Amherst Conservation Commission
Forest Management Plan

In 1996, the Conservation Commission had a forest management plan developed by Charles Koch, forester, for some of the Amherst conservation areas. Inventories were taken of the standing timber on the areas, as well as other features of the land, including streams, wet areas, cavity/den trees, mast, browse, groundcover, and dead/down trees.

The management plan is not directed toward producing a certain timber output. The objective is, instead, one of producing forest conditions most suitable for as many benefits as possible. Wildlife habitat will be enhanced by maintaining or creating, browse and cover; seed (acorns and nuts) production; cavities, snags and perches; herbaceous vegetation, grasses and woody seedlings; deer yards; and vernal pools. A diversity of forest habitats with a number of forest layers within the habitats will be provided. The forest structure, as shown in these charts, will include trees ranging in age from seedlings to antiques more than 110 years old. Skid trails will eventually be incorporated into the existing trail system.

Harvests of about 610,000 board feet of sawtimber and 2,500 cords of cordwood are expected during the 15 years ending in 2011. This is expected to result in net revenues of about $40,000, which the Amherst Conservation Commission plans to use for management and maintenance of the conservation areas.

FOREST MANAGEMENT PLAN
FOR
AMHERST CONSERVATION COMMISSION
AMHERST, NEW HAMPSHIRE
1996
(Revised 1999)

Prepared by:

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Forester
Jaffrey, NH
August, 1999

This document is presented in 2 parts. The first part, which follows, presents the background, theory, and general explanation of the resource components needed to arrive at management decisions and to direct action on site. The second part is the site specific maps, recommendations, and data for the individual land parcels.

Part 1 - Criteria for Management

Introduction

This plan was prepared at the request of the Amherst Conservation Commission, Amherst, New Hampshire for 6 of their upland forested properties located in Amherst. Its purpose is to provide the Amherst Conservation Commission with information concerning the existing forest conditions and to make recommendations for the management of their upland forested properties for the next 20 year period.

The specific tasks of this plan were:
1. Conduct a forest inventory during July and August 1996 (Dacquino Lot - 1999).
2. Analyze the inventory, report the results, and consult with the Conservation Commission during August, September, and October 1996 to clarify management objectives and discuss recommendations.
3. Develop the finalized plan during October and November 1996. Revised Plan - August 1999

Location (see Appendix 1 - **Locus Map**)

The subject properties involve 6 separate parcels which total approximately 940 acres and are located north of Route 101 in Amherst, New Hampshire in the northeast quadrant of the Milford , NH USGS Topographic Map, the southeast quadrant of the New Boston, NH USGS Topographic Map and the southwest quadrant of the Pinardville, NH USGS Topographic Map.

Management Objectives

The landowners' objectives for the management of these woodlots are as follows, in the order of their relative importance:

1. ***High*** - Wildlife/Recreation/Aesthetics
2. ***Medium*** - Income/Wood Products

The principle motivators for undertaking this management program are: a. to inventory property's forested resource and, b. assess options for conserving the forested uplands while improving wildlife habitat, recreational opportunities, aesthetics, and cash flow.

The management statement for the Town of Amherst for these subject properties can be stated as: *An extended rotation management philosophy with timber as a major consideration, but with considerable associated nontimber values (wildlife, recreation, and aesthetics).*

Inventory Procedures

The sawtimber and cordwood inventory is based on a variable plot cruise technique. At each intersection of the cruise grid (295' square grid), a sample plot was established and trees were tallied by using a 10 factor wedge prism. A total of 381 plots were established during the inventory. The trees were tallied by species, 2" dbh class, product (sawtimber or cordwood) and merchantable height. The total volume for these properties is calculated at the 95% confidence interval with a

standard error of 14% for the sawtimber and 12% for the cordwood. In other words, if the same procedure is repeated 100 times, the estimated volumes will be within the standard errors 95 out of 100 times (see Appendix 2 & 3). The Dacquino Lot (1999) had 39 plots on a 275' square grid.

In addition, at each plot center, ocular estimates were made of the relative occurrence (none, low, medium, high) of the following structural wildlife features: cavity/den trees, snags/perches, mast, browse, shrub layer, midstory layer, groundcover, and dead/down trees.

Forested habitats were mapped while the inventory was being conducted and consist of areas where a specific grouping of trees with similar characteristics dominate an area (i.e. age, density, and species composition). Major land features such as perennial and intermittent streams, wet areas, stone walls, roads, trails, etc. were also located and mapped.

Forest Structure

The benefits available from a given woodlot depend primarily on its forest structure. This structure is defined by the proportion of forested habitats found within a woodlot. A forested habitat is described by its dominant tree species or forest type, age/size class, and area. This forest structure is dynamic, as the forested habitats age, they evolve through each class, changing the forest structure as well as the benefits derived from the forest (see Appendix 4 - **Elements of Forest Structure**).

For example, a forested habitat of antique red oak offers den trees for use by mammals and birds; hard mast (nuts) for squirrels, turkey, and deer; and provides excellent aesthetic opportunities, but little browse and cover. A hardwood forested habitat of seedlings and saplings provides excellent breeding cover for grouse and excellent browse for deer, but offers little aesthetic appeal.

This plan is not directed toward producing a certain output of timber or wildlife. Rather, the objective is one of producing the conditions most suitable for as many benefits as possible by providing diversity in the forest structure. The goal becomes that of allocating a certain percentage of acreage to each forested habitat that will allow a sustained yield of the desired forested habitats indefinitely into the future. All cutting is directed toward this goal.

The forest structure is controlled with timber removals according to specific silvicultural applications. Timber removals are controlled primarily by the harvest rate (acres per year) and the size of the openings made in the forest

Harvest Rate - Rotation periods are a convenient way to express harvest rates. The rotation period is the approximate maximum age that the forest will be allowed to grow and trees are scheduled for harvesting at this time (see Appendix 4 - **Elements of Forest Structure**). Extended rotations (100 years+) will allow development of a wide range of forested habitats and tree sizes.

The harvest rate becomes the number of acres of upland forested habitats in a parcel divided by the desired rotation age. For example, a 100 acre parcel with a 100 year rotation age would have a harvest rate of 1 acre per year. Conducting harvests annually on small woodlots is usually not economical so harvesting is usually scheduled once every 15 years. The harvest rate becomes 15 acres every 15 years.

Size of the Opening - The size of the opening created in the forest canopy of the above 100 acre example parcel can be one large opening of 15 acres or several small openings totaling 15 acres. The intensities of cutting appear as point on a continuum. For example, removing a selected large tree leaves a small opening in the forest canopy and clearcutting leaves a large one; in between the two would be cutting several large trees in a contiguous area, creating a larger opening than the removal of a single tree but smaller than a clearcut. The distribution and size of these managed openings or patches is problematic and can only be addressed on a case by case basis, with landowner objectives determining each action.

The goal for all of the parcels in this plan is to create openings in the forest canopy which equal the harvest rate using the most appropriate silvicultural systems. The area harvested is then scheduled to flow through all the possible forested habitats, such as a seedling to pole to sawtimber and then be harvested at the predetermined rotation age.

As the necessary silviculture is implemented, the forested habitats that are older than the rotation age will be liquidated and the remaining forested habitats will be brought into balance to ensure an even distribution into the future. Harvesting of some forested habitats may need to be restrained or accelerated in order to bring about this even distribution. In reality, the forest will never reach this distribution, but will oscillate near the desired forest structure. Further, it may take a number of planning periods before the forest approaches the desired structure.

In silviculture, there are 2 main groups of cutting systems; the first is regeneration cuttings and the second is loosely referred to as improvement cuttings and thinnings

Regeneration cuttings change and redistribute forested habitats. These types of cuttings can be made early in the age of a forested habitat or more frequently when the age of a forested habitat is approaching or exceeds the predetermined rotation age.

Improvement cuttings and thinnings enhance and accelerate the growth of a forested habitat into the next larger forested habitat. In some cases, an improvement cutting may create a younger forested habitat. Thinnings will be frequent (every 10-15 years) in the 60-100 year age classes and will be less frequent after age 100. Thinnings provide control of habitat density and structure to promote wildlife, aesthetics, and growth without any desire to regenerate, change, or redistribute the habitat.

The summary of the silvicultural systems to be used to accomplish the desired goals for this planning period can be found in Appendix 9-10 (**Silvicultural Systems**)

In-Place Enhancements of Forested Habitats

In-place decisions are needed to match a forested habitat with its intended use. These decisions are opportunistic, in that they depend upon the existing state of the forest and the demands for enhancing certain benefits. Such measures, because they are planned by the forest manager on-site, are called in-place enhancements. Site specific directives are difficult to list and locate on a map, but general statements that guide decisions are appropriate for this section of the plan. Some examples are locating thinnings, locating trails and roads, creating openings, and reserving den and/or snag trees. The results of any in-place decisions would become apparent in subsequent inventories. For example, if thinnings in pole habitats speed the transition to sawtimber habitats, this change would be apparent in the inventory.

The following are the recommended on-site enhancements which will occur as a result of altering the existing forest structure:

Aesthetics

It is assumed that much of the visual interest in forests is derived from the diversity of forest spaces that are encountered. For activities that require movement, the rate of change and abruptness in change is the key to visual interest. Prolonged exposure to the same forest conditions can lead to boredom; where the change in forest spaces within a woodlot is different (See Appendix 5 - **Horizontal Diversity**), visual interest should be high. Group selection cuttings, shelterwood cuttings, and improvement cuttings encourage horizontal diversity within a forested habitat and tend to favor a patchy distribution of trees.

Maintaining a greater number of forest layers within a timber stand (see Appendix 5 - **Vertical Diversity**) can generate aesthetic as well wildlife benefits. Thinning and selection cutting allow some sunlight to reach the ground and are the primary means of maintaining vertical diversity.

Thinning trees in overstocked forested habitats increases the visual penetration into the habitat and also increases the apparent size of the forest space. Park-like habitats can be encouraged by low thinnings and crown thinnings that do not significantly alter the upper forest canopy. It would follow that by reducing the numbers of small trees and increasing the proportion of large trees would yield greater scenic beauty at the forested habitat level.

A negative factor in the aesthetics of any woodlot under management is the slash generated during the harvesting operations. This is a relatively short-lived effect, especially where the slash is lopped close to the ground (2-3 feet). Under these conditions, hardwood slash should decompose completely in as little as 5-8 years and softwood slash in about 10 years.

Another negative factor is the disorderly appearance of recently regenerated stands, but as these areas age they can provide strong visual contrast to the older stands. This effect can be minimized to a point, by maintaining a 50-100 foot buffer strip between harvested stands and sensitive areas.

Wildlife

The six essential habitat elements needed which influence use by wildlife are:

1. Browse (buds, twigs, shoots, and leaves of woody plants)
2. Cover (high density of small woody stems - herbaceous vegetation - conifer crowns)
3. Mast Production (fruits and seeds of trees and woody shrubs)
4. Cavity/Den Sites/Snags/Perches (shelter, dens, and nesting sites)
5. Ground vegetation (grasses, woody seedlings <2', and forbs)
6. Dead and Down Trees (woody debris)

In general, seedling and sapling habitats produce abundant herbage, browse, and cover; while older habitats produce more cavity/den sites/snag/perches, mast, and dead and down trees. It is important to note that stands seldom produce high levels of all six habitat elements at the same time. However, a general rule when managing for wildlife is to maintain habitats that have higher levels of compositional (tree and shrub species) and structural (wildlife elements) diversity, as well as large cavity trees, snags, and dead and down logs and trees.

In order to enhance wildlife habitat, the following actions are recommended:

Browse and Cover
Create non-permanent openings (regenerating forested habitats). These areas while they are in the seedling and sapling stage (0-15 year age class) will provide more kinds of food and nest sites than an older stand of trees. Here, animals, such as deer, find the browse they need, especially in the spring and fall and birds, such as ruffed grouse, use these openings for nesting and brood rearing. Where diversity of wildlife is an important objective, it is recommended that patches of 2-5 acres be created for early successional habitat. In general, most properties evaluated do not require these large patches for this planning period. Heavy cutting on adjacent properties has provided plenty of early successional habitat. However, as these cuttings mature, a need may arise to provide this early successional habitat within the Town's property and will need to be addressed during the next planning period (2011). For this planning period, group selection cutting will be the primary method for creating and maintaining non-permanent openings and generally will not exceed 1.0 acre in size. However, the Conservation Commission decided that it would be willing to accept openings of up to 5 acres if early successional habitat was desired.

Seed Production (mast)
Hard mast refers to the nuts produced by trees and shrubs especially oak, and beech. Soft mast are the fleshy fruits such as blueberry and cherry. Acorns are probably the single most important type of food for wildlife in the Amherst forests. Acorns are a staple in the diet of deer, black bear, turkey, grey squirrel, and other wildlife species.

In general, forest-grown trees do not begin to produce seed until the trees are several decades old and individual tree species vary in their seed production potential. Also, trees of the same species usually will not produce seed annually. Because years with good seed production by all species is uncommon, mixtures of species should increase the probability of some seed production every year. For example, mixtures of red oak and beech should result in seed production nearly every year.

Give special attention to overstory hard mast trees (red oak & beech). By creating ample space around them with crown thinnings, the production of greater quantities of nuts is encouraged. In addition, oaks and beech can provide browse, forage, cavities, dens, perch sites, and feeding substrate. The most common soft mast species are apples and blueberries. Where desirable, it is recommended that desirable soft mast be provided full sunlight by removing and/or killing any overtopping vegetation.

Cavity/Den Trees/Snags/Perches
Cavity trees provide shelter, dens, nest sites, and forage for many wildlife species. Cavity trees are used by a succession of wildlife species. Use of cavity trees range from perches, nest and roost holes, dens, and foraging sites and continues until the tree falls and rots away. Large diameter (18"+ dbh) cavity trees provide breeding, roosting, or denning sites for larger-bodied cavity dwellers such as raccoon, fisher, and pileated woodpecker. Smaller bodied species such as nuthatches, chickadees, and other woodpeckers can use decayed upper portions of larger live stems in addition to smaller diameter (8"+ dbh) stems.

The most important features to look for in identifying potential cavity/den trees are broken off tops and large, broken off branches, the presence of conks or other fungal fruiting bodies, old wounds or scars, dead portions of the tree, and existing woodpecker cavities. Trees that are 8"+ dbh with some

of the above characteristics will likely develop into large hollow trees in time. Small and medium sawlog sized trees with external indicators of internal rot are likely to be excavated by woodpeckers and then provide habitat for secondary users in time. If not excavated, they will at least provide foraging, roosting, or perching sites for a variety of wildlife.

Short rotations (<80 years) produce few large diameter cavity trees; whereas, rotations of 100-120 years can be expected to produce some smaller diameter cavity trees and probably would support populations of most cavity dwelling species. Large cavity or den dwelling species can be supported by allowing for longer rotations or allowing some trees in the shorter rotation scenarios to grow beyond the rotation age to their biological limit.

Snags (standing dead) that do not have cavities are also important. They provide foraging sites and perches for insectivorous birds and raptors, singing perches for many songbirds, and nest sites if near or in wetlands. More wildlife species can be attracted to openings if snags can be left or created within openings or adjacent to wetlands. These snags may be used as nesting cavities for birds, dens for small mammals.

Where possible, leave all wildlife trees during any cutting. Where choices must be made, leave the largest, relatively sound trees, especially those with cavities already present.

Herbaceous vegetation, grasses, woody seedlings, and forbs
There is very little information for use in controlling herbaceous vegetation, so when herbaceous material occurs in situations where it is desirable, the recommendation is to avoid destroying it. Wildlife use of ground vegetation is highest in the early stage of the sapling habitat class. The older habitat classes are used less, usually due to the lack of an herbaceous layer on the ground.

Dead and Down Trees (woody debris)
Woody debris such as logs and slash is important for nesting and shelter, as a source of and place to store food, as lookout sites, for drumming, sunning, and preening sites, and as natural bridges across streams. Decaying logs also are important in nutrient cycling. Logs are considered more valuable for wildlife habitat than other woody debris because they persist longer. The larger the diameter of a log and the longer its length, the greater the value, but small logs are better than none.

Thinning entries will usually be infrequent during the latter part of a long rotation, so there will be some natural mortality providing coarse dead and down material. Additional trees, such as poorly formed, non commercial trees can be killed or treated as needed to provide additional snags and than left to fall and large unmerchantable portions of felled trees should be left in the woods.

Other Considerations
1. Create and maintain permanent grassy and herbaceous openings. The use of skid trails, haul roads, and log landings assures that sufficient permanent openings will be maintained incidental to the primary management effort. Since these areas will be used in successive harvesting operations, maintenance costs are minimal. These openings can be enhanced by seeding grasses and/or planting herbaceous plants. In addition, skid trails and/or hiking trails will be used by wildlife as walking or flight corridors.

