation value of the timber (cutting and sale of all trees over 6 inches DBH) was assessed in September 1997 at \$95,243. However an analysis of the timber valuation done for the conservation commission by forester Leo Maslan in December 1998 estimated the selective harvest value at \$63,812.47. This result was based on a harvest that kept long-term timber management in mind, rather than liquidation value. The Society set a sale price of \$100,000, and a potential buyer was interested in purchasing the property for its timber liquidation value.

At this time the Cornish Conservation Commission had been searching for an appropriate property to purchase for a town forest. The Commission had saved up about \$70,000 from its annual appropriations from the town (at up to about \$3,000 per year this represented savings over a long period of time). The Commission made an offer of its entire treasure chest to the Society, and on December 22, 1998 the Society's executive committee approved the offer, while retaining a conservation easement. The conservation easement states that, "The Property shall be maintained in perpetuity as open space without there being conducted thereon any industrial or commercial activities, except agriculture and forestry..." This purchase agreement finally removed the possibility of liquidation clear cutting and construction of a housing development, and preserved the woodland as Cornish Town Forest.

6. FOREST ECOLOGY

A. Forest composition

A timber cruise was performed in 1997 by Jeff Smith of Ecosystem Management for the Olsen family (owners of the property at that time). The cruise inventoried the species and ages of trees present on the property (see Appendix 2).

The cruise identified the major tree species as white pine, hemlock, red oak, and white ash, with smaller amounts of sugar maple, red maple, poplar, white birch, yellow birch, black birch, black cherry, hop hornbeam and red pine.

Small numbers of spruce are scattered throughout the property, but are found primarily in an area with very thin soil over ledge east of the power line, near a single nurse tree.

B. Age and age class distribution:

Past land use (in this case farming and logging), and to a lesser extent soils and aspect, are largely responsible for the current age - class distribution of this forest (see Appendix 3). Scattered older (about 100 year old) trees can be found, mostly on the very steep slopes south and west of the height of land where logging appears to have been

minimal. Two four-foot diameter trees (one hemlock and one sugar maple) are located near the southern boundary of the property.

Medium aged trees (pole timber and young sawtimber classes) with actively growing understories predominate in most stands. Vigorous growth of seedling and sapling hemlocks is found in areas of small patch cuts and skid roads.

C. Tree quality and health

There is a wide variety of tree quality ranging from actively regenerating saplings and rapidly growing pole timber to highgraded areas where poor quality trees make up a significant proportion of the stand. In addition there are patches of overstocked pole - age white pine. In some areas tree health would benefit from some type of thinning. Much of the beech is affected by beech scale. Due to the high percentage of hemlock, especially in the eastern half of the forest, hemlock woolly adelgid may have a significant impact on the forest in the future.

D. Future potential

The 1997 timber cruise estimated that due to the favorable soils, tree growth rates on this land would be somewhat higher than the average of 2 to 3% occurring in unmanaged New Hampshire forests, which translates to growth rates of at least 0.5 cords or 250 board feet per acre per year.

Because of the predicted growth rate, diverse tree species and a mix of healthy younger age classes, there is excellent potential for the forest to be maintained in a healthy state, and for the forest to support the multiple uses described in the goals. In the long-term future, mixed "old growth - like" forest should result from a combination of natural forces and management practices (gardening on a forest scale).

E. Other plant life

In addition to supporting a wide variety of non-timber species (witch hazel, ironwood, osiers, alders, wildflowers, ferns, blueberries, etc.). the forest has sites which could support the growth of rare plants. Care should be taken to preserve any rare plants and sensitive plant communities, and to monitor and control invasive plant species.

7. WILDLIFE ECOLOGY

The forest contains a wide variety of habitat types (see Appendix 4). Hardwood and softwood stands of varying ages are found. Over time, developing an "old growth" type habitat will extend the variety of habitat characteristics. Even now there are significant numbers of snags, large old den trees and coarse woody debris, especially in areas with older beeches affected by beech scale. Currently there are extensive areas of dense young hemlock growth, which support an active deeryard and snowshoe hare population. Shrub, hardwood and softwood browse is scattered throughout the property

in old logging cuts, around the vernal pools and along the power line right of way and the logging loop road. Small areas of spruce regeneration can be found and should be released to provide more variety of dense softwood cover. This may be particularly important if the hemlock woolly adelgid infests the large hemlock population of the Forest.