2. Maintain dense conifer thermal cover (possible winter deer yarding sites).

3. Protect vernal pools. When harvesting, avoid making ruts deeper than 6" within 200' of a vernal pool. These can present physical barriers to amphibian migration. Tree tops and slash should be kept out of the pool depression and no equipment should be allowed to operate in the depression of a vernal pool. A 50' filter strip around a vernal pool depression should be maintained. No more than 50% of the basal area in a filter strip should be cut at any time during a 10 year period.

Recreation

Roads and trails are the most common form of recreational enhancements; making it easier to walk, ski, or ride through the woodlot. The woods road and trails that presently exist will continue to be useable, if maintained. In addition, the network of skid trails needed to conduct the silvicultural applications could provide further access into the woodlot. However, skid trails usually dead-end and may be too wide initially to provide the aesthetic features of a woodland path. Further study (connect with existing trails) and patience (time to grow back to more natural state) will be necessary to obtain circuitous routes, if desired. Buffer strips may be necessary to protect any visually sensitive areas.

The existing network of hiking trails can be used as skid trails when desirable. However, skid trails are usually wider than hiking trails. If width is a factor, the location and use of hiking trails for skid trails will need to be discussed, in detail, prior to the layout of the harvesting operations.

A negative factor in conducting recreational activities immediately after timber harvests is that newly regenerated areas soon grow into thickets which become very difficult to walk through and will stay in this stage of growth for up to 20 years. To minimize this effect, skid roads can be set back into the woods and located parallel to the edge of newly regenerated areas.

Other site-specific recreational opportunities (i.e. camping, picnic areas, scenic vistas, etc.) will be addressed prior to any on-site work and incorporated into the final operating plan.

Soils (see Appendices 11-16 **- Soil Map, Soil Summary by Parcel, Soil Descriptions*)***

Wetlands

All forested wetland habitats have been taken out of those areas regarded as timber producing and are not part of the acreage in determining the harvest rates and rotation age. No cutting is recommended in the forested wetlands and the focus will be to allow these areas to develop naturally and grow to biological maturity. These areas will provide riparian corridors for wildlife movement and an uncut buffer along waterways. In addition, non forested wetlands were located and are shown on the habitat base maps for each parcel.

Harvesting Operations

Conventional Harvesting/Biomass Harvesting

Conventional harvesting is the most commonly applied technique used when cutting timber and consists of manually felling, with a chain saw, all merchantable trees. The top or unutilized portion of the tree is severed, in place, in the woods and lopped. The merchantable portion of the tree (logs and/or cordwood) is than skidded to the landing using a cable skidder. All products removed from the site are in the form of roundwood and is transported on tri axle log trucks. A considerable amount of slash is left in the woods, but if treated properly (see page 4 - ***Aesthetics***) has a relatively short lived impact.

Biomass harvesting consists of mechanically cutting the standing timber and skidding the entire tree (with its top) to the landing with a grapple skidder. The tree is then cut into pieces according to their highest value product. The logs and cordwood are separated out and the unmerchantable tops and small trees are mechanically chipped and put into trailers for transport to electrical power plants to be used as fuel. One aesthetic benefit of using this type of harvesting is that very little slash is left in the woods. Another is, everything can be chipped - filling the void if no markets for pulpwood and/or cordwood are available.

It is recommended that conventional logging be used whenever possible.

Haul Roads

Three options exist for haul roads which will be necessary for the primary access to the landing area needed to harvest timber from any property. First, where access already exists to a landing, minimal road work other than slight grading and draining may be necessary to initiate a logging operation. Second, a short stretch of new road may be necessary to shield a landing from view of a main road. Such a road, which is usually less than 100' long would require minimal capital to improve access into a woodlot. The third, is where no easy access exists and the most logical location for a landing is in the interior of the property. Considerable expense (stumping, grading, and gravel) may be necessary to build a new road into the interior. This third option is usually employed when the skidding distances are so long as to render any logging uneconomical.

Landings

A landing is necessary to concentrate the forest products at one location to facilitate the loading of forest products on trucks. A good landing location consists of a relatively flat, well drained area, at the end of a haul road or adjacent to a town road. Landings can be hidden somewhat from the direct view of a traveled way by locating the landing a short distance from the town road with a haul road which is at an angle to the road. Landings are usually easily located and built at little expense. However, some may need capital investment (stumping, grading, and gravel) to bring an area up to workable condition. Conventional harvesting (cable skidder) landings are usually much smaller than biomass harvesting landings.

Skid Trails

Old skid trails may exist on the properties and these existing trails can be used again if they connect with, or can be connected to the new landing area. Existing hiking trails can be used if the management objectives will permit their use. If use of hiking trails is prohibited, careful skid road location will be critical in protecting the integrity of the hiking trail.

In most cases, these new and existing trails will be used again and again for successive cuttings. The main skid trails should be as straight as possible, as much of the damage caused by skidding occurs on sharp curves. Avoid unusually long, steep pitches and locate trails as far as possible from streams.

Erosion Control
Deep ground disturbances, such as rubber-tired skidder ruts can be minimized by restricting logging operations to dry or frozen ground.

Water bars and outsloping of roads and landings are the most common means of controlling erosion and are usually installed after logging is completed. During the placement of water bars, ruts in haul roads, skid trails, and landings should be filled if they offer any potential for gullying.

Erosion control measures can be most effective when done in conjunction with seeding of grasses. Areas that may require attention are: disturbed soils in protective strips, landings, and steep pitches on skid trails. In addition to helping control water flow, seeding can also provide food and cover for wildlife.

Water Quality
Water quality can be maintained by keeping the upland soil in place by adhering to Best Management Practices (BMP's).

All erosion control for timber harvesting will be according to *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire; April, 1996; State of New Hampshire.*

All trail construction will be according to *Best Management Practices for Erosion Control During Trail Maintenance and Construction; 1994; State of New Hampshire.*

Endangered Species
No rare or endangered flora or fauna were sighted during the on-site evaluation and no occurrences have been noted by the Hew Hampshire Natural Heritage Inventory. However, it is possible that some are present. In the future, if such species of flora or fauna are observed to occur on these properties, the New Hampshire Heritage Inventory, Dept. of Resource & Economic Development in Concord, NH should be notified.

Protection
Biotic/Abiotic
Biotic agents such as insects and disease can attack areas of the forest and alter its health as well as species composition. The most common insect affecting the Amherst forests is the gypsy moth which defoliate trees and is more of a nuisance than a potentially devastating insect pest. Usually, the gypsy moth will not kill hardwoods after one infestation. Softwoods, such as hemlock, will die if defoliated once. The effects of gypsy moth defoliation are evident throughout the parcels but should not be a concern. While the control of insect and diseases in a forest situation is usually cost prohibitive, the usual course of action is to try and salvage mortality as it occurs. The salvage operation may slow down a infestation, but will most likely not stop one.

Abiotic agents such as climate change, potential loss of soil and nutrients from fire and catastrophic weather events are hard to predict and manage for. The risk of losses from fire can be alleviated somewhat by providing good vehicular and trail access within a woodlot. The loss of soil and nutrients can be minimized somewhat by using BMP's when constructing trails and conducting harvesting operations.

Boundaries/Trespass
The boundaries of the 6 parcels are not well marked and very little of the boundaries are easily identified (blazed and painted.) Evidence does exist (old blazes, old wire fences, and stone walls) which is adequate to locate the property lines if adequate metes and bounds descriptions are available. Before undertaking any management activities near the boundaries, the Conservation Commission should have the boundaries lines clearly marked to avoid any form of trespass. The cost to locate, blaze, and paint boundaries is roughly $400-$500 per mile plus the cost of marking materials. Periodic maintenance (freshen blazes and paint) will be required every 10-15 years.

Revisions
This plan has been prepared to serve as a working document for the period of 1999-2014. By no means is it meant to be "written in stone". One management direction has been presented and should be reviewed, revised, and updated at the end of this planning period, or before so if so warranted.

The particular relationships assumed between the manipulation of habitat classes and the resultant benefits must be regarded as tentative and subject to change if landowner objectives change. As this plan is applied, the assumed relationships should be tested by measuring the production of benefits (landowner satisfaction) and then adjusted to fit a particular area if deemed necessary.

PART 2 - Maps, Recommendations, and Data

Individual Parcel Plan Format

The resource components which will be addressed for each of the 4 parcels inventoried, as requested in the Conservation Commission's original RFQ follow:

1. Timber
    - Near commercial harvest areas
    - Improvement cut areas
    - Biomass areas
    - Field and Pasture areas
2. Recreational Resources
3. Forest Protection
4. Wildlife Habitat
5. Aesthetic Resources
6. Cultural Features
7. Water Quality (see page 9)
8. Endangered Species (see page 9)
9. Soils (see Appendices 11-17)
10. Wetlands (see page 8)

Each parcel's plan will consist of the following:

1. Habitat Base Map - Map showing forested habitats and major land features. The Key and Legend to these maps are found in Appendix 6 & 7 (**Map Key & Map Legend**)
2. Total Sawtimber and Cordwood Inventory
3. Narrative Summarizing General Conditions and Goals per RFQ.
4. Graph of Forest Structure - Existing, After Harvest, After Second Harvest, and Long Term Goal.
5. Tabular Summary of Forest Structure
6. Silvicultural Recommendations and Anticipated Habitat Classes - Tabular Form
    - Rotation Age; Harvest Rate
    - Existing Habitat Classes
    - Silvicultural Recommendations
    - Habitat Classes after Silvicultural Applications
    - Habitat Classes after 15 years growth
    - Silvicultural Recommendations
    - Habitat Classes after Silvicultural Applications
7. Silvicultural Recommendations by Habitat - Narrative Form
8. Individual Forested Habitat Summaries (see Appendix 6)
    - Per Acre Summary
    - Species Composition
    - Structural Wildlife Features (see Appendix 8)

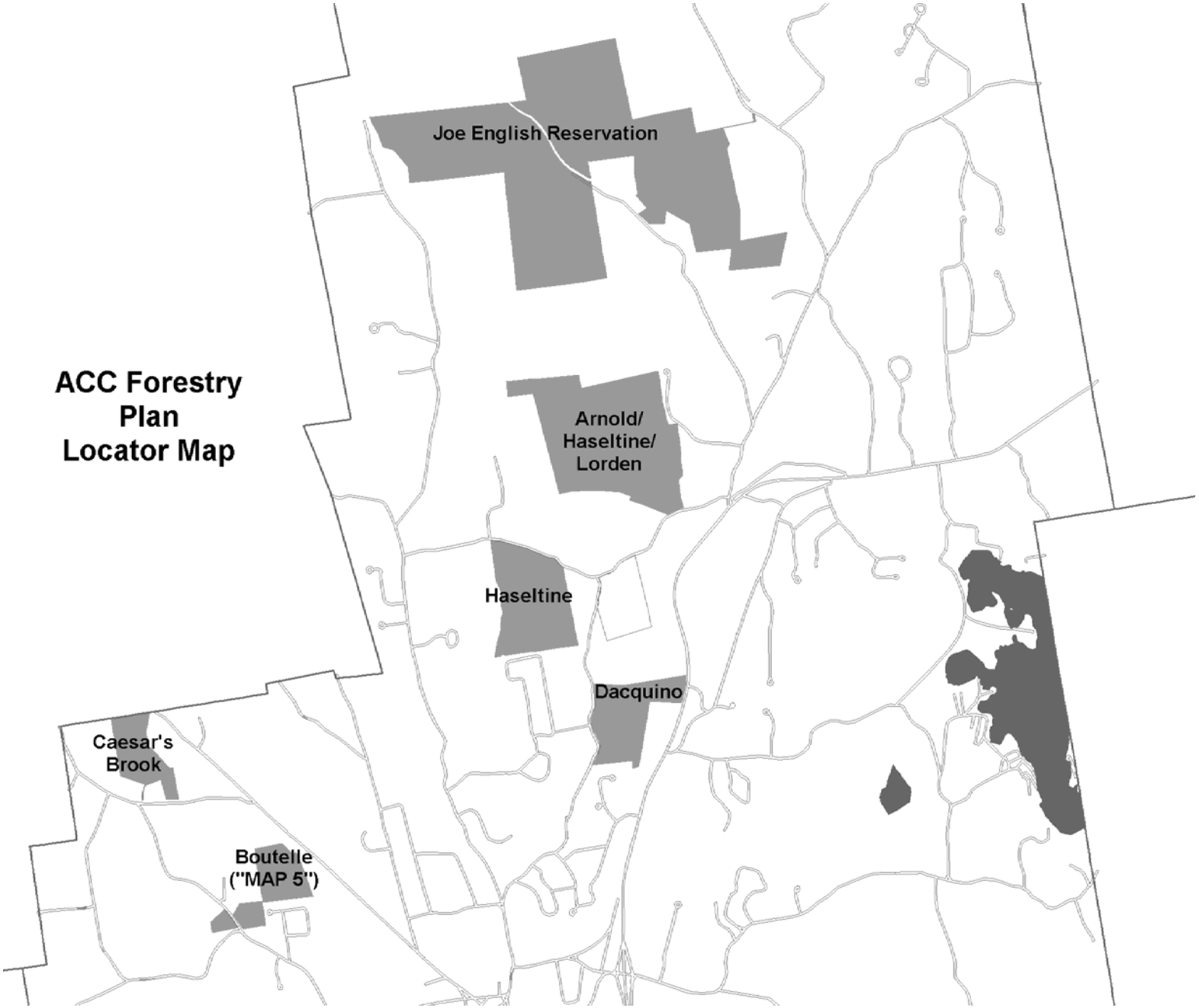
Harvesting Schedule (Revised 1999)

The following table summarizes the individual parcels, their priority for treatment, anticipated gross revenues, costs, and net revenues for this planning period (1996-2011):

Priority # - Parcel	*Anticipated Start*	*Type of Logging Operation*	*Anticipated Volumes Removed*		*Anticipated Gross Revenues*	*Anticipated Costs*			
			MBF	*Cords*		*Timber Sale Admin.*	*Timber Marking*	*Boundary Marking*	*Road Construc*
#1 - Ceasars Brook	**June 1997**	**Completed 1998**	**120**	**65**	**13,129**	**(1,575)**	**(585)**		
#2 - Haseltine	**June 1998**	**Completed 1999**	**149**	**316**	**21,934**	**(2,632)**	**(1,390)**		**(150**
#3 - Joe English Unit 1	**Nov. 1999**	*Conventional*	*80*	*315*	*9,000*	*(1,080)*	*(1,185)*	*(700)*	**(1,50**
#4 - AHL Austin Road	*June 2001*	*Conventional/ Biomass*	*125*	*885*	*15,000*	*(1,800)*	*(3,030)*	*(350)*	*(1,70*
#5 - Joe English Unit 3	*Dec. 2003*	*Conventional*	*60*	*250*	*7,000*	*(840)*	*(930)*	*(700)*	*(2,20*
#6 - AHL Nathanial Road	*June 2005*	*Conventional*	*75*	*400*	*5,000*	*(600)*	*(1,425)*	*(350)*	
#7 - Joe English Unit 2	*Dec. 2007*	*Conventional*	*25*	*150*	*5,000*	*(600)*	*(525)*	*(700)*	
#8 - Map 5	*June 2009*	*Conventional*	*200*	*150*	*20,000*	*(2,400)*	*(1,050)*	*(525)*	*(500*
#9 - Dacquino	*June 2011*	*Conventional*	*155*	*95*	*21,000*	*(2,520)*	*(875)*	*(600)*	
TOTAL			*989*	*2,626*	*117,047*	*(14,047)*	*(10,995)*	*(3,925)*	*(6,05*

This harvesting schedule has been presented to serve as a guide for action. The Conservation Commission has the flexibility to change the priorities as needed due to changes in markets, unusual weather events (wet summer/warm winter), and timing of biological events such as seed years or insect infestations. **Lots that are in bold type are lots that have been completed as of August 1999.** Numbers are the actual amounts realized.