Moose cycle through the area periodically, feeding on red maple browse in the winter and understory and wetland browse of various other types seasonally.

Significant mast contributions are made by apple, beech and oak trees, which are abundantly scattered through the property. Wild turkey, deer, squirrels, chipmunks, grouse and multiple other bird species are attracted by these food sources. Bear could be expected to feed in this habitat but have not been observed. Porcupines have been seen, however, and raccoons are probably frequent visitors.

Elusive fur bearing animals such as fisher and bobcat have been tentatively identified, and coyotes pass through the area often. There are indications that there may be a bobcat denning area on the property immediately north of the forest.

Brushy and grassy areas are found along the logging loop road and the power line. More active management of these areas to select for desirable wildlife food and cover sources will enhance these habitats for birds of all types, small mammals, deer browse, etc.

The wetlands support numerous kinds of wildlife, and the vernal pools are particularly outstanding in abundance and variety. Wood frogs, peepers and salamanders all appear to have healthy breeding populations.

Management activities will strive to preserve and enhance these diverse habitats in order to provide habitats for as many different species as the property can support. Additionally, attention should be paid to complimenting and enhancing the habitats of the abutting properties, to provide for species with larger home ranges (bear, moose, bobcat, hawk, possibly bald eagle, etc.), to protect migration corridors and to take advantage of surrounding seed sources for regeneration.

Surrounding acreages were logged extensively between 1992 and 2000, providing plentiful low browse such as blackberry and raspberry bushes and saplings. At this time, preserving older age classes of trees and the deer yard will compliment the abutting habitats. Also maintaining the open areas preserves grassland and shrub habitat, which is relatively lacking on surrounding properties.

8. ARCHEOLOGY

A large cellar hole is located just north of the southern arm of the logging loop road, about 100 yards west of the power line (see HISTORY section). An extensive network of stone walls radiates from the cellar hole and probably includes foundations of a barn and other outbuildings. Some of these walls were disrupted by construction of the logging road and by associated stump dumps. Most of the stone walls are to be found in the southwestern third of the property where the gentler slopes were more suited to pasture and farming, but scraps of walls, some only 50 feet long, can be found scattered throughout the area. In addition, the north, south and southeast boundaries of the property follow broken stone walls, which sometimes have wire fence filling in the breaks. There are traces of an old barbed wire fence running from north to south at the top of the steep slope along Tandy Brook Road.

9. SPECIFIC FOREST MANAGEMENT PROCEDURES AND ACTIVITIES

A. Supervision of management procedures and activities

All management procedures will be supervised by the management committee. The committee will meet at quarterly intervals and as needed to review current and proposed management activities, to evaluate the state of the forest and to arrange for implementation of management activities.

Activities which could have or could develop a negative effect on the health, viability and aesthetics of the forest, its wildlife or its visitors should be considered carefully as needed and permitted only if the management committee is satisfied that damaging effects can be acceptably controlled. The committee may prohibit such activities if judged necessary. Any timber harvests will be planned and closely monitored by a licensed forester and the management committee.

B. Mapping and other information

A detailed map of the topography, wetlands, trails, stone walls and foundations and any other points of interest will be made, with copies available to the public. A file or notebook of information may be kept at the Town Office, library or other site where it will be available to the public. This file will contain information gathered to date such as flora and fauna inventory, photographs, the management plan, reports on management activities and any other pertinent information.

C. Inventory of flora and fauna

While many species have been observed, an inventory should be made to document what animal and plant species are present over time. Any rare plants and endangered animals or insects should be identified and protected along with their habitats. In particular, the area of rich, moist soils, steep slopes and sensitive plants along Tandy Brook Road should be protected and monitored.

D. Education and research programs

Possibilities include youth group study projects of any aspect of the forest, and informational programs and tours for the public.