ACC Forestry Plan Locator Map



Total Sawtimber Inventory and Valuation (Revised 1999)
Amherst Conservation Commission
August, 1996

	Joe English	AHL	CBR (1998)	Haseltine (1999)	Map 5	Dacquino (1999)	Total Volume	Value/ MBF	Total Value
White Pine	905,817	246,354	75,919	513,434	526,097	403,645	2,671,266	$120	$320,552
Red Pine	1,827	0	1,344	0	0	0	3,171	50	159
Pitch Pine	0	3,605	0	5,677	0	0	9,282	10	93
Hemlock	326,963	181,575	4,660	73,472	12,099	230,844	829,613	45	37,333
Sugar Maple	13,333	0	0	0	0	1,358	14,691	300	4,407
Red Maple	27,599	14,496	0	8,978	19,384	9,931	80,388	40	3,216
White Ash	16,078	8,825	0	6,696	542	0	32,141	150	4,821
Aspen	9,610	0	0	0	4,354	0	13,964	10	140
Black Cherry	0	2,035	0	0	0	0	2,035	200	407
White Birch	19,425	13,250	0	3,805	0	2,131	38,611	60	2,317
Yellow Birch	4,595	3,038	0	2,306	0	0	9,939	80	795
Black Birch	54,566	20,424	0	4,256	1,860	2,366	83,472	80	6,678
Beech	22,650	41,212	0	3,209	0	0	67,071	40	2,683
Basswood	982	0	0	1,322	0	0	2,304	40	92
Red Oak	524,311	193,223	6,110	57,520	43,825	75,427	900,416	400	360,166
White Oak	19,794	14,175	0	21,067	2,879	21,481	79,396	300	23,819
Black Oak	33,871	22,807	2,984	9,776	4,799	17,332	91,569	300	27,471
Black Gum	1,233	0	0	0	0	0	1,233	10	12
Hickory	3,832	1,826	0	0	0	0	5,658	30	170
Elm	0	0	0	834	0	0	834	10	8
TOTAL	**1,986,486**	**766,845**	**91,017**	**712,352**	**615,839**	**764,515**	**4,937,054**		**795,339**
Percent Error	±10	±11	±49	±17	±23	±14			

Total Volume = Board Feet - International ¼ Rule
MBF = thousand board feet

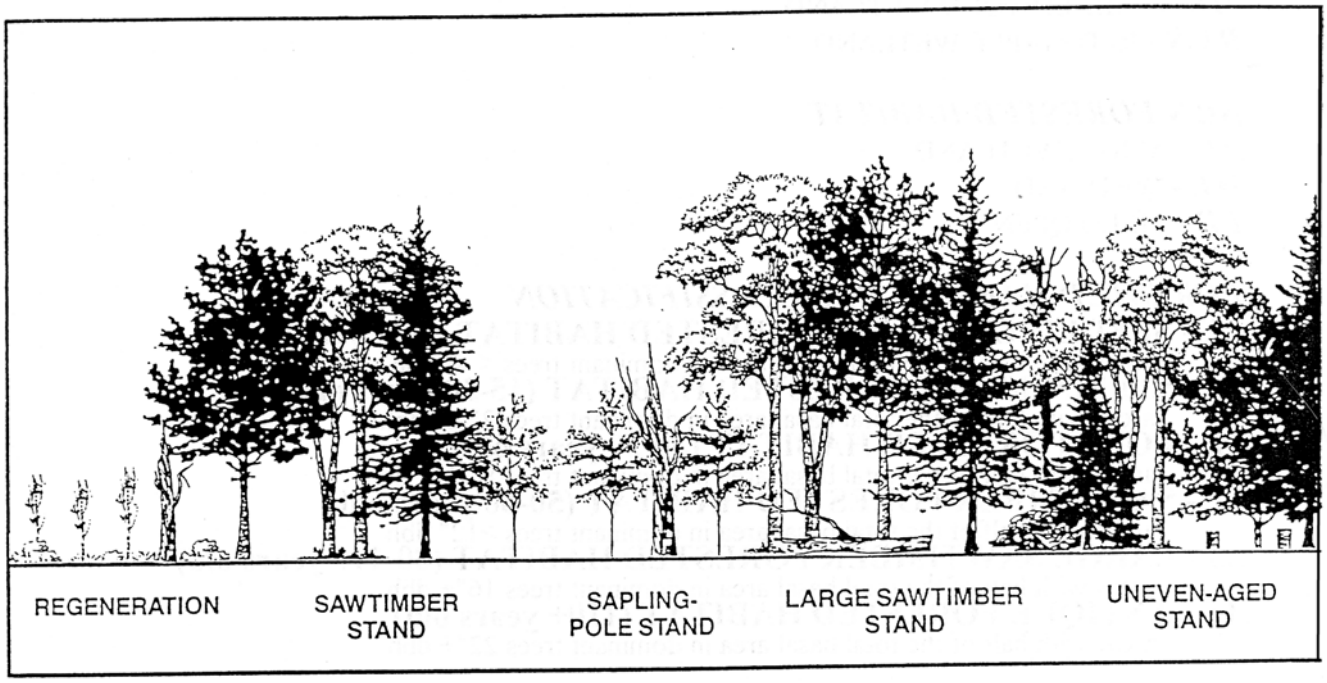
Total Cordwood Inventory and Valuation (Revised 1999)

Amherst Conservation Commission
August, 1996

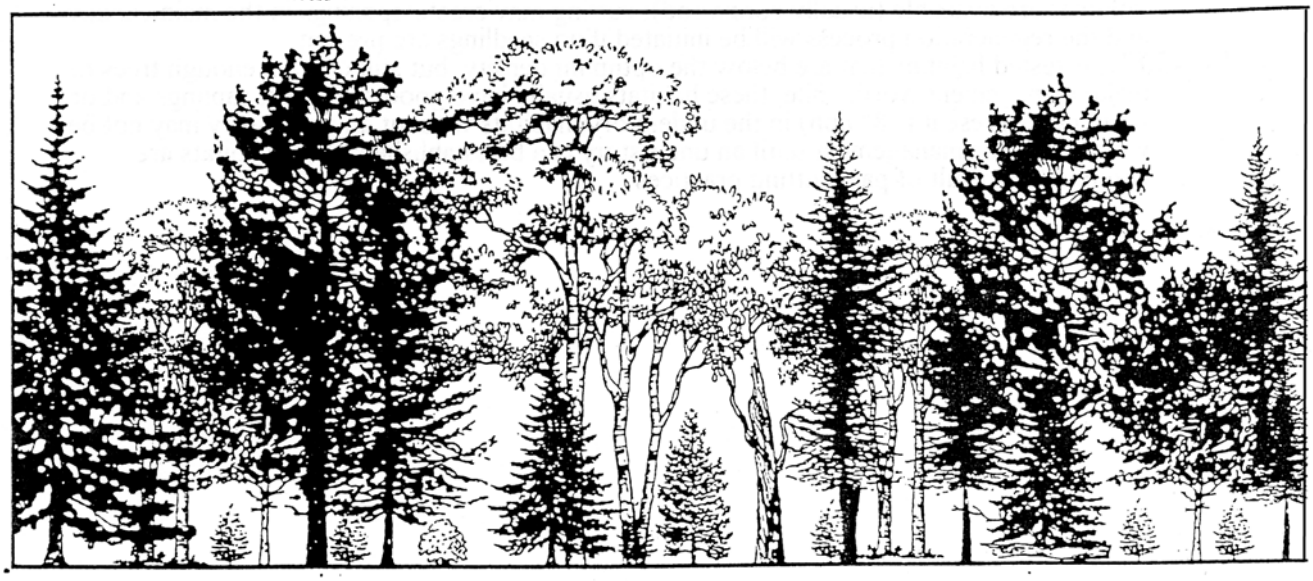
	Joe English	AHL	CBR (1998)	Haseltine (1999)	Map 5	Dacquino (1999)	Total Volume	Value/cord	Total Value
White Pine	915	797	328	297	262	272	2,871	$2	$5,742
Hemlock	965	853	39	224	126	46	2,253	0	0
Sugar Maple	80	0	4	4	4	0	92		
Red Maple	1,216	631	65	372	293	64	2,641		
White Ash	76	100	6	46	3	4	235		
Black Ash	0	0	0	0	0	3	3		
Aspen	45	5	12	5	7	0	74		
Black Cherry	0	18	0	0	3	0	21		
White Birch	361	125	0	57	25	26	594		
Yellow Birch	71	17	11	68	6	0	173		
Black Birch	850	297	30	143	0	7	1,327		
Grey Birch	27	8	2	0	0	0	37		
Beech	434	307	6	43	0	10	800		
Basswood	6	0	4	11	2	0	23		
Red Oak	2,230	446	18	148	44	95	2,981		
White Oak	207	94	0	35	7	66	409		
Black Oak	280	78	10	83	0	15	466		
Black Gum	24	27	0	0	0	0	51		
Hickory	26	111	0	4	0	0	141		
Hophornbeam	10	0	0	0	0	0	10		
Chestnut	0	0	0	0	0	1	1		
All Hardwoods	5,943	2,264	168	1,019	394	491	10,279		
All Hardwoods after Cutting (1999)	**5,943**	**2,264**	**156**	**891**	**394**	**491**	**10,139**	6	60,834
TOTAL All Species	**7,823**	**3,914**	**523**	**1,412**	**782**	**809**	**15,263**		**$66,576**
Percent Error	±5	±15	±124	±11	±24	±20			

Total Volume = cords

HORIZONTAL DIVERSITY



VERTICAL DIVERSITY



MAP KEY

FORESTED HABITAT TYPE

HW **-** HARDWOOD (75%+ hardwoods)
MW **-** MIXEDWOOD (hardwoods and 25-75% softwoods)
RO **-** RED OAK (50%+ red oak)
WP **-** WHITE PINE (80%+ white pine)
HK **-** HEMLOCK (80%+ hemlock)
MWS **-** MIXEDWOOD WETLAND
RMS **-** RED MAPLE WETLAND

NON FORESTED HABITAT

AL **-** ALDER WETLAND
WL **-** WETLAND
FD **-** FIELD/OPEN

FORESTED HABITAT SIZE CLASSIFICATION

***SE*- SEEDLING/SAPLING FORESTED HABITAT (0-15 years old)**
areas with half of the total basal area in dominant trees < 4" dbh
SP **- SAPLING/POLE FORESTED HABITAT (15-30 years old)**
areas with half of the total basal area in dominant trees 2"-6" dbh
PL **- POLE FORESTED HABITAT (30-50 years old)**
areas with half of the total basal area in dominant trees 8"-10" dbh
ST **- SAWTIMBER FORESTED HABITAT (50-80 years old)**
areas with half of the total basal area in dominant trees >12" dbh
LS **- LARGE SAWTIMBER FORESTED HABITAT (80-110 years old)**
areas with half of the total basal area in dominant trees 16"+ dbh
AT **- ANTIQUE FORESTED HABITAT (110+ years old)**
areas with half of the total basal area in dominant trees 22"+ dbh

FORESTED HABITAT GROWING DENSITY

4 - 95%+; forested habitats at or near the maximum density for best growth; these habitats have the highest priority for treatment
3 - 75-90%; forested habitats above the optimum density for best growth; these habitats can be cut if commercial volumes are available; urgency of cutting is less than the #4 habitats
2 - 50-70%; forested habitats at the optimum density range for growth of high quality sawtimber; these habitats usually do not need cutting; however, these habitats can be cut if commercial volumes are available (usually cordwood); cutting may create openings in the main canopy and the regeneration process will be initiated if no seedlings are present
1 - <50%; forested habitats that are below the optimum density, but still contain enough trees to make management worthwhile; these habitats usually have good seedlings, saplings and/or small poles present (<8" dbh) in the understory; habitats without an understory may not be worthwhile for management until an understory can be established; these habitats are commonly a result of past cutting practices

LEGEND

- Specimen Tree
- Well
- Vernal Pool
- Specimen Rock/Glacial Erratic
- Old Quarry
- Old Dump
- Old Skid Trail/Woods Road
- Footpath
- Stone Wall
- Intermittent Stream
- Perennial Stream
- Pile of Stones
- Stone Bound
- Forested Habitat Boundary
- Wet Area
- Forested/Non Forested Wetland
- Inclusion (**hk** - hemlock; **gu** - black gum; **wp** - white pine; **rms** - red maple swamp)
- Ledge/Rock Outcrop (scalloped edge denotes downhill direction)
- Cellar Hole
- Old Foundation
- Scenic Vista
- Foot Bridge
- P Parking Area

WILDLIFE STRUCTURAL FEATURES

1 - none: none of the subject element was encountered
2 - low: little of the subject element is encountered; occurrence is minimal and provides poor habitat structure
3 - medium: moderate amounts of the subject element is encountered; occurrence is patchy, not continuous, and provides average to above average habitat structure
4 - high: large amounts of the subject element is encountered; occurrence is continuous and provides excellent habitat structure

Cavity/Den Trees
1 - trees are not large enough to provide this feature
2 - trees are large enough to provide this feature; however, trees are vigorous and show no signs of broken limbs, holes, or rot; given enough time will develop cavities
3 - good chance of cavities in the near future; broken limbs/tops and butt scars are visible and need time to develop
4 - large holes, broken tops and limbs observed

Snags/Perches (standing dead)
overstory - occurring in the overstory above or in the surrounding forest canopy
understory - shrubs, fenceposts, and dead tree stubs not in the forest canopy

Mast, Browse, Shrub Layer, Midstory Layer (listed in descending order)

AP - Apple	HK- Hemlock	SM - Striped Maple
BE - Beech	HM - Hard Maple	SU - Sumac
BM - Bramble	LI - Lichens	VA - Vaccinium
BO - Black Oak	LR - Laurel	VB - Viburnum
BR - Birches	OK - Oaks	WA - White Ash
CH - Cherry	RM - Red Maple	WH - Witch Hazel
CT - Chestnut	RO - Red Oak	WO - White Oak
HI - Hickory	SB - Black Birch	WP - White Pine

Groundcover
FN - Ferns
MS - Mosses
PB - Partridgeberry
SA - Sassafras

Dead and Down
SE - Stem Exclusion (natural process where trees die and are excluded through competition)
BD - Blowdown (sign of natural thinning from mortality, tree litter, and broken off limbs)
SL - Slash (debris left from a recent logging operation)
OL - Old Log (usually old, decaying portions of trees either from blowdown or slash from an old logging operation)

SILVICULTURAL SYSTEMS

Regeneration Cuttings

The time ultimately comes in the life of every forested habitat when it must be reproduced. The continuity of forest habitat production is simply not possible without periodic replacement of forested habitats. Successful regeneration of any sort can occur only if a sufficient amount of growing space becomes available for the establishment and subsequent growth of the new trees. It is easy to ensure that the appropriate vacancies are created in the main canopy by cutting or other means. Such vacancies do not have to be created all at once, but can be enlarged in a series of operations. The ideal objective is to create vacancies that are not merely favorable to the desired species, but are more favorable to the desired species than to any others.

Regeneration cuttings change and redistribute habitats. These types of cuttings can be made early in the age of a forested habitat or more commonly when the age of a forested habitat is approaching or exceeds the predetermined rotation age.

1. Shelterwood Cutting (**SW**)

These cuttings are directed at the gradual removal of a mature overstory. Securing the desired reproduction before the overstory is removed is the cornerstone of this regeneration method. The overstory is not completely removed until adequate regeneration of the desired species is established. Shelterwood cuttings involve a sequence of treatments and requires conscientious attention to the task of regeneration over a long period of time - possibly up to 20 years.

A first cutting eliminates approximately 30-50% of the overstory. Less vigorous trees and trees of undesirable species are taken; adding light to the forest floor, stimulating seed production from the residual trees, eliminating undesirable seed sources, and creating an environment for seed germination. Once the desired species has started to become established in the understory, the remaining trees are then removed in two or more stages over a period of 10-20 years, with the best quality trees retained at each stage. The timing of subsequent removals is determined by the amount of new reproduction realized by the previous cutting. A 2-cut shelterwood means that the overstory will be completely removed in two cuttings. A 3-cut shelterwood, in three cuttings. This type of cutting is commonly used to regenerate the shade intolerant tree species such as Red Oak and White Pine, but can be applied to most species. It is not planned to use this system during the present planning period. This system will become more important as management progresses into future planning periods.

A cutting which is similar to a shelterwood cutting is called a deferment or two-age cutting. The residual trees left in a shelterwood cutting are not cut and are left to grow with the regenerated area. This type of cutting leads to a 2 age habitat and may be employed where the total removal of the canopy is not acceptable. This type of cutting is not employed during this planning period but may become important during subsequent planning periods.

2. Selection Cutting (**SL**)

In theory, the selection method works by removing the oldest trees in a forested habitat as a way to encourage its replacement by new regeneration. Simultaneously, intermediate treatments are applied to the younger trees. The point of the selection method is to maintain vigorous species of at least three age classes (including those in the understory) within the same forested habitat, thereby forming an all-aged or uneven-aged forested habitat in which a few high quality, mature trees and some younger trees are available for harvest at repeated intervals (every 10-20 years). The overstory is never completely removed using this method, but is continually replaced by thrifty trees adjacent to the cut trees or by thrifty trees in the understory. The selection method is best applied in forested habitats of shade tolerant species that have the capacity to respond to release after growing in the shade for extended periods. Such species are sugar maple, beech, and hemlock. This method will be employed in those forested habitats that have a strong hemlock component and, with management, will eventually dominate a forested habitat. The shade intolerant species, such as red oak, white birch, and white pine are unlikely to respond to release and do not regenerate well in the shade and use of the selection method with these species may be disastrous.