E. Photographic record

An ongoing photographic documentation of growth and changes in the forest over time should be made, preferably by local volunteers.

F. Access policy and recreation opportunities

The property will be open to foot travel such as hiking, skiing, and mountain biking, as well as tent camping and hunting and fishing in season.

Horses and motorized vehicles, including snowmobiles, will be restricted to designated routes: the logging road loop, power line service road and Root Hill Road. The forest will be closed to motorized wheeled vehicles and horses during mud season when all class VI roads are closed to motorized wheeled vehicles (from March 1 to July 1). Our hope is to upgrade and maintain the southern access by Root Hill Road and the logging road so that disabled individuals can drive into the property. Small areas for parking have been constructed at the intersection of the logging road with Root Hill Road, on Tandy Brook Road at the northeast corner of the property, and on Root Hill Road at the northwest corner of the property.

The property is available for minimum impact, primitive camping of short duration (no long term residence, motorized camper vehicles or camper trailers). One or two lean-tos or other simple shelters may be constructed in locations where environmental and aesthetic impact will be minimal. Site selection, construction and upkeep will be overseen by the management committee.

G. Trail construction and maintenance

The existing trail network will be expanded and maintained according to the following guidelines:

1. Trails will be routed to provide access to most areas of the property from different parts of town. The trail network will make it easy to view items of particular interest such as vistas, cellar holes, vernal pools, very large trees, and other ecological attractions.

2. Trails will be located where they minimize environmental impact such as causing erosion, damaging major tree root systems or rare plants, disrupting animal dens or disturbing wetland habitat.

3. Trail construction techniques should minimize upkeep and trail damage. Some specific techniques include trail hardening, creating disincentive for cutting switchbacks, and following rock ridges.

4. Trail construction will be supervised by the management committee, and trail condition will be assessed by the committee annually or as needed.

H. Forest management procedures

In keeping with the goals of wildlife management, recreation and aesthetics, uneven - aged management should be implemented to encourage development of a more “old growth like” forest, except in areas designated specifically for possible commercial timber product harvest, where even - aged management is more efficient and economical. Uneven - aged management may occur through natural processes and by intervention. Release of diverse understory and wildlife food source species, small patch cuts and thinning of overstocked and single species stands are all acceptable forms of intervention (see Appendix 5 for a discussion of even - aged versus uneven - aged management techniques).

Based on the purpose of the Town Forest as described above, the management plan prescribes the following three management areas instead of using the timber stands identified in the timber cruise (see FIGURE 2).

Area 1. All of the town forest except specific areas described below shall be “minimum disruption areas” where the only activities are trail construction, and intervention for wildlife and plant species management and forest health.

Appropriate activities include:

1. Construction of trails for non - motorized use
2. Release of food trees and plants
3. Small (one acre or less) patch clear cuts or burns for regeneration of specific vegetation
4. Cutting to select for diverse tree species, increase edge habitat along the power line, preserve snags and den trees, release understory and selected desirable trees, protect individual large trees, and to remove individual disease- and insect- prone trees
5. Removal of damaged trees when this can be done without harming the surrounding forest
6. Protection of rare plants
7. Monitor for and control invasive plant species (invasive plants identified to date include buckthorn, honeysuckle and Russian and autumn olive) and
8. Other similar, low impact types of intervention.

Area 2. Open areas - the power line ROW, logging road and clearings:

Management activities include:

1. Search for alternate maintenance methods for the power line ROW that are environmentally safe and create desirable wildlife browse,
2. Allow no herbicide spraying unless the safety can be unequivocally demonstrated and this is the most suitable method for controlling plant growth,
3. Create more edge habitat and soften the visual impact of the right of way with timber cuts at the edge of the ROW in areas that would be maintainable (by mowing for example)
4. Enforce mud season restrictions of motorized vehicles to prevent deepening of the mud bogs on the service road
5. Mow appropriate areas at one to three year intervals in order to maintain grass habitat. Mow late in the season to avoid disrupting nesting, insect hatching and seeding
6. Cyclic cutting of poplar and other browse species in the edge habitat to maintain distributed ages and sizes of browse species,
7. Monitor for and control invasive plant species
8. Maintain views and associated blueberry patches at the lookout areas on the height of land by hand cutting and possibly by controlled burning as needed
9. Other similar management practices judged necessary by the management committee.

Area 3. Timber production - 20 acres or about 7% of the total acreage of the town forest, consisting of the following 2 areas:

- a. Regrown pasture in the southwest corner of the property: this area is delineated by the Cornish - Claremont town line, the power line ROW and the south arm of the logging loop road.
- b. Regrown pasture along Root Hill Road: this area is delineated by Root Hill Road, a rocky elevation near the northwest corner of the property, the stream which parallels Root Hill Road, and the logging road causeway.

Note that steep banks, wetlands and the area within 75 feet of the stream are not included in the harvest management area.

1. Stand description

These areas were inventoried in the timber cruise and reviewed by the management committee and forester, and consist of 20 acres of mixed wood with areas of white pine.

This area has an even - aged stand structure of pole - timber size class. Stand composition by basal area is as follows: white pine 24.5%, hemlock 20%, red oak 13%, red maple 10%, ash 8.5%, black birch 7.5%, sugar maple 5%, white birch 4.5%, poplar 3%, beech 2%, cherry 1%, red pine 0.5%, yellow birch .25%, and hop hornbeam and

other hardwoods 0.25%. The area is fully- to over- stocked with trees, which have regenerated vigorously following the heavy cutting about 25 years ago.

Slopes in this area are moderate. Operability is somewhat limited due to wet areas and seasonal streams. However the proximity to the maintained logging road and Root Hill Road provides good access in dry weather and winter months, unlike the eastern portion of the property where access is hampered by the band of vernal pools and steep eastward slopes adjacent to Tandy Brook Road.

2. Stand History

The area was pasture at one time. After the land was abandoned it reverted to woods, which were heavily cut at least once, the last time being about 25 years ago. A few low quality white pines were left but the bulk of the growth is active opportunistic growth, which has led to overstocking.

3. Stand data

Mean Stand Diameter (inches): 9.5
Basal Area (sq. feet./ac.): 91
Stocking Level: B
Stand Height: 40 to 60 feet.
Stand Age: 40 years
Stand Quality: Fair
Insects and disease: some white pine weevil is present
Site Class: I and II
Regeneration: Minimal
Volume/acre: 2,792 board feet/ac.

4. Recommendations

Due to the small size of the management area and the current even - aged structure of the stand, this area should be managed for continued even aged production of sawlogs (see appendix 5). For optimum tree vigor, a pre - commercial thinning is overdue. This thinning should identify and release “crop” trees (crop trees are selected on the basis of species, form and vigor). In this stand white pine, red oak and black birch are preferred species.

5. Treatment schedule

Weeding and thinning by girdling (possible youth group project) as soon as possible then evaluate for further thinning or harvest in 10 years. Subsequent evaluation of residual stand should be at 15-year intervals.

6. Other considerations for timber harvesting

a. Terms of the easement

At least 30 days before any harvest, the management committee must provide written certification (signed by a licensed forester or other qualified person approved in advance and in writing by the Grantor of the conservation easement, the Society for Protection of New Hampshire Forests,) that a harvest plan has been prepared in compliance with the terms of the conservation easement and the management plan. In addition, if any harvest is planned more than 10 years after the adoption of this management plan, the entire plan must be reviewed and updated by a licensed forester and the management committee at least 30 days before the harvest.

b. Aesthetics of harvest or any other human activity

The aesthetics and visual quality of the Town Forest are of crucial importance. By nature the woods are a messy place: trees often die, fall down, rot or drop limbs. Retention of snags (dead or partially dead standing trees) and den trees (live trees with existing cavities) helps to maintain populations of cavity nesting wildlife. Dead and down woody material in various stages of decay (logs, stumps, limbs, tree tops and upturned tree roots) serves many critical functions in a forest and should be present in most if not all stands. Such debris is used as habitat by many small mammals, amphibians, reptiles, insects, other invertebrates, mosses, fungi and lichens. In addition, rotting wood is an important part of the recycling of biomass, which is necessary to avoid long-term depletion of soil nutrients.