3. Group Selection Cutting

When the objective is to promote a mosaic of forested habitats and secure the regeneration of intolerant species, a variation of the selection method can be used and is called a group selection cutting (**GS**). This type of cutting closely resembles a clear-cut and is different only in its size. Patches are established by removal of a group of trees in a small area (up to 2-5 acres). These holes or gaps are surrounded by desirable, adjacent seed sources. The holes or gaps in the forest canopy are gradually enlarged in subsequent cuttings to provide additional reproduction areas. This type of cutting will gradually create a mosaic of small, even aged

forested habitats covering the full range of habitat classes desired. This type of cutting is commonly used when desired regeneration already exists in the understory; in this case, the management decision must be made whether to continue growing the overstory or to start a new forested habitat.

Intermediate Cuttings

After a new forested habitat is established, a long period ensues during which the trees grow and pass through various stages until they are mature and ready to be harvested and replaced by a succeeding generation. The various cuttings made during the development from the seedling stage to maturity without any effort directed at regeneration are termed intermediate cuttings. These cuttings represent the primary means by which the productivity of stands can be increased beyond the best that might be achieved under purely natural conditions. Choosing the kind and number of trees to remain for future growth is emphasized much more than the selection of trees to cut. The primary objective is to improve a forested habitat.

1. Improvement Cutting (**IC**)

Improvement cuttings are made in forested habitats past the sapling stage for the purpose of improving species composition and quality by removing undesirable species and trees with poor form or condition from the main canopy. The unsatisfactory conditions corrected by improvement cuttings are generally those that might have been avoided if other types of cuttings had been made earlier in the life of a stand. The fundamental characteristic of improvement cuttings is the elimination of poor trees in favor of the good. The stems removed include: inferior species; crooked, leaning, extremely limby, or otherwise badly formed trees; overmature individuals; and trees seriously injured by biotic or other agencies. Generally, dominant trees are removed to favor better trees in the understory. The objective in operations of this kind are to find, encourage, and release desirable trees rather than to merely look for undesirable trees to eliminate. The trees designated for elimination may be harvested in conventional fashion or merely killed and left standing. This type of cutting can be applied in stands of almost any combination of species and size.

2. Thinning

Thinning is often used loosely to describe an improvement cutting. The purpose of an improvement cutting is to regulate species composition and to improve overall tree quality and vigor by removing undesirable trees. A thinning differs from an improvement cutting in that the main considerations in tree selection are not quality and species composition, but tree spacing for optimum growth. This distinction between thinning and improvement cutting usually becomes blurred in practice, as both cuttings are usually applied simultaneously.

Thinnings enhance and accelerate the growth of a habitat into the next larger habitat. Thinnings will be frequent (every 10-15 years) in the 60-100 year age classes and will be less frequent after age 100. Thinnings provide control of habitat density and structure to promote wildlife, aesthetics, and growth without any desire to regenerate, change, or redistribute the habitat.

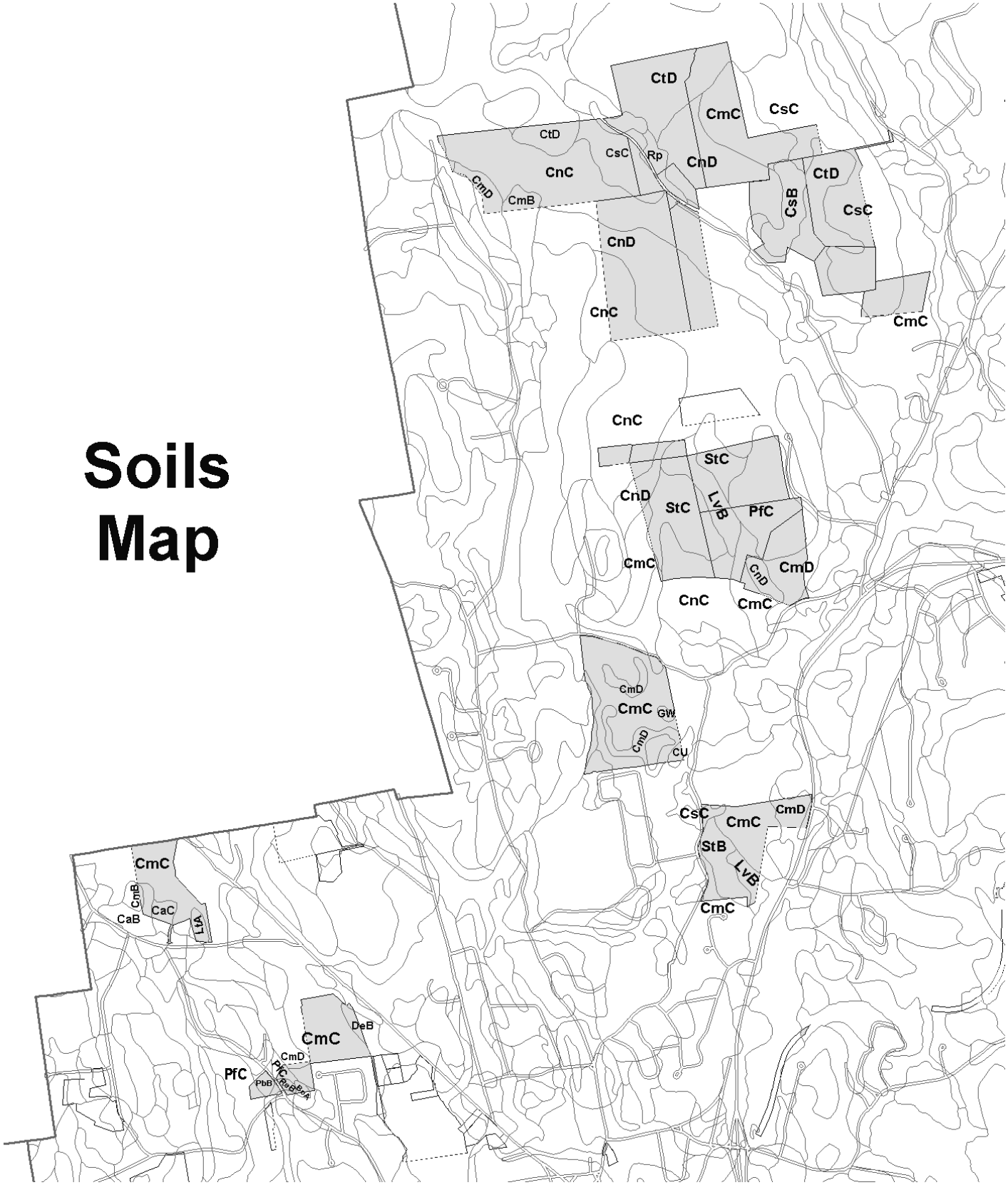
a. Low Thinning (**LT**)

In low thinnings, trees are removed from the lower crown classes. In the lightest of low thinnings, only the overtopped trees would be removed. In low thinning, the natural extermination of the lower crown classes (overtopped trees) is simulated and accelerated. So long as no trees in the main canopy are removed, low thinnings result in little more than the salvage of trees which will eventually die; competition among the remaining trees is alleviated only to the extent that root competition is reduced. The growth of the remaining trees is stimulated only if openings are made in the main canopy. Low thinnings encourage park like forested habitats with little sunlight reaching the ground.

b. Crown Thinning (**CT**)

In crown thinning, trees are removed from the upper crown classes in order to open up the canopy and favor the development of the most promising trees in the main canopy. Theoretically, the overtopped trees that do not interfere with the crop trees are not cut in crown thinnings. In practice, there is little reason to leave such trees if they can be harvested profitably and their continued presence will add value neither to themselves nor to the stand as a whole. Crown thinning normally embodies the best basic principles in the development of good stands for sawtimber, veneer logs, and mast trees. Crown thinnings encourage open, park like forested habitats with dappled sunlight reaching the ground.

Soils Map


CtD
CmC
CsC
CtD
CsC
Rp
CnD
CnC
CmD
CmB
CtD
CsB
CsC
CnD
CnC
CmC
CnC
StC
CnD
StC
LvB
PfC
CmC
CmD
CmD
CnC
CmC
CmD
CmC
GW
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Cu
CsC
CmC
CmD
StB
LvB
CmC
CmC
CmB
CaC
CaB
LtA
CmC
DeB
CmD
PfC
PfC
PbB
ReB
BrA

SOIL SUMMARY BY PARCEL

Ceasers Brook
CaB - Canton fine sandy loam, 0-8% slopes
CaC - Canton fine sandy loam, 8-15% slopes
CmC - Canton stony fine sandy loam , 8-15% slopes
CpC - Chatfield-Hollis-Canton complex, 8-15% slopes
LtA - Leicester-Walpole complex, 0-3% slopes

Haseltine
CmC - Canton stony fine sandy loam , 8-15% slopes
CmD - Canton stony fine sandy loam , 15-25% slopes
CtD - Chatfield-Hollis-Rock outcrop complex, 15-35% slopes
Cu - Chocorua mucky peat
Gw - Greenwood mucky peat
PfC - Paxton stony fine sandy loam, 8-15%slopes
PfD - Paxton stony fine sandy loam, 15-25%slopes

Arnold/Haseltine/Lorden (AHL)
CmC - Canton stony fine sandy loam , 8-15% slopes
CmD - Canton stony fine sandy loam , 15-25% slopes
CnC - Canton very stony fine sandy loam, 8-15% slopes
CnD - Canton very stony fine sandy loam, 15-35% slopes
LvB - Leicester-Walpole complex stony, 3-8% slopes
PfC - Paxton stony fine sandy loam, 8-15%slopes
StC - Scituate stony fine sandy loam, 8-15% slopes

Joe English
CmB - Canton stony fine sandy loam , 3-8% slopes
CmC - Canton stony fine sandy loam , 8-15% slopes
CmD - Canton stony fine sandy loam , 15-25% slopes
CnC - Canton very stony fine sandy loam, 8-15% slopes
CnD - Canton very stony fine sandy loam, 15-35% slopes
CsB - Chatfield-Hollis complex, 3-8% slopes
CsC - Chatfield-Hollis complex, 8-15% slopes
CtD - Chatfield-Hollis-Rock outcrop complex, 15-35% slopes
PbC - Paxton fine sandy loam, 8-15% slopes
PfC - Paxton stony fine sandy loam, 8-15%slopes
PfD - Paxton stony fine sandy loam, 15-25%slopes
Rp - Rippowam fine sandy loam

Map 5
CaC - Canton fine sandy loam, 8-15% slopes
CmC - Canton stony fine sandy loam, 8-15% slopes
CmD - Canton stony fine sandy loam, 15-25% slopes
DbB - Deerfield loamy fine sand, 3-8% slopes
HsB - Hinckley loamy sand, 3-8% slopes
LvA - Leiscester-Walpole complex, 0-3% slopes, stony
PbC - Paxton fine sandy loam, 8-15% slopes
PfC - Paxton stony fine sandy loam, 8-15% slopes
Sn - Saugatuck loamy sand

Dacquino
BpA - Borohimists, ponded
CmC - Canton stony fine sandy loam, 8-15% slopes
CmD - Canton stony fine sandy loam, 15-25% slopes
CsC - Chatfield-Hollis complex, 8-15% slopes
CtD - Chatfield-Hollis-Rock outcrop complex, 15-35% slopes
HsA - Hinckley loamy sand, 0-3% slopes
LvB - Leister-Walpole complex, 3-8% slopes, stony
StB - Scituate stony fine sandy loam, 3-8% slopes
SOIL DESCRIPTIONS

(taken from *Soil Survey of Hillsborough County New Hampshire - Eastern* Part, USDA Soil Conservation Service, 1979)

BpA - Borohemists, ponded
This soil is nearly level and poorly drained. The soil consists of moderately decayed organic matter 16 inches to more than 50 inches thick. The permeability of this soil is moderate and available water capacity is high. The depth to bedrock is more than 5 feet. A water table is between the surface and a depth of 6 inches throughout the year and some areas have water poned on the surface. Most of this soil is covered by grasses, reeds, cattails, and sedges, and a few red maple trees.

CaB - Canton fine sandy loam, 0-8%. This soil is nearly level to gently sloping and is well drained. It is on hilltops and at the base of slopes of hilly uplands. The surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil is yellowish brown fine sandy loam 12 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. Depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low.

CaC - Canton fine sandy loam, 8-15%. This soil is sloping and well drained. It is on side slopes of hilly uplands. The surface layer is dark brown fine sandy loam about 7 inches thick. The subsoil is yellowish brown fine sandy loam 12 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low. Constructing logging roads on the contour helps to control erosion.

CmB - Canton stony fine sandy loam, 3-8% slopes. This soil is gently sloping and well drained. It is on hilltops and side slopes of wooded uplands. Stones that are 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low.

CmC - Canton stony fine sandy loam, 8-15% slopes. This soil is sloping and well drained. It is on side slopes and hills of uplands. Stones that are 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low.

CmD - Canton stony fine sandy loam, 15-25% slopes. This soil is moderately steep and well drained. It is on hillsides of uplands. Stones that are 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low. Erosion is a hazard if logging equipment is used during wet periods, but this hazard can be controlled by constructing logging roads on the contour.

CnC - Canton very stony fine sandy loam, 8-15% slopes. This soil is sloping and well drained. It is on hills and low mountains. Stones and boulders less than 5 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low. The stones and boulders limit logging operations. Erosion is a hazard if logging equipment is used during wet periods, but this hazard can be controlled by constructing logging roads on the contour.

CnD - Canton very stony fine sandy loam, 15-35% slopes. This soil is moderately steep and is well drained. It is on hills and low mountains. Stones and boulders less than 5 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy

loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and rapid in the substratum. The depth to bedrock is more than 5 feet. This soil is poorly suited to most tree species and productivity is low. The stones and boulders limit logging operations. Erosion is a hazard if logging equipment is used during wet periods, but this hazard can be controlled by constructing logging roads on the contour.

CpC - Chatfield-Hollis-Canton complex, 8-15% slopes. This complex consists of sloping soils in such an intricate pattern that it is not practical to map them separately. This complex is generally on the tops and sides of hills and ridges. The surface layer of the Chatfield soil is very dark grayish brown fine sandy loam 4 inches thick. The subsoil is yellowish brown sandy loam 20 inches thick and slightly weathered granite bedrock is at a depth of 24 inches. The surface layer of the Hollis soil is dark brown fine sandy loam 4 inches thick and the subsoil is yellowish brown fine sandy loam 15 inches thick. Unweathered granite bedrock is at a depth of 19 inches. The surface layer of the Canton soils is dark brown fine sandy loam about 4 inches thick. The subsoil is yellowish brown fine sandy loam 15 inches thick. The substratum is pale brown and light brownish gray gravelly loamy sand to a depth of 60 inches or more. The Chatfield soils have moderate or moderately rapid permeability and depth to bedrock is 20 to 40 inches. The Hollis soils have moderate or moderately rapid permeability and depth to bedrock is 10 to 20 inches. The Canton soils have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum and the depth to bedrock is generally more than 5 feet. This complex is suitable for a variety of trees and productivity is moderate. There are few limitations for most types of forest management or logging operations. Constructing logging roads on the contour helps control erosion.

CsB - Chatfield-Hollis complex, 3-8% slopes. This complex consists of gently sloping soils in such an intricate pattern that it is not practical to map them separately. This complex is generally on the tops of hills and ridges. The surface layer of the Chatfield soil is very dark grayish brown fine sandy loam 4 inches thick. The subsoil is yellowish brown sandy loam 20 inches thick and slightly weathered granite bedrock is at a depth of 24 inches. The surface layer of the Hollis soil is dark brown fine sandy loam 4 inches thick and the subsoil is yellowish brown fine sandy loam 15 inches thick. Unweathered granite bedrock is at a depth of 19 inches. The Chatfield soils have moderate or moderately rapid permeability and depth to bedrock is 20 to 40 inches. The Hollis soils have moderate or moderately rapid permeability and depth to bedrock is 10 to 20 inches. This complex is suitable for a variety of trees and productivity is moderate. A high rate of seedling mortality and a hazard of uprooting during windy periods are the main woodland management concerns.

CsC - Chatfield-Hollis complex, 8-15% slopes. This complex consists of sloping soils in such an intricate pattern that it is not practical to map them separately. This complex is generally on the tops of hills and ridges. The surface layer of the Chatfield soil is very dark grayish brown fine sandy loam 4 inches thick. The subsoil is yellowish brown sandy loam 20 inches thick and slightly weathered granite bedrock is at a depth of 24 inches. The surface layer of the Hollis soil is dark brown fine sandy loam 4 inches thick and the subsoil is yellowish brown fine sandy loam 15 inches thick. Unweathered granite bedrock is at a depth of 19 inches. The Chatfield soils have moderate or moderately rapid permeability and depth to bedrock is 20 to 40 inches. The Hollis soils have moderate or moderately rapid permeability and depth to bedrock is 10 to 20 inches. This complex is suitable for a variety of trees and productivity is moderate. A high rate of seedling mortality and a hazard of uprooting during windy periods are the main woodland management concerns. Constructing logging roads on the contour helps control erosion.