It is important to distinguish between natural, desirable disorder and man-made mess. Slash and debris left from logging operations can be extremely unsightly and may impede foot travel. Logging operations will not be undertaken in the town forest if this will result in unacceptable impact on aesthetic appearance, access or the health of any part of the ecosystem. When logging does occur, techniques to minimize the undesirable effects of slash should be used at all times (chipping, crushing by forwarder, etc.). The effect of removal of biomass by whole tree harvest should be taken into consideration.

Log landings will be scrupulously cleaned and reseeded or replanted so that they can be maintained as a natural appearing contribution to the ecosystem. Roads and trails should be pleasing to the eye and fit into the natural landscape.

c. Boundaries

Boundaries of the Town Forest have been clearly identified and marked with green - on - white Cornish Conservation Land medallions.

d. Laws and permits

New Hampshire state laws pertaining to the harvesting of wood will be observed. This includes filing "Intent to Cut" forms, obtaining any wetlands permits or other permits required and abiding by all water quality regulations.

e. Water quality protection

Any time heavy equipment is used in the woods the potential for water quality problems exists. Skid trails must be laid out correctly and used only when the ground is firm. In addition to layout, other erosion control measures must be carefully attended to, such as water bars, reseeding and mulching. Brook crossings will be kept to a minimum. Slash and other logging debris will be kept out of streams and vernal pools. Low - impact techniques should be employed to insure that physical and aesthetic disruption is minimized.

f. Sustainable harvesting

Any tree harvests will preserve regeneration capabilities of the forest so that there is continuous production of healthy, high quality trees of all ages in the forest as a whole. The goal is to achieve a complex, balanced forest structure, which benefits plant and animal diversity, aesthetics, and recreational opportunities as well as wood product harvest potential over the long term.

Best management practices will also be followed to control damage to residual trees during and after harvest (such as from skidding wounds, soil compaction and wind vulnerability).

The most suitable harvest technique(s) will be determined for each area. Specific harvest methods may include group selection, single tree selection, shelterwood cutting or small (1/4 to one acre) clearcuts.

g. Products and markets

Markets for various types of forest products have fluctuated historically. In the long term, there probably will always be markets for wood products of some type. Wood is a renewable resource, and the harvest of appropriate types and volumes of wood at appropriate times and with current best techniques from the Cornish Town Forest should be an example of ideal multi - use forest management. This may mean that harvests are rare and small, and targeted for specific markets as they occur.

10. SUMMARY:

It is our hope that the Cornish Town Forest may serve as an example and possibly an experiment in long term (multigenerational) consistent management for a healthy forest, multiple uses and the enjoyment of all.

This plan was approved on December 20, 2002

GLOSSARY OF SELECTED TERMS

Age classes of trees - Foresters generally categorize the forest stands by four different age classes: seedlings (1-5 years), saplings (6-15 years), pole timber (15-40 years), and sawtimber (40+ years). A variety of age classes is important for providing diverse wildlife habitats, for allowing for tree regeneration after natural or human disturbances, for natural aesthetic appearances and for sustainable harvest of forest products. The juxtaposition of trees of different age classes is important for long term forest health and wildlife management.

Aspect - The direction that a slope faces (north, south, etc.).

Basal area - A measure of tree density. It is determined by estimating the total cross-sectional area of all trees measured at breast height (4.5 feet) and expressed in square feet per acre. It may also indicate the cross-sectional area of a single tree, in square feet, at breast height.

Beech scale - **Bark disease**, *Nectria coccinea* var. *faginata*. This disease occurs in conjunction with infestation by the woolly beech scale. Feeding punctures made by the insects kill the living bark and produce cracks through which the causal fungus enters the tree. The fungus causes a canker which may be sunken, with small orange lumps of fungal tissue on the surface. Leaves are usually yellow and small, and the tree lacks vigor. When cankers are large enough to encircle the twig, branch, or trunk, the foliage wilts, and the parts of the tree distal to the canker die. Infection usually does not occur when the insects are removed soon after infestation.

Biodiversity - The variety and variability of all living organisms.

Bog - A low-lying area with standing water or saturated soil for a significant portion of the year that is dominated by grass like vegetation, shrubs and dwarf trees, and which has a thick vegetative mat under foot.

Browse - Leaves, buds and woody stems used as food by woodland mammals like deer and moose.

Channery - A term to describe flat rock fragments 2 to 150 mm long.

Crop tree - A tree which is retained for maximum longevity in a stand due to desired characteristics such as commercial quality or biotic contribution.

DBH - Diameter at breast height: The average diameter of a standing tree, measured outside the bark, at a point 4.5 feet above the ground.

Yard - Any place where animals congregate for protection from the elements. Deer yards are often associated with coniferous cover.

Den tree - A living tree with a hollow cavity large enough to shelter wildlife.

Easement - A voluntarily created land use agreement between a landowner and a land conservation organization or government agency. The agreement permanently protects a defined parcel of land and its associated values by restricting certain uses or activities that could occur on the property.

Ecology - The science of the relationships between organisms and their environments.

Ecosystem - A community of species (or group of communities) and its physical environment, including atmosphere, soil, sunlight and water.

Edge habitat - The area where the variety of types of food, cover, water or terrain required by a particular species come together.

Even - aged management - Forest management with periodic harvest of all trees on part of the forest at one time, or over a short period to produce stands containing trees all the same, or nearly the same age or size.

Harvest - In general use, removing all or portions of the trees on an area. It can mean removing trees to obtain income, to develop the environment necessary to regenerate the forest, and to achieve special objectives such as development of particular wildlife habitat needs. Contrast with weeding and thinning cuts.

Hemlock woolly adelgid - An introduced insect pest that infests and kills hemlock trees.

High grading - An exploitive logging practice that removes only the best, most accessible and marketable trees in a stand.

Liquidation cut - An exploitive harvest that removes all marketable timber for purely economic reasons.

Loam - Soil consisting mainly of sand, clay, silt and organic matter.

Marsh - A low -lying area with standing water or saturated soil for a sufficient portion of the year that is dominated by reeds, cattails, sedge or grass - like vegetation.

Mast - Nuts of trees such as oak, beech, walnut and hickory that serve as food for many species of wildlife.

Mean stand diameter - Based on a relationship of the number of trees per acre and the sum of their basal areas, it is the DBH of the tree of average basal area in a stand.

Mesic forest - hardwood forest generally occurring on lower elevation concave slopes and characterized by deep, fine - textured soils and relatively high nutrient status ... They are dominated by sugar maple with white ash or basswood ... understory plants include blue cohosh, rattlesnake fern, maidenhair fern, wild ginger, and Dutchman's breeches. A considerable number of New Hampshire's rare upland forest plants occur in this forest type, including butternut, flowering dogwood, ginseng, etc.

Old growth - A self perpetuating forest community that has reached a dynamic steady state (i.e. changes occur in the community only when gaps are formed as old trees die out, but the changes do not affect the overall character of the community) in the absence of silvicultural treatments. The dominant vegetation is considered to be climax with all age classes present.

Overstocked - A condition where a stand has more trees than at normal or optimal (full) stocking.

Regeneration - The renewal of a stand of trees either by natural or artificial means.

Seep - A spot where groundwater oozes slowly to the surface, forming a small pool.

Selective harvest - A common term in forestry that has no silvicultural meaning unless the criteria for selection are specified. A selective harvest simply means that someone indicated which trees would be cut.

Site class - (or index) A measure of the relative productive capacity of an area, based on tree height growth.

Slash - The residue left on the ground after felling, lopping, storm, fire, or girdling. It includes nonmerchantable portions of trees, such as stumps, broken branches, dead trees and other debris left on the ground.

Slope - The average angle of incline of the terrain, usually expressed as a percentage based on the amount the incline rises over a horizontal distance.

Snag - A standing dead tree generally left for wildlife management purposes.