CtD - Chatfield-Hollis-Rock outcrop complex, 15-35% slopes. This complex consists of moderately steep soils and areas of exposed bedrock in such an intricate pattern that it is not practical to map them separately. This complex is generally on the sides of hills and ridges. The surface layer of the Chatfield soil is very dark grayish brown fine sandy loam 4 inches thick. The subsoil is yellowish brown sandy loam 20 inches thick and slightly weathered granite bedrock is at a depth of 24 inches. The surface layer of the Hollis soil is dark brown fine sandy loam 4 inches thick and the subsoil is yellowish brown fine sandy loam 15 inches thick. Slightly weathered granite bedrock is at a depth of 24 inches. The Chatfield soils have moderate or moderately rapid permeability and depth to bedrock is 20 to 40 inches. The Hollis soils have moderate or moderately rapid permeability and depth to bedrock is 10 to 20 inches. The rock outcrops are exposed bedrock. This complex is poorly suited to most tree species and productivity is low. Slope and the areas of exposed bedrock limit the use of equipment.

Cu - Chocorua mucky peat. This soil is nearly level and very poorly drained. This soil generally consists of black, partly decayed organic matter to depth of 22 inches. Between 22 and 33 inches, the soil is dark yellowish brown and olive grey gravelly loamy sand and gravelly sandy loam. From 33 inches to a depth of 60 inches or more, the soil is a light brownish gray coarse sand and loamy sand. The permeability of this soil is moderate in the organic material and rapid in the mineral layer. The depth to bedrock is more than 5 feet

and the water table is between the surface and a depth of 6 inches year round. Red maple and small shrubs such as highbush blueberries are the common types of vegetation. The high water table makes this soil unsuitable for most uses other than wetland wildlife.

Gw - Greenwood mucky peat. This soil is nearly level and very poorly drained. It is in depressions on outwash terraces, outwash plains, and uplands. This soil is very dusky red or reddish brown, partly decayed organic matter to a depth of 5 feet or more. The permeability of this soil is moderate and depth to bedrock is more than 5 feet. A high water table is between the surface and a depth of 1 foot most of the time between September and June. The high water table makes this soil unsuitable for most uses other than wetland wildlife.

HsA - Hinckley loamy sand, 0-3% slopes.
HsB - Hinckley loamy sand, 3-8% slopes. These soils occur on terraces and outwash plains. Typically, the surface layer is very dark brown loamy sand 3 inches thick. The subsoil is yellowish brown gravelly loamy sand 18 inches thick. The substratum extends to a depth of 60 inches or more. The permeability of this soil is rapid in the surface layer and subsoil and very rapid in the substratum. Available water capacity is very low. The depth to bedrock is more than 5 feet. This soil is suited to drought tolerant tree species, but productivity is low.

LtA - Leicester-Walpole complex, 0-3% slopes. This complex consists of nearly level, poorly drained soils in such an intricate pattern that it is not practical to map them separately. This complex is generally in depressions in hilly uplands. The surface layer of the Leicester soils is very dark grayish brown loam about 9 inches thick. The subsoil is mottled, grayish brown fine sandy loam 13 inches thick. The substratum extends to 60 inches and is a mottled, light brownish gray sandy loam. The surface layer of the Walpole soil is very dark gray sandy loam about 5 inches thick. The subsoil is mottled, dark grayish brown sandy loam 13 inches thick. The substratum is mottled pale brown sand and extends to a depth of 60 inches or more. The Leicester soils have moderate or moderately rapid permeability and depth to bedrock is more than 5 feet. A seasonal high water table is between the surface and a depth of 1½ feet from November to May. The Walpole soils have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum and the depth to bedrock is more than 5 feet. A seasonal high water table is between the surface and a depth of 1 foot from November to April. These soils are suited to a variety of trees, mainly water tolerant species such as red maple. Productivity is moderate. The seasonal high water table limits some forest management practices and logging operations.

LvA - Leicester-Walpole complex stony 3-8% slopes.
LvB - Leicester-Walpole complex stony 3-8% slopes. This complex consists of gently sloping, poorly drained soils in such an intricate pattern that it is not practical to map them separately. This complex is generally in depressions in hilly uplands. Stones 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer of the Leicester soils is very dark grayish brown loam about 6 inches thick. The subsoil is mottled, grayish brown fine sandy loam 16 inches thick. The substratum extends to 60 inches and is a mottled, light brownish gray sandy loam. The surface layer of the Walpole soil is very dark gray sandy loam about 5 inches thick. The subsoil is mottled, dark grayish brown sandy loam 13 inches thick. The substratum is mottled pale brown sand and extends to a depth of 60 inches or more. The Leicester soils have moderate or moderately rapid permeability and depth to bedrock is more than 5 feet. A seasonal high water table is between the surface and a depth of 1½ feet from November to May. The Walpole soils have moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum and the depth to bedrock is more than 5 feet. A seasonal high water table is between the surface and a depth of 1 foot from November to April. These soils are suited to a variety of trees, mainly water tolerant species such as red maple. Productivity is moderate. The seasonal high water table limits some forest management practices and logging operations.

PbC - Paxton fine sandy loam, 8-15% slopes. This soil is sloping and well drained and is on hilltops and side slopes of uplands. Many of the hills, called drumlins, are smooth sided and oval. The surface layer is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown fine sandy loam 19 inches thick and the substratum is a dense hardpan of olive fine sandy loam to a depth of 60 inches or more. The permeability of this soil is moderate in the surface layer and subsoil and slow in the hardpan. The dense hardpan is at a depth of 15 to 36 inches and limits the rooting depth of plants. A seasonal high water table is perched on the hardpan from February to March and some areas have seeps. The depth to bedrock is generally more than 5 feet. This soil is well suited to most tree species and productivity is moderately high. Operating logging equipment during wet periods increases the erosion hazard. Constructing logging roads on the contour helps to control erosion.

PfC - Paxton stony fine sandy loam, 8-15% slopes. This soil is sloping and well drained and is on hilltops and side slopes of uplands. Many of the hills, called drumlins, are smooth sided and oval. Stones 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown fine sandy loam 19 inches thick and the substratum is a dense hardpan of olive fine sandy loam that extends to a depth of 60 inches or more. The permeability of this soil is moderate in the surface layer and subsoil and slow in the hardpan. The dense hardpan is at a depth of 15 to 36 inches and limits the rooting depth of plants. A seasonal high water table is perched on the hardpan from February to March and some areas have seeps. The depth to bedrock is generally more than 5 feet. This soil is well suited to most tree species and productivity is moderately high. Operating logging equipment during wet periods increases the erosion hazard. Constructing logging roads on the contour helps to control erosion.

PfD - Paxton stony fine sandy loam, 15-25% slopes. This soil is moderately steep and well drained and is on side slopes of hilly uplands. Many of the hills, called drumlins, are smooth sided and oval. Stones 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is dark brown fine sandy loam about 5 inches thick. The subsoil is yellowish brown fine sandy loam 19 inches thick and the substratum is a dense hardpan of olive fine sandy loam that extends to a depth of 60 inches or more. The permeability of this soil is moderate in the surface layer and subsoil and slow in the hardpan. The dense hardpan is at a depth of 15 to 36 inches and limits the rooting depth of plants. A seasonal high water table is perched on the hardpan from February to March and some areas have seeps. The depth to bedrock is generally more than 5 feet. This soil is well suited to most tree species and productivity is moderately high, but slope may limit equipment operations. Operating logging equipment during wet periods increases the erosion hazard. Constructing logging roads on the contour helps to control erosion.

Rp - Rippowam fine sandy loam. This soil is nearly level and poorly drained. It is in depressions on flood plains. The surface layer is a very dark grayish brown fine sandy loam 6 inches thick. The subsoil is mottled, dark grayish brown fine sandy loam 27 inches thick. The substratum extends to a depth of 60 inches or more and is mottled, olive gray sand. The permeability of this soil is moderate or moderately rapid in the surface layer and subsoil and is rapid in the substratum. Depth to bedrock is more than 5 feet. This soil is subject to frequent flooding from November to April and has a high water table between the surface and 18 inches during the same period. This soil is suited to water tolerant tree species and productivity is moderate. The seasonal high water table limits forest management and logging operations.

Sn - Saugatuck loamy sand. This soil is nearly level and poorly drained. It is in depressions on terraces and outwash plains. The surface layer is greyish brown loamy sand about 7 inches thick. The subsoil is 30 inches thick and is strongly cemented very dark, greyish brown and yellowish gravelly sand. The substratum is yellowish brown, gravelly coarse sand to a depth of 60 inches or more. The permeability of this soil is mainly rapid but is slow in the cemented part of the subsoil. Depth to bedrock is more than 5 feet. A perched water table is between the surface and a depth of 2 feet from December to June. This soil is poorly suited to most tree species and productivity is low. The seasonable high water table limits forest management and logging operations.

StB - Scituate stony fine sandy loam, 3-8% slopes.
StC - Scituate stony fine sandy loam, 8-15% slopes.
This soil is sloping and moderately well drained. It is in slight depressions and on side slopes of hills on uplands. Stones 1 to 1½ feet in diameter and 5 to 30 feet apart cover the surface. The surface layer is very dark grayish brown fine sandy loam about 7 inches thick. The subsoil is mottled and 15 inches thick. The substratum is a hardpan of mottled, pale olive gravelly loamy sand that extends to a depth of 60 inches or more. The permeability of this soil is moderately rapid in the surface layer and subsoil and slow in the hardpan. The hardpan is at a depth of 19 to 29 inches and limits the rooting depth of plants. A seasonal high water table is perched at a depth of 1½ to 3 feet from November to May and some areas have seeps. The depth to bedrock is generally more than 5 feet. This soil is suited to most tree species and productivity is moderate and there are few limitations for most types of forest management or logging operations. Operating logging equipment during wet periods increases the erosion hazard; constructing logging roads on the contour helps to control this erosion.

GLOSSARY

basal area **-** the cross sectional area of a tree at its dbh; the basal area of a forested habitat is given as the sum of all the basal areas of trees on an acre

biological maturity **-** the time frame in which a forest is allowed to grow to senescence

dbh **-** diameter at breast height (4.5' above the ground)

density **-** the quantitative indication of the number of trees in a forested habitat as compared to the desirable number for best growth

drumlin **-** a low, smooth, elongated oval hill, mound, or ridge of compact glacial till; the longer axis is parallel to the path of the glacier

epicormic branching **-** some hardwood species, with sudden exposure to sunlight, form undesirable lower branches

glacial till **-** unsorted clay, silt, sand, and boulders transported and deposited by glacial ice

hardpan **-** a hardened or cemented soil; sand, loam, or clay cemented by iron oxide, silica, calcium carbonate or other substance

inclusion **-** small coniferous/deciduous areas within predominately hardwood or softwood forested habitats or areas too small to be mapped or tallied

mbf **-** thousand board feet

outwash plain **-** mainly stratified sandy or coarse textured material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice

permeability **-** the quality of the soil that enables water to move downward through the soil layers

rotation **-** the predetermined time frame in which a forest is allowed to grow and is then harvested and replaced with a new one

slash **-** that portion of the tree that is left in the woods after the merchantable portion has been removed (usually tops and other smaller unmerchantable damaged trees)

stocking **-** a subjective reference to the adequacy of a given forested habitat density for current management

subsoil **-** the part of the soil below the surface layer

substratum **-** the part of the soil beneath where the living roots, plants, and animal activities are confined (surface layer and subsoil)

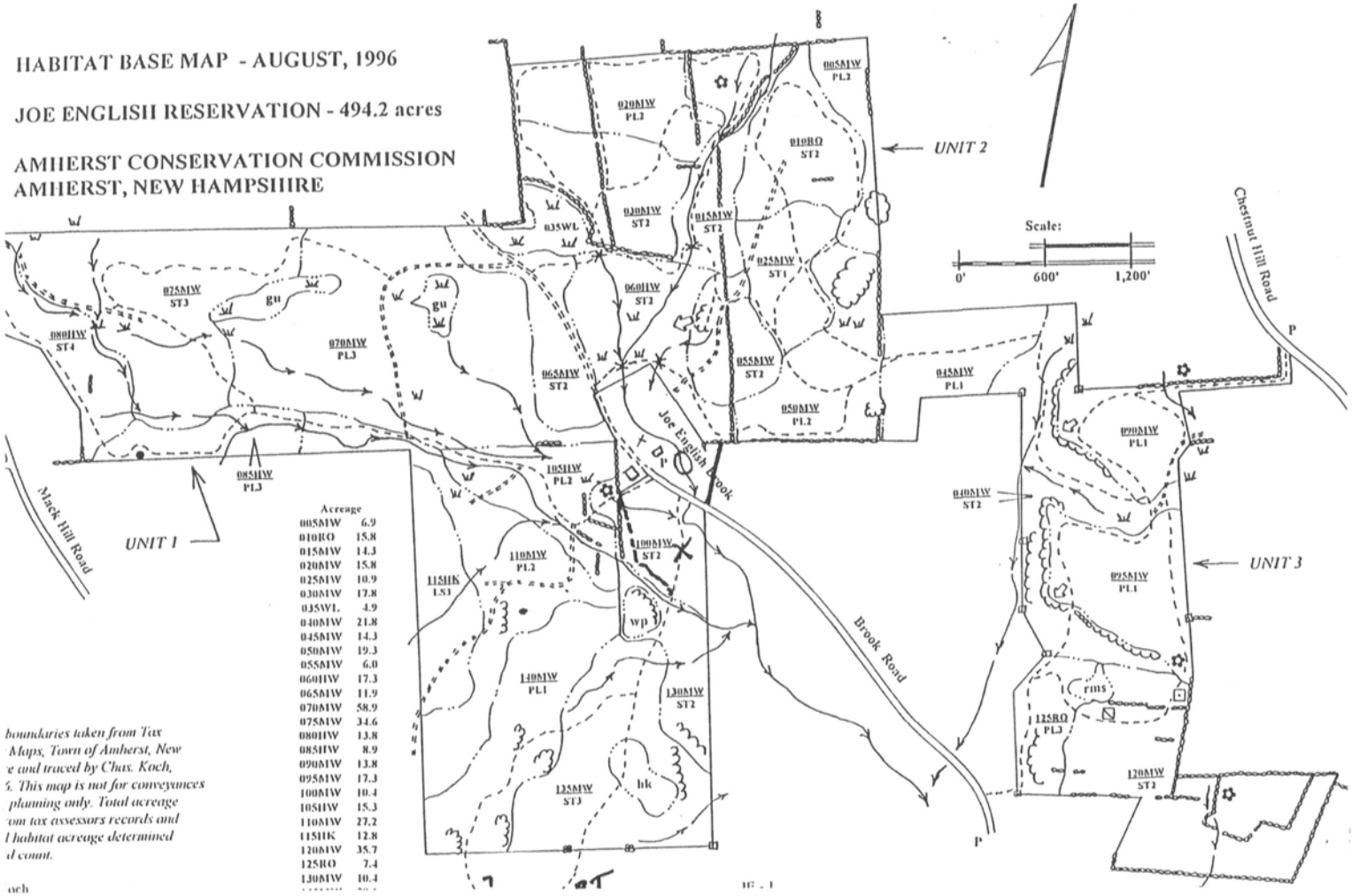
surface layer **-** the soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 4-10 inches

terrace **-** an old alluvial plain, flat or undulating, bordering a river, lake, or the sea

HABITAT BASE MAP - AUGUST, 1996

JOE ENGLISH RESERVATION - 494.2 acres

AMHERST CONSERVATION COMMISSION
AMHERST, NEW HAMPSHIRE



Acreage	
005MW	6.9
010RO	15.8
015MW	14.3
020MW	15.8
025MW	10.9
030MW	17.8
035WL	4.9
040MW	21.8
045MW	14.3
050MW	19.3
055MW	6.0
060HW	17.3
065MW	11.9
070MW	58.9
075MW	34.6
080HW	13.8
085HW	8.9
090MW	13.8
095MW	17.3
100MW	10.4
105HW	15.3
110MW	27.2
115HK	12.8
120MW	35.7
125RO	7.4
130MW	10.4

boundaries taken from Tax Maps, Town of Amherst, New e and traced by Chas. Koch, . This map is not for conveyances planning only. Total acreage om tax assessors records and l habitat acreage determined d count.

och

TOTAL SAWTIMBER AND CORDWOOD INVENTORY

AMHERST CONSERVATION COMMISSION
JOE ENGLISH RESERVATION; BROOK & CHESTNUT HILL ROADS
489.3 Timbered Acres
494.2 Acres Total
August, 1996

	Sawtimber (Board feet - International 1/4 Rule)	Cordwood (Cords)
White Pine	905,817	915
Red Pine	1,827	0
Hemlock	326,963	965
Sugar Maple	13,333	80
Red Maple	27,599	1,216
White Ash	16,078	76
Aspen	9,610	45
White Birch	19,425	361
Yellow Birch	4,595	71
Black Birch	54,566	850
Grey Birch	0	27
Beech	22,650	434
Basswood	982	6
Red Oak	524,311	2,230
White Oak	19,794	207
Black Oak	33,871	280
Black Gum	1,233	24
Hickory	3,832	26
Hophornbeam	0	10
All Softwoods	1,234,607	1,880
All Hardwoods	751,879	5,943
All Species	1,986,485 ± 10%	7,823 ± 5%

I am confident that the total volume for this woodlot lies somewhere within the interval of 1,787,836 BF and 2,185,134 BF for the sawtimber and 7,432 cords and 8,214 cords for the cordwood. The procedure used will generate correct statements 95 out of 100 times (using a 10 factor prism on 225 sample plots, located on a 295' square grid pattern).

Timber

The Joe English Reservation consists of the following Habitats by acreage:

Upland Forested Habitats	482.7
Forested Wetland Habitats	6.6
Wetlands	4.9
Open/Field	0.0
Total Acreage	**494.2**

Calculation of Harvest Rate:
Rotation Age - 120 years
Harvest Rate - 482.7 acres ÷ 120 years = 4.02 acres per year

Because of high recreational use, it was decided to take a conservative approach to any cutting for this planning period. Group selection and improvement cuttings will be used to create approximately 16 acres of new seedling/sapling habitat. The long term goal is to provide approximately 60 acres (see **Forest Structure** - JE - 6 & JE - 7). All other cutting is directed toward altering stocking levels and enhancing non timber values. The next planning period (2011) calls for a more aggressive approach to cutting and the forest structure will start to approach the desired long term goal.

For administrative ease it was decided to divide Joe English into 3 units. Accessibility determined the boundaries of each unit.

Unit 1 is west of Brook Road and the access into this unit will be by Brook Road and along the woods road near the northerly border of 065MW. The landing area for the harvesting operation will be at the intersection of the end of the woods road and the trail along the stream in 110MW. It is anticipated that minimal capital will be required to improve this access.

Unit 2 is located east of Brook Road. The location for a landing area needs to be somewhere on the east side of Brook Road; possibly near the trail that leads to 035WL. A major stream crossing will need to be developed that can cross Joe English Brook without affecting water quality. A timber skidder bridge, in conjunction with frozen ground may alleviate any wetland crossing problems. Without this crossing, harvesting may not be economically feasible in this unit.

Unit 3 presents the most expensive access. A road which extends from Chestnut Hill Road into the area at the end of the woods road near the border of 040MW and 095MW is needed to make any harvesting possible (by reducing skidding distances). The landing would be located at the end of this road. This proposed road would be approximately 2,200' long and would require clearing, stumping, and grading for the entire length and the installation of a rock ford at the stream crossing. The cost would be approximately $2,200 to construct this road access.

Conventional logging (cable skidder) is recommended for the timber removal on all units.

Recreation
Approximately 9.5 miles of well marked hiking, mountain biking, and cross country skiing trails occur throughout the Reservation. Unit 2 has the highest density of trails. Numerous scenic vistas with sitting benches are found in Units 2 and 3. An overlook with a bench is also available at the wetland (035WL) in Unit 2. The Bicentennial Trail enters the south end of Unit 1. The Bicentennial Trail provides access to the south into the town owned Arnold/Haseltine/Lorden Lot and Austin Road. A short distance to the west along Austin Road, the Haseltine Lot, another town owned woodlot is located.

Educational opportunities are plentiful with good viewing sites at the wetland and the old growth characteristics found in the gum swamps in Unit 1.

Wildlife
All wildlife elements occur throughout the property. Because this property is becoming a larger, maturing forest, browse is the only wildlife element that is lacking. Group selection cutting is the type of regeneration cutting used for this planning period and will encourage the production of more browse. Only 16 acres of new reproduction areas are called for during this planning period. This amount of new reproduction may not be enough to sustain good browse opportunities over the long run. However, there has been severe cutting in the area west of Unit 1 and east of Unit 2 which have created large areas of early successional habitat and browse is plentiful there. As these areas age, there will likely be a need to provide browse areas on the Reservation and the issue of creating larger regeneration areas will need to be addressed at the next planning period (2011).

The high density of trails may be a deterrent to viewing wildlife as the high use of these trails by recreationists may lead to a high anxiety level for the wildlife. They may choose to use other areas with less human pressure.

The 115HK habitat appears to be an opportunity to provide a classic deer yard (hemlock cover) and will be treated as such. However, this habitat may be too small to provide an attractive yard for actual use. If desired, it appears that 110MW has enough young hemlock that this area may be combined with 115HK to extend the hemlock cover in the future..

Aesthetics
See Part 1, page 4 - *Aesthetics*. Outstanding features such as specimen trees, scenic vistas, specimen rocks/glacial erratics are shown on the Habitat Base Map.

Cultural Features
Interior stone walls would indicate that portions of this property were pasture at one time. Numerous interior stone walls in Unit 2 may indicate that this area was more intensively managed as improved pasture and the other areas as unimproved pasture.

A cellar hole and old foundation were found in Unit 3 and an old stone bridge abutment was found at the stream along the woods road that accesses habitats 105HW, 110MW, and 115HK.

Boundaries
Portions of the property that border the New Boston Tracking Station to the north of Units 1 and 2 are clearly marked with blue painted blazes and a small portion of the southern boundary of Unit 1 is clearly marked with yellow painted blazes. The remainder of the boundaries (approximately 6 miles) have some evidence (scattered flagging), but no permanent marking. It is recommended that all boundaries be clearly blazed and painted.

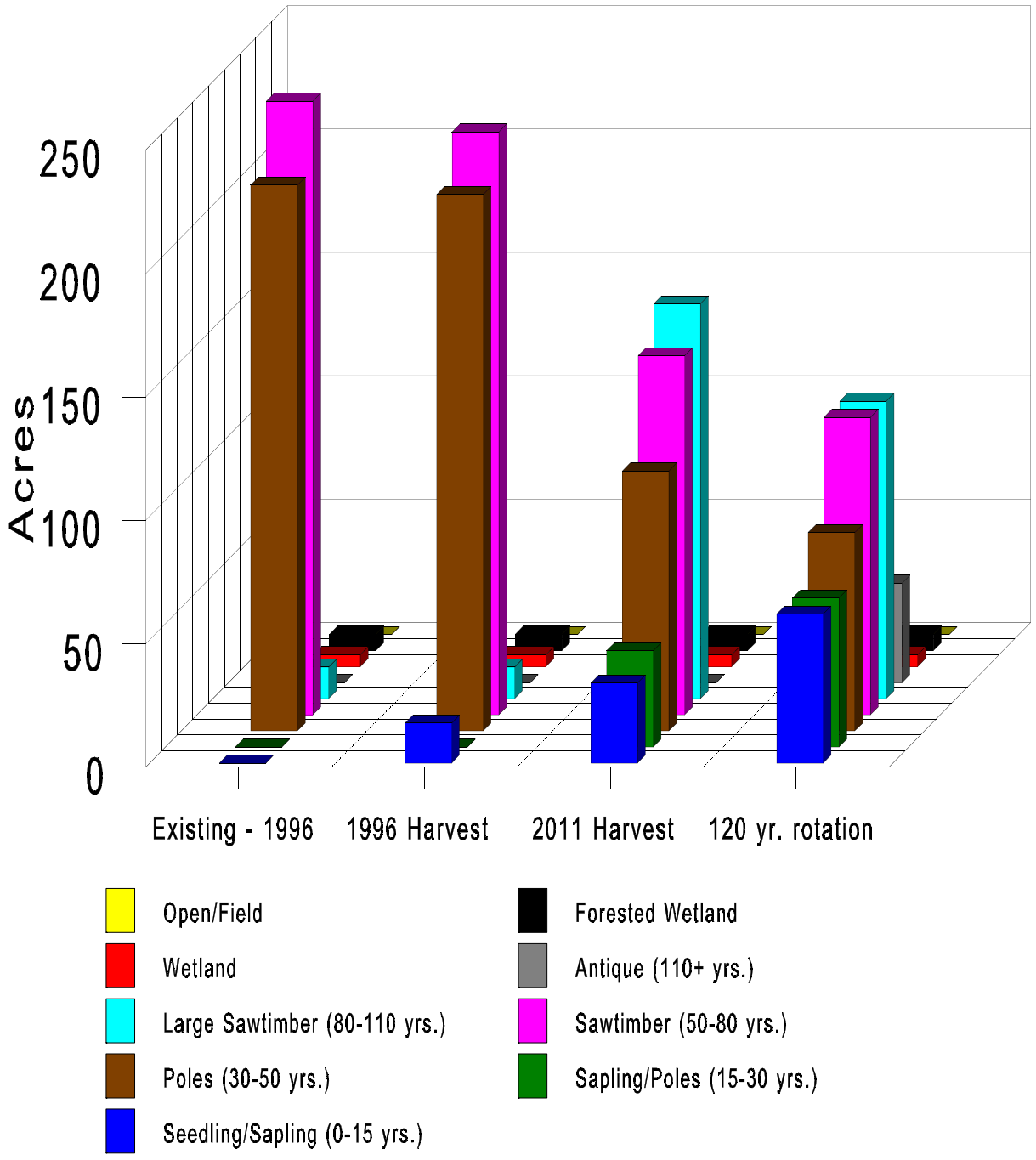
Summary of Timber Revenues and Expenses (1996-2011)

		MBF	cords	Revenue (Expense)
	Unit 1	80	315	9,000
	Unit 2	25	150	5,000
	Unit 3	60	250	7,000
Total Gross		**165**	**715**	**21,000**
Timber Sale Administration	Marking			(2,640)
	Commission			(2,520)
Boundary Maintenance	6 miles			(2,100)
Road Construction	2,200' + Misc.			(2,500)
Total Net				**11,240**

The following pages show the forest structure in graphic and tabular form; the summary of silvicultural recommendations in tabular and narrative form; and specific timber and wildlife data for each forested habitat.

FOREST STRUCTURE

Joe English



Joe English - Forest Stucture (acres per habitat class)
Existing (1996) Habitats; Habitats after Silvicultural Recommendations; and Long Term Goal Habitats

Habitat	**Existing 1996**	**After 1996 Silviculture**	**After 2011 Silviculture**	**Long Term Goal**
Open/Field	0.0	0.0	0.0	0.0
Forested Wetland	6.6	6.6	6.6	6.6
Wetland	4.9	4.9	4.9	4.9
Antique (AT)	0.0	0.0	0.0	40.3
Large Sawtimber (LS)	12.8	12.8	160.1	120.6
Sawtimber (ST)	248.7	236.3	145.6	120.6
Pole (PL)	221.2	217.4	105.4	80.4
Sapling/Pole (SP)	0.0	0.0	39.1	60.4
Seedling/Sapling (SA)	0.0	16.2	32.5	60.4

(See Appendix 6 **- Forested Habitat Size Classification**)

Joe English - west of Brook Rd. (Unit 1) - Silvicultural Recommendations and Anticipated Habitat Classes
Rotation Age - 120 years; Harvest Rate - 4.02 acres per year

Habitat	Habitat Class 1996	Silvicultur e 1996	BF 1996	CDs. 1996	Habitat Class After Treatment (1996)	Habitat Class 2011 (15 years growth)	Silvicultur e 2011	Habitat Class After Treatment 2011
065HW	ST (11.9)	LG	0	0	ST (11.9)	ST (11.9)	CT,LT	LS (11.9)
070M W	PL (53.9) forested wetland (5.0)	LG	0	0	PL (53.9) Forested wetland (5.0)	PL (53.9) forested wetland (5.0)	LG	PL (53.9) forested wetland (5.0)
075M W	ST (34.6)	LG	0	0	ST (34.6)	ST (34.6)	GS,CT,LT	ST (26.0); SA (8.6)
080HW	ST (13.8)	LG	0	0	ST (13.8)	ST (13.8)	CT,LT	LS (13.8)
085HW	PL (8.9)	LG	0	0	PL (8.9)	PL (8.9)	CT,LT	ST (8.9)
100M W	ST (10.4)	CT,LT	15,000	70	ST (10.4)	ST (10.4)	CT,LT	LS (10.4)
105HW	PL (15.3)	CT,LT	0	50	PL (15.3)	PL (15.3)	CT,LT	ST (15.3)
110M W	PL (27.2)	LG	0	0	PL (27.2)	ST (27.2)	CT,LT	ST (27.2)
115HK	LS (12.8)	SL,LT	15,000	75	LS (12.8)	LS (12.8)	SL,LT	LS (12.8)
130M W	ST (10.4)	LG	0	0	ST (10.4)	ST (10.4)	LG	LS (10.4)
135M W	ST (29.6)	GS,CT,LT	50,000	120	ST (22.2); SA (7.4)	ST (22.2); SA (7.4)	GS,CT,LT	LS (14.8); SP (7.4); SA (7.4)
140M W	PL (21.1)	LG	0	0	PL (21.1)	PL (21.1)	LG	PL (21.1)
Totals			**80,000**	**315**				

SL - Selection Cutting

GS - Group Selection
LT - Low Thinning
CT - Crown Thinning
LG - Let Grow

(See Appendix 9 - **Silvicultural Systems**)

Joe English - west of Brook Rd. (Unit 1) - Silvicultural Recommendations by Habitat

065HW - This is a sawtimber sized habitat dominated by white pine and a mixture of hardwoods with black birch and red oak dominating the hardwood component. Laurel dominates the understory and is the most visible wildlife feature, providing excellent cover for ground dwelling wildlife. The laurel presents timber management problems. Any cutting that allows light to hit the ground will encourage the laurel to proliferate. If the laurel can be kept in the shade, the more likely it will diminish in quantity, thus allowing new tree regeneration to become established. The laurel is too thick now to allow new tree regeneration. The recommendation is to let this habitat grow for another 15 years and reevaluate the density of the laurel at that time. If cutting appears to be acceptable at that time, a low and crown thinning seem to be the most appropriate action to take.

070MW - This habitat is a poor timber growing site with white pine and red oak dominating. This area appears to have been cut very heavily in the past. The white pine appears to be better suited to grow here as the red oak is poorly formed, stunted, and limby. Laurel dominates the understory, at an even higher density than that found in 065HW. It is recommended that this area be left to grow until the timber becomes large enough provide a commercially viable harvest.

This habitat has 2 unique inclusions; black gum wetlands. These areas provide a forested wetland habitat that is quite rare and should be left to grow in an undisturbed state. These areas provide the best example of old growth or antique forested habitats found on the lands surveyed for this plan.

075MW - This habitat consists of hemlock, hardwoods, and white pine poles and small sawtimber. An understory is usually lacking, providing an open park like appearance. Cavity/den trees which are less than 18" dbh is the most prominent wildlife feature found here, but red oak and beech provide good mast potential as well. It is recommended that this habitat be left to grow another 15 years and at that time conduct a group selection cutting to provide early successional habitat, and low and crown thinnings in the other areas of this habitat to stimulate tree growth and mast production. At the time of the proposed cutting, a decision needs to be made whether to manage this habitat as hemlock, hardwood, or a mixture of the two. The group selection cuttings will eventually replace the present habitat class with a mosaic of younger habitat classes.

080HW - This is an overstocked hardwood sawtimber habitat which supports a somewhat northern hardwood association of sugar maple, yellow birch, and beech in its southern half, which has enriched loamy soils and a red oak dominated area in its north half which has rockier, and shallower soils. This habitat could be managed now, but due to its isolation from other areas that are recommended for cutting, it is suggested that any management be deferred for another 15 years and a harvest can be conducted in conjunction with 075MW. It is recommended that a low and crown thinning be conducted at that time. It appears that the north half may be inaccessible, due to slope and rockiness, for any harvesting to be conducted there. Cavity/den trees which are less than 18" dbh is the most prominent wildlife feature found here, but red oak and beech provide good mast potential as well.

085HW - This is an adequately stocked pole habitat of a mixture of hardwoods; mainly black birch, red maple, aspen, and red oak and a smaller component of hemlock and white pine. This habitat occurs along a major drainage. It is recommended that this habitat be allowed to grow

for another 15 years and at that time a low and crown thinning, to simulate crown development and accelerate this habitat into the sawtimber class, be conducted. This harvest would be conducted in conjunction with those recommended for 075MW and 080HW. Understory snags and perches is the most prominent wildlife feature found here, but red oak provides good mast potential as well.