Stand - A grouping of trees with similar characteristics (such as species, age or condition) that can be distinguished from adjacent groups.

Stand height - Average height of trees in a stand.

Stand quality - A silvicultural classification used to describe the condition of a stand, particularly in relation to its need for treatment.

Stocking level - An indication of the number of trees in a stand as compared to the optimum number of trees for some management objective, usually improved growth rates or timber values.

Suppressed trees - Trees with small crowns that are entirely below the level of the canopy, receiving no direct sunlight.

Sustainable forestry - Management to produce the goods we desire today without compromising the productive capability and biological integrity on which future generations will depend.

Swamp - A tree or shrub wetland, with standing water or saturated soils for a sufficient portion of the year, that often has a "hummocky" appearance and buttressed tree roots.

Dominant full sized trees may include red maple, black ash, black willow, black spruce, tamarack or white cedar.

Tree quality - A measure of health and marketability.

Treatment - Any action in forest stands that is controlled by a silvicultural prescription.

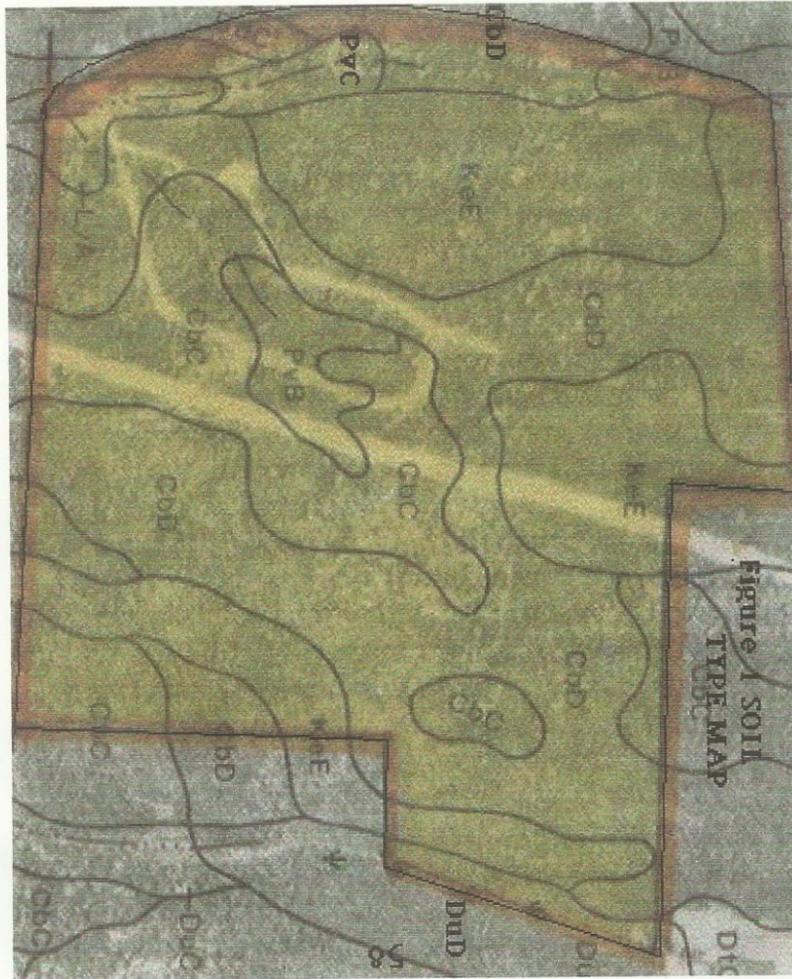
TSI - Timber stand improvement: Silvicultural activities that improve the composition, constitution, condition and growth of a timber stand.

Uneven aged - A timber management method that produces a stand composed of a wide range of ages and sizes.

Vernal pool - An ephemeral body of water that fills in the spring, holds water for at least 10 days, and dries up by fall in some or all years and that does not contain fish.

Weeding and thinning - A reduction in the number of trees in an immature forest stand to reduce tree density and concentrate growth potential on fewer, higher quality trees. (see TSI).

Wetland - An area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water loving) vegetation and which has soils indicative of wet conditions.



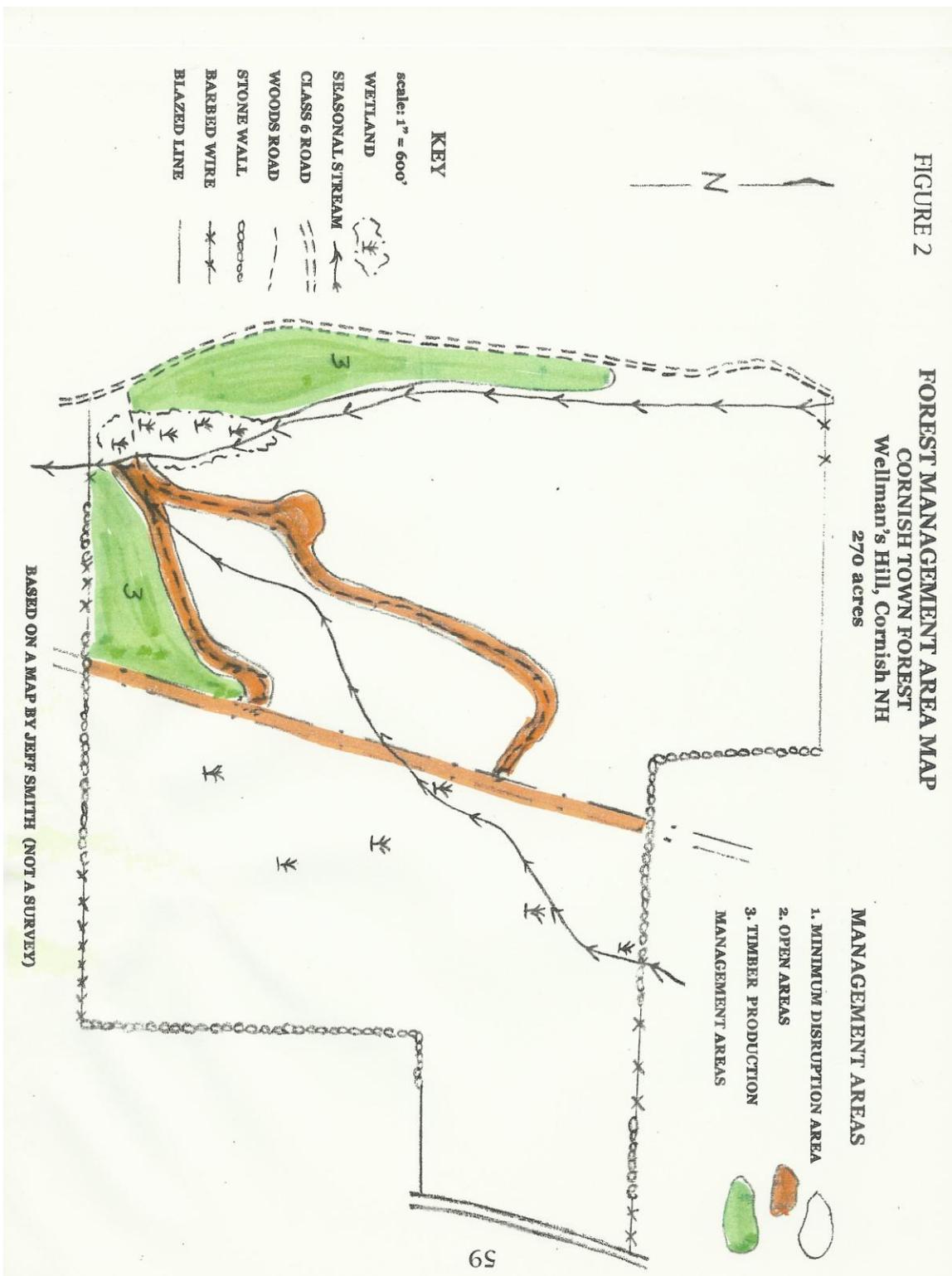


Figure 3. Cornish Town Forest topographic map