100MW - This habitat is adequately stocked with good to excellent white pine and red oak sawtimber and a mixture of hardwoods in its understory. Hard mast of red oak is the most prominent wildlife feature here. A low and crown thinning is recommended here and can take place now. This type of thinning will remove most of the understory cordwood and some of the more suppressed sawtimber trees and will provide good growing conditions for excellent mast production and also present a park like appearance. Another thinning in 15 years, coupled with the thinning now, will help accelerate this habitat into the large sawtimber class.

105HW - Red oak dominates this habitat with other poles of a mixture of hardwoods. This habitat occurs along a major drainage. Understory snags and perches and a ground cover of ferns, mosses, and partridge berry are the most prominent wildlife features here. This habitat will support a harvest of small cordwood. A low and crown thinning can be conducted now in conjunction with 100MW and another low and crown thinning in 15 years will accelerate this habitat into the sawtimber class.

110MW - This habitat is a mix of small sawlogs and poles of hardwood and hemlock. The most prominent wildlife feature is the shrub layer which consists of laurel, witch hazel, hemlock, and beech and provides good cover. It is recommended that this habitat be left to grow for another 15 years and at that time a low and crown thinning be conducted. The thinnings, coupled with 15 years of growth will accelerate this habitat into the sawtimber class. A decision will need to be made at that time as to what direction management should take; manage for hemlock, hardwood, or a mixture of both.

115HK - This area is a large sawtimber habitat dominated by hemlock, with a hemlock and hardwood understory. The hardwood understory is generally red maple and black birch. The strongest wildlife habitat element here is cavity/den trees which are less than 18" dbh. Cavity/den trees greater than 18" dbh and red oak and, to a lesser degree, beech hard mast are also well represented. This habitat should be maintained for its strong hemlock element as a possible deer yard. Its size is small (12.8 ac.), but this area presents the best opportunity for deer yard management on this property. A selection cutting, which removes any cordwood sized hardwood from the overstory is recommended here, as well as a low thinning. This should encourage new hemlock reproduction. Any good mast producing trees should also be left standing. The same recommendations carry for the next cutting in 15 years. This habitat is approaching the antique class and should be one of the first areas on this property to attain that size.

130MW - This habitat is dominated by a mixture of sawlog sized hemlock and hardwoods. The hardwood component is dominated by red oak. A small 1.5 acre inclusion of white pine sawlogs occurs within this habitat also. Understory snag and perches and cavity/den trees less than 18" dbh are the most prominent wildlife feature found in this habitat. Red oak also provides good amounts of mast. This habitat has very rough terrain (rocky, bouldery, and steep) and may be inaccessible. For this reason it is recommended that this habitat be left to grow unless access can be gained here. Growth alone should be enough to put this habitat into the large sawtimber category in 15 years.

135MW - This habitat is quite variable, but is generally dominated by hardwoods; heavy to red oak. A 3 acre inclusion of hemlock and white pine occurs within this habitat. Parts of this habitat have very rocky slopes and these may restrict access somewhat, but not to the degree of 130MW. Hard mast of red oak and, to a lesser degree, beech is the most prominent wildlife element present in this area. The hemlock inclusion may provide some deer yard characteristics, but is too small to be of any major value. It is recommended that the hemlock inclusion be managed the same as 115HK. In addition, conduct group selection cuttings and low and crown thinnings in the remaining areas of this habitat to stimulate tree growth and mast production. The same recommendations carry for the next cutting scheduled in 15 years. The group selection cuttings will eventually replace the present habitat class with a mosaic of younger habitat classes.

140MW - This habitat is dominated by poor quality red oak and hemlock which are growing on shallow, ledgy soils. This area is similar to 070MW in that laurel is a major component in the understory and hinders management. As in 070MW, the shrub layer is the major wildlife feature of this habitat and consists of mainly laurel and lesser amounts of witch hazel and hemlock. It is recommended that this habitat be left to develop for another 20 years before any management is undertaken.

Joe English - east of Brook Rd. (Unit 2) - Silvicultural Recommendations and Anticipated Habitat Classes
Rotation Age - 120 years; Harvest Rate - 4.02 acres per year

Habitat	Habitat Class 1996	Silviculture 1996	BF 1996	CDs. 1996	Habitat Class After Treatment (1996)	Habitat Class 2011 (15 years growth)	Silviculture 2011	Habitat Class After Treatment 2011
005MW	PL (6.9)	LG	0	0	PL (6.9)	PL (6.9)	LT	ST (6.9)
010RO	ST (15.8)	LG	0	0	ST (15.8)	ST (15.8)	IC	ST (7.9); SA (7.9)
015MW	ST (14.3)	LG	0	0	ST (14.3)	ST (14.3)	LG,CT,LT	ST (14.3)
020HW	PL (15.8)	LG	0	0	PL (15.8)	PL (15.8)	IC,CT,LT	ST (7.9); SP (7.9)
025MW	ST (10.9)	LG	0	0	ST (10.9)	ST (10.9)	IC,CT,LT	ST (5.5); SP (5.4)
030MW	ST (17.8)	CT,LT	15,000	75	ST (17.8)	ST (17.8)	CT,LT	LS (17.8)
035WL	wetland		0	0	wetland	wetland		wetland
045MW	PL (14.3)	LG	0	0	PL (14.3)	PL (14.3)	LG	PL (14.3)
050MW	PL (19.3)	LG	0	0	PL (19.3)	PL (19.3)	IC,CT,LT	ST (9.7); SP (9.6)
055MW	ST (6.0)	LG	0	0	ST (6.0)	ST (6.0)	CT,LT	ST (6.0)
060HW	ST (17.3)	CT,LT	10,000	75	ST (17.3)	ST (17.3)	CT,LT	LS (17.3)
Totals			**25,000**	**150**				

IC - Improvement Cutting
LT - Low Thinning
CT - Crown Thinning
LG - Let Grow

(See Appendix 9 - **Silvicultural Systems**)

Joe English - east of Brook Rd. (Unit 2) - Silvicultural Recommendations by Habitat

005MW - This habitat is a mixture of hemlock, white pine, and hardwoods which is growing on a poor, ledgy site. A little better site, with deeper soils occurs in the north half, but very ledgy, shallow soils occur in the south half. The strongest wildlife feature here is the midstory layer, which consists of hemlock, red maple, witch hazel, and beech. It is recommended that this habitat be left alone for now and in 15 years enter this area and conduct a low thinning if enough merchantable material is available. The low thinning coupled with 15 years growth will enable this habitat to move into the sawtimber class.

010R0 - This habitat is a poor red oak/hardwood area which has repeatedly suffered attacks by what appears to be gypsy moth. Excellent white pine reproduction exists throughout this area and may be there as a result of the repeated gypsy moth attacks on the red oak (added sunlight when red oak is defoliated). Leader growth on the pine is less than 6" per year and may die out if the red oak overstory persists. There is not enough volume to make an economically viable harvest in this area at this time. The recommendation is to let this area grow and reevaluate in another 15 years. If there is enough volume to harvest at that time, conduct improvement cuttings by removing the overstory where the best white pine occurs. This type of cutting will eventually turn the red oak habitat into a white pine habitat. The excellent white pine reproduction provides good cover and is this habitat's most evident wildlife feature. In addition, red oak provides a source of some mast.

015MW - This is a sawtimber habitat dominated by white pine and a mixture of hemlock and hardwoods. Red oak dominates the hardwood component. Cavity/den trees less than 18" dbh is the highest ranked wildlife feature here, with understory snags and perches being well represented. This habitat, for the most part, occurs along the drainage of a major stream. The sides of the drainage are steep and will be considered inaccessible. No cutting is recommended along the drainage. This area will be allowed to grow naturally to its biological maturity. However some areas are accessible (east of the stone wall) and some cutting can be conducted there. A low and crown thinning could be conducted on the accessible areas in 15 years when other areas near this habitat will be scheduled to be harvested also.

020MW - This habitat is a pole sized area dominated by white pine and black birch, with excellent white pine reproduction found throughout. A shrub layer of white pine, beech, hemlock, and witch hazel and understory snags and perches provide the best wildlife habitat features. No cutting is recommended here for this planning period. In 15 years, improvement cuttings can be conducted to release the already present white pine. Low and crown thinnings can be conducted in the other areas to accelerate growth of the pole habitat into the sawtimber habitat class. This habitat will eventually be turned into a white pine habitat if the white pine persists in the understory.

025MW - This is a small sawtimber habitat dominated by white pine and red oak. The white pine appears to be in better condition than the hardwood. It appears that the red oak has suffered gypsy moth attacks in the past and there are some standing dead hemlocks which were most likely killed by the gypsy moth. A shrub layer of white pine, witch hazel, hemlock, and laurel, a ground cover of partridge berry and ferns, and cavity/den trees less than 18" dbh are the most prominent wildlife features found in this habitat. Excellent white pine reproduction exists throughout this area and may be there as a result of the repeated gypsy moth attacks on the red oak (added sunlight when red oak is defoliated). Leader growth on the pine is around 6" per year and may die out if the overstory persists. There is not enough volume to make an economically viable harvest in this area at this time. The recommendation is to let this area

grow and reevaluate in another 15 years. If there is enough volume to harvest at that time, conduct improvement cuttings by removing the overstory where the best white pine occurs and conduct low and crown thinnings in the other areas. Theses types of cutting will eventually turn this area into a white pine habitat.

030MW - This is a adequately stocked white pine and red oak sawtimber habitat. A shrub layer of witch hazel, white pine, beech, hemlock, and laurel is the most prominent wildlife feature in this area. The recommendation for this habitat is to conduct a low and crown thinning throughout the area to remove cordwood and suppressed sawlog sized trees. This type of thinning will encourage a park like appearance and accelerate this habitat into the large sawtimber category. The same treatment is recommended for the period 15 years from now.

045MW - This habitat is dominated by red oak poles and scattered white pine sawlogs. It appears that the gypsy moth has attacked this area in the past and numerous dead, standing hemlock snags and perches are found throughout. These understory snag and perches are the most prominent wildlife feature in this habitat. A shrub layer of hemlock, white pine, beech, witch hazel provides a strong cover feature also. This area is understocked and it is recommended that this area be allowed to grow and develop further (15 yrs. +) before any management activities are undertaken.

050MW - This habitat is located on very shallow, ledgy soils and the tree quality is poor. White pine and red oak dominate this pole sized area. The red oak shows sign of gypsy moth attack in the past (epicormic branching). Good white pine reproduction is scattered throughout this area and may be there as a result of the repeated gypsy moth attacks on the red oak (added sunlight when red oak is defoliated). This white pine along with hemlock, laurel, red maple, and black birch comprise the shrub layer which is the most prominent wildlife feature of this habitat. Gypsy moth attacks have created understory snags and perches as well. Leader growth on the pine is around 6" per year and may die out if the overstory persists. There is not enough volume to make an economically viable harvest in this area at this time. The recommendation is to let this area grow and reevaluate in another 15 years. If there is enough volume to harvest at that time, conduct improvement cuttings where the best white pine occurs and low and crown thinnings elsewhere. These types of cutting will eventually turn the red oak portion into white pine habitat.

055MW - This habitat is a mix of white pine and red oak sawlogs. A shrub layer of white pine, hemlock, witch hazel, chestnut, and white oak provide the strongest wildlife feature in this area and provide excellent cover. Numerous deer scrapes and scat were observed in the eastern portion of this habitat. This area is adequately stocked, but it is recommended that this habitat be left to grow for another 15 years and than a low and crown thinning should be conducted.

060HW - This area is dominated by red oak and white pine sawlogs, with red oak mast being the most prominent wildlife feature. The recommendation for this area is to conduct low and crown thinnings now and again in 15 years. This will accelerate the growth of this habitat into the large sawtimber class and will promote a park like character and excellent mast production.

Joe English - east of Brook Rd. (Unit 3) - Silvicultural Recommendations and Anticipated Habitat Classes
Rotation Age - 120 years; Harvest Rate - 4.02 acres per year

Habitat	Habitat Class 1996	Silvicultur e 1996	BF 1996	CDs. 1996	Habitat Class After Treatment (1996)	Habitat Class 2011 (15 years growth)	Silvicultur e 2011	Habitat Class After Treatment 2011
040MW	ST (21.8)	CT,LT	10,000	50	ST (21.8)	ST (21.8)	CT,LT	LS (21.8)
090MW	PL (13.8)	IC	0	50	PL (10.0); SA (3.8)	PL (10.0); SP (3.8)	CT,LT	ST (10.0); SP (3.8)
095MW	PL (17.3)	LG	0	0	PL (17.3)	PL (17.3)	IC	PL (8.7); SA (8.6)
120MW	ST (34.1) forested wetland (1.6)	GS,CT,LT	50,000	150	ST (29.1); SA (5.0) forested wetland (1.6)	ST (29.1); SP (5.0) forested wetland (1.6)	GS,CT,LT	LS (29.1); SP(5.0); forested wetland (1.6)
125RO	PL (7.4)	LG	0	0	PL (7.4)	PL (7.4)	LG	PL (7.4)
Totals			**60,000**	**250**				

GS - Group Selection Cutting
IC - Improvement Cutting
LT - Low Thinning
CT - Crown Thinning
LG - Let Grow

(See Appendix 9 - **Silvicultural Systems**)

Joe English - east of Brook Rd. (Unit 3) - Silvicultural Recommendations by Habitat

040MW - This is an adequately stocked sawtimber habitat dominated by white pine, red oak, and hemlock. Red oak provides a very strong mast wildlife feature to this area. Cavity/den trees which are less than 18" dbh also contribute a strong wildlife feature. The area which is bordered by the westerly boundary of the property (@ 5 acres) is considered inaccessible and the trees here will be allowed to grow to biological maturity. The other areas are accessible and it is recommended that these areas have low and crown thinnings conducted now and 15 years hence, to accelerate this habitat into the large sawtimber class and to promote hard mast development.

090MW - This is an understocked pole habitat dominated by white pine in the west half and red oak/hardwood in the east half. Excellent white pine reproduction occurs in the east half underneath the red oak/hardwood. This white pine reproduction shrub layer, coupled with hemlock and oaks which are also shrub size provide good wildlife cover. For this planning period, it is recommended that improvement cuttings be conducted in those areas where the good white pine reproduction exists and low and crown thinnings be conducted in the remaining areas 15 years from now.

095MW - This is an understocked pole habitat that is dominated by pole sized white pine and red oak and a smaller amount of white pine sawtimber. Excellent white pine reproduction occurs throughout this area. A shrub layer is the most prominant wildlife feature here and consists of the white pine regeneration coupled with vaccinium, witch hazel, laurel, and red maple. There is not enough volume to justify any cutting at this time, but in 15 years it is recommended that improvement cuttings be conducted to release the white pine reproduction if it still persists.

120MW - This is an adequately stocked sawtimber habitat dominated by white pine and red oak. The white pine is more common in the south half of this area and the white pine/red oak mix is more common in the north half. Good hardwood reproducton (white oak/red oak) occurs scattered in groups throughout this habitat. Red oak mast is the most prominent wildlife feature. Understory snag and perches and all sizes of cavity/den trees also provide good wildlife features. Conduct group selction cuttings in areas where the best hardwood reproduction exists for this planning period. In addition low and crown thin the remaining areas to accelerate these areas into the large sawtimber habitat class and to promote hard mast production. In 15 years, conduct the same, expanding group selection openings and thinning around the best trees. The 1.6 acre red maple swamp inclusion is to be allowed to grow unmanaged

125RO - This pole habitat is dominated by poor quality white pine and red oak poles which are growing on very shallow, ledgy soils. Hard mast is the most prominent wildlife feature in this habitat. Due to the poor quality of the trees it is recommended that this area be left alone and allowed to develop in an unmanaged state.

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 005MW**	***Acreage*:**	**6.9**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	28	286	0	3.2
8"-10"	62	152	0	12.6
12"-16"	20	22	1,388	1.3
18"-22"	10	5	1,638	.0
22"+	2	1	0	.5
TOTAL	**122**	**466**	**3,026**	**17.6**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	13.70	5.99	61.50	8.25
Hemlock	31.51	41.34	24.35	30.87
Red Maple	6.85	18.19	.00	1.78
White Birch	9.59	7.45	1.69	13.82
Black Birch	1.37	1.82	.00	1.65
Beech	6.85	3.86	5.54	10.14
Red Oak	26.03	18.85	3.46	29.63
White Oak	1.37	1.02	.00	1.38
Black Oak	2.74	1.48	3.46	2.49

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	2.33	
> 18" DBH Cavity/Den Trees	1.00	

Overstory Snags	2.00	
Understory Snags	2.50	
Hard Mast (acorns, beechnuts, etc.)	2.50	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.00	
Shrub Layer (woody plants 2'-10' high)	2.50	HK,BE,WH,CT
Midstory Layer (woody plants 10'-30' high)	**2.67**	**HK,RM,WH,BE**
Groundcover	2.17	MS
Dead & Down Trees	2.33	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 010RO**	***Acreage*:**	**15.8**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	17	249	0	1.9
8"-10"	39	100	0	8.2
12"-16"	37	40	2,325	1.5
18"-22"	7	3	1,084	.0
22"+	0	0	0	.0
TOTAL	**100**	**392**	**3,409**	**11.6**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	20.00	29.48	49.63	15.09
Hemlock	4.29	18.40	.00	3.42
Red Maple	10.00	14.81	.00	12.27
White Birch	1.43	.46	1.50	2.37
Black Birch	1.43	.67	.00	2.22
Beech	2.86	4.64	.00	2.45
Red Oak	50.00	24.61	48.87	43.94
White Oak	2.86	1.71	.00	4.10
Black Oak	7.14	5.22	.00	14.15

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	2.57	
> 18" DBH Cavity/Den Trees	1.00	

Overstory Snags	3.00	
Understory Snags	2.14	
Hard Mast (acorns, beechnuts, etc.)	3.43	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.86	OK
Shrub Layer (woody plants 2'-10' high)	**3.71**	**WP,HK,LR,WH,CT**
Midstory Layer (woody plants 10'-30' high)	2.29	
Groundcover	2.71	
Dead & Down Trees	3.00	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 015MW**	***Acreage*:**	**14.3**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (60%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	21	347	0	1.5
8"-10"	41	104	0	10.8
12"-16"	57	57	4,320	1.9
18"-22"	14	7	2,224	.5
22"+	7	2	950	.5
TOTAL	**140**	**517**	**7,494**	**15.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	31.63	7.41	76.78	7.19
Hemlock	15.31	11.69	7.38	21.70
Sugar Maple	1.02	.51	.00	2.49
Red Maple	9.18	10.79	1.72	13.82
White Ash	1.02	.06	.00	3.04
White Birch	5.10	4.00	.00	10.60
Yellow Birch	2.04	1.05	1.67	1.83
Black Birch	9.18	22.04	1.25	10.98
Beech	4.08	31.65	.00	.00
Red Oak	14.29	7.30	9.92	14.46
White Oak	4.08	2.00	1.29	7.45
Black Oak	3.06	1.49	.00	6.44

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	**3.00**	
> 18" DBH Cavity/Den Trees	1.71	
Overstory Snags	1.86	
Understory Snags	2.71	
Hard Mast (acorns, beechnuts, etc.)	2.29	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.71	
Shrub Layer (woody plants 2'-10' high)	2.43	WH,HK,BE,RM,CT
Midstory Layer (woody plants 10'-30' high)	2.71	BE,HK,WH,RM
Groundcover	2.14	FN,PB
Dead & Down Trees	2.86	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 020MW**	***Acreage*:**	**15.8**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	29	269	0	3.3
8"-10"	50	124	0	12.0
12"-16"	25	28	1,242	2.4
18"-22"	6	3	589	.2
22"+	5	2	649	.3
TOTAL	**115**	**426**	**2,480**	**18.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	21.74	21.13	58.24	14.16
Hemlock	3.26	1.31	.00	3.98
Red Maple	23.91	29.87	.00	31.26
White Birch	2.17	1.68	.00	2.67
Black Birch	31.52	33.82	25.50	31.20
Red Oak	5.43	3.48	9.46	4.13
White Oak	1.09	1.49	.00	1.19
Black Oak	10.87	7.21	6.79	11.42

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	2.38	
> 18" DBH Cavity/Den Trees	1.38	
Overstory Snags	1.25	
Understory Snags	**2.88**	
Hard Mast (acorns, beechnuts, etc.)	2.00	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.63	OK
Shrub Layer (woody plants 2'-10' high)	**2.88**	**WP,BE,HK,WH**
Midstory Layer (woody plants 10'-30' high)	2.13	WP,HK,SB,RM,BE
Groundcover	2.50	PB
Dead & Down Trees	2.63	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 025MW**	***Acreage*:**	**10.9**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**1 - (40%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	22	162	0	2.7
8"-10"	35	80	0	9.2
12"-16"	30	31	2,693	.0
18"-22"	8	3	1,224	.0
22"+	0	0	0	.0
TOTAL	**95**	**276**	**3,917**	**11.9**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	34.21	14.06	81.08	20.60
Red Maple	15.79	29.40	.00	22.00
White Birch	2.63	2.59	.00	4.10
Black Birch	10.53	29.97	.00	7.36
Red Oak	34.21	23.13	16.23	45.95
White Oak	2.63	.85	2.69	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	**3.50**	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	3.25	gypsy moth - HK
Understory Snags	3.00	
Hard Mast (acorns, beechnuts, etc.)	3.00	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.50	VB
Shrub Layer (woody plants 2'-10' high)	**3.50**	**WP,WH,HK,LR**
Midstory Layer (woody plants 10'-30' high)	2.50	SB,RM,BE
Groundcover	**3.50**	**PB,FN**
Dead & Down Trees	3.00	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 030MW**	***Acreage*:**	**17.8**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (65%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	13	218	0	1.8
8"-10"	38	90	0	9.0
12"-16"	51	53	3,846	3.5
18"-22"	28	13	4,079	.8
22"+	4	2	803	.0
TOTAL	**134**	**376**	**8,728**	**15.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	42.15	13.01	84.92	15.05
Hemlock	6.61	4.91	.72	10.12
Red Maple	12.40	43.00	.00	21.36
White Birch	.83	.38	.00	2.03
Black Birch	12.40	9.40	1.64	20.57
Beech	1.65	14.41	.00	1.66
Red Oak	18.18	10.51	11.92	19.16
White Oak	.83	.38	.80	.00
Black Oak	4.96	4.01	.00	10.05

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.56	
> 18" DBH Cavity/Den Trees	1.89	
Overstory Snags	1.22	
Understory Snags	2.22	
Hard Mast (acorns, beechnuts, etc.)	2.22	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.78	OK
Shrub Layer (woody plants 2'-10' high)	**3.00**	**WH,WP,BE,HK,LR**
Midstory Layer (woody plants 10'-30' high)	2.22	RM,WH,HK
Groundcover	2.56	
Dead & Down Trees	2.33	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 040MW**	***Acreage*:**	**21.8**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (60%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	12	130	0	1.4
8"-10"	40	99	0	9.9
12"-16"	58	57	4,703	2.2
18"-22"	20	10	2,658	1.0
22"+	0	0	0	.0
TOTAL	**130**	**296**	**7,361**	**14.5**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	21.53	10.21	54.42	8.08
Hemlock	14.58	22.36	10.53	11.27
Red Maple	12.50	13.26	1.33	29.25
White Ash	.69	.39	1.03	.00
Aspen	1.39	.61	2.17	1.71
Yellow Birch	1.39	1.17	.81	1.54
Black Birch	4.86	18.13	1.55	6.42
Beech	.69	.88	.00	1.41
Red Oak	33.33	21.05	24.61	30.19
White Oak	6.94	11.29	1.60	8.71
Black Oak	2.08	.67	1.95	1.42

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.27	
> 18" DBH Cavity/Den Trees	2.27	
Overstory Snags	1.36	
Understory Snags	2.82	
Hard Mast (acorns, beechnuts, etc.)	**3.36**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.27	VA
Browse (woody plants)	1.36	OK
Shrub Layer (woody plants 2'-10' high)	2.82	HK,WP,WH,SB,SM
Midstory Layer (woody plants 10'-30' high)	2.18	HK,RM,SB,CT
Groundcover	1.91	PB,SA
Dead & Down Trees	2.45	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 045MW**	***Acreage*:**	**14.3**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**1 - (40%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	28	325	0	2.8
8"-10"	53	134	0	10.3
12"-16"	17	17	1,061	.9
18"-22"	0	0	0	.0
22"+	0	0	0	.0
TOTAL	**98**	**476**	**1,061**	**14.0**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	10.14	2.98	67.40	6.50
Hemlock	8.70	6.86	.00	9.47
Red Maple	5.80	34.33	.00	.00
White Birch	5.80	8.01	.00	5.35
Black Birch	2.90	2.38	.00	3.77
Beech	4.35	2.46	.00	5.59
Red Oak	47.83	31.46	32.60	54.18
White Oak	5.80	5.70	.00	5.44
Black Oak	8.70	5.82	.00	9.70

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.29	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	3.00	gypsy moth - HK
Understory Snags	**3.43**	**gypsy moth - HK**
Hard Mast (acorns, beechnuts, etc.)	3.14	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.14	VA
Browse (woody plants)	1.29	
Shrub Layer (woody plants 2'-10' high)	3.29	HK,WP,BE,WH
Midstory Layer (woody plants 10'-30' high)	2.57	RM,HK,CT,SB,RO
Groundcover	2.29	PB
Dead & Down Trees	3.29	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 050MW**	***Acreage*:**	**19.3**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	34	449	0	5.6
8"-10"	50	122	0	11.5
12"-16"	33	35	2,315	2.0
18"-22"	1	1	165	.0
22"+	0	0	0	.0
TOTAL	**118**	**607**	**2,480**	**19.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	50.85	25.41	90.03	56.27
Red Maple	6.78	41.31	.00	1.68
Black Birch	2.54	3.20	.00	1.41
Red Oak	28.81	16.62	9.97	31.08
White Oak	4.24	2.92	.00	3.48
Black Oak	5.93	2.99	.00	6.08
Other Hardwoods	.85	7.55	.00	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.90	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	1.70	
Understory Snags	3.30	gypsy moth
Hard Mast (acorns, beechnuts, etc.)	2.90	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.10	VA
Browse (woody plants)	1.80	OK
Shrub Layer (woody plants 2'-10' high)	3.40	WP,HK,LR,RM,SB
Midstory Layer (woody plants 10'-30' high)	2.10	RM,SB,CT,WP
Groundcover	**3.50**	**MS,PB**
Dead & Down Trees	2.30	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 055MW**	***Acreage*:**	**6.0**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	30	311	0	3.7
8"-10"	54	134	0	15.4
12"-16"	56	56	5,176	2.0
18"-22"	8	3	796	1.0
22"+	0	0	0	.0
TOTAL	**148**	**504**	**5,972**	**22.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	52.70	25.31	85.79	57.69
Hemlock	1.35	4.55	.00	.00
Red Maple	10.81	41.14	.00	6.24
White Birch	2.70	4.04	.00	3.18
Black Birch	5.41	5.55	1.08	6.80
Beech	2.70	4.73	.00	2.23
Red Oak	24.32	14.69	13.14	23.86

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.40	
> 18" DBH Cavity/Den Trees	1.60	
Overstory Snags	2.20	
Understory Snags	**3.60**	
Hard Mast (acorns, beechnuts, etc.)	3.00	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.20	OK
Shrub Layer (woody plants 2'-10' high)	**3.60**	**WP,HK,WH,CT,WO**
Midstory Layer (woody plants 10'-30' high)	2.20	WP,BE,CT,RM,SB
Groundcover	3.40	MS,PB,FN
Dead & Down Trees	2.20	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 060HW**	***Acreage*:**	**17.3**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (70%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	24	270	0	3.5
8"-10"	35	82	0	8.1
12"-16"	41	41	2,801	2.5
18"-22"	9	4	750	.3
22"+	2	1	98	.3
TOTAL	**111**	**398**	**3,649**	**14.7**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	9.01	9.78	17.44	6.84
Hemlock	6.31	14.90	.00	7.94
Sugar Maple	1.80	2.56	.00	2.61
Red Maple	22.52	45.40	1.93	30.79
White Ash	.90	.23	1.80	.00
White Birch	4.50	4.32	1.11	7.61
Black Birch	12.61	9.52	1.72	19.22
Red Oak	39.64	11.79	76.00	20.33
White Oak	.90	.72	.00	1.36
Black Oak	.90	.72	.00	1.41
Black Gum	.90	.06	.00	1.89

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.60	
> 18" DBH Cavity/Den Trees	2.30	
Overstory Snags	2.90	
Understory Snags	2.50	
Hard Mast (acorns, beechnuts, etc.)	**3.30**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.30	OK,WA
Shrub Layer (woody plants 2'-10' high)	3.20	WH,WP,HK,RM,RO
Midstory Layer (woody plants 10'-30' high)	2.30	HK,RM,SM,SB,BE
Groundcover	2.90	FN,PB,MS,SA
Dead & Down Trees	3.10	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 065MW**	***Acreage*:**	**11.9**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	16	206	0	1.4
8"-10"	43	107	0	8.7
12"-16"	42	43	3,212	1.3
18"-22"	13	6	2,149	.0
22"+	2	1	333	.0
TOTAL	**116**	**363**	**5,694**	**11.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	24.29	6.55	68.19	9.28
Hemlock	12.86	15.53	4.57	17.71
Red Maple	4.29	27.64	.00	2.27
White Birch	1.43	.84	.00	4.13
Black Birch	4.29	2.59	1.23	5.48
Beech	14.29	11.99	3.80	20.97
Red Oak	28.57	24.17	14.55	35.49
White Oak	10.00	10.69	7.66	4.66

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	**3.17**	
> 18" DBH Cavity/Den Trees	1.50	
Overstory Snags	1.00	
Understory Snags	2.50	
Hard Mast (acorns, beechnuts, etc.)	3.00	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.00	
Shrub Layer (woody plants 2'-10' high)	**3.17**	**LR,HK,RM,WO,CT**
Midstory Layer (woody plants 10'-30' high)	2.83	WH,RM,HK,BE,SB
Groundcover	2.17	PB
Dead & Down Trees	1.67	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 070MW**	***Acreage*:**	**58.9 (5.0 gu inclusion)**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	35	449	0	2.0
8"-10"	42	104	0	7.0
12"-16"	20	21	1,764	2.0
18"-22"	10	5	1,576	.0
22"+	1	1	201	.0
TOTAL	**108**	**580**	**3,541**	**11.0**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	11.93	3.10	44.82	8.00
Hemlock	10.09	3.27	24.93	6.00
Red Maple	15.59	35.51	.93	12.00
White Ash	.45	.17	.00	1.00
White Birch	3.70	2.93	.00	5.00
Yellow Birch	.45	.34	.00	.00
Black Birch	6.42	5.17	2.46	7.00
Grey Birch	.91	.68	.00	1.00
Beech	6.42	19.48	.00	2.00
Red Oak	38.53	20.17	23.92	50.00
White Oak	.91	.52	.00	2.00
Black Oak	2.75	1.90	.00	3.00
Black Gum	.91	.17	2.94	2.00
Other Hardwoods	.94	6.59	.00	1.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	1.60	
Overstory Snags	1.68	
Understory Snags	2.48	
Hard Mast (acorns, beechnuts, etc.)	2.68	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.08	VA
Browse (woody plants)	1.28	OK
Shrub Layer (woody plants 2'-10' high)	**3.60**	**LR,WH,WP**
Midstory Layer (woody plants 10'-30' high)	2.92	WH,RM,BE
Groundcover	1.56	MS,FN
Dead & Down Trees	2.20	OL,BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 075MW**	***Acreage*:**	**34.6**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	24	415	0	2.5
8"-10"	50	121	0	12.3
12"-16"	67	68	3,812	6.0
18"-22"	14	7	1,112	1.7
22"+	1	1	113	.0
TOTAL	**156**	**612**	**5,037**	**22.5**

SPECIES COMPOSITION BY PERCENT

	Basal Area	***# of Trees***	***Board Feet***	***Cordwood***
White Pine	4.93	.86	23.18	1.16
Hemlock	32.02	23.45	37.07	29.12
Sugar Maple	.99	1.28	.00	1.51
Red Maple	9.85	6.87	2.66	15.68
Aspen	.49	.16	.96	.00
White Birch	2.46	2.51	1.64	2.48
Yellow Birch	1.48	2.44	.00	1.27
Black Birch	4.43	4.11	2.29	4.45
Beech	21.67	49.86	3.35	24.75
Red Oak	17.24	6.75	26.50	12.78
White Oak	.99	.25	.60	1.68
Black Oak	2.96	1.37	1.03	4.30
Black Gum	.49	.07	.71	.81

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	**3.00**	
> 18" DBH Cavity/Den Trees	2.00	
Overstory Snags	1.31	
Understory Snags	2.38	
Hard Mast (acorns, beechnuts, etc.)	2.77	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.15	
Shrub Layer (woody plants 2'-10' high)	2.46	LR,HKWH,BE
Midstory Layer (woody plants 10'-30' high)	2.54	BE,HK,WH,RM,SB
Groundcover	1.00	
Dead & Down Trees	1.92	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 080HW**	***Acreage*:**	**13.8**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**4 - (100%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	12	148	0	1.2
8"-10"	40	91	0	10.8
12"-16"	65	68	3,984	5.0
18"-22"	22	11	2,051	1.9
22"+	6	2	809	.5
TOTAL	**145**	**320**	**6,844**	**19.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	1.15	.08	5.28	.00
Hemlock	12.64	7.82	19.06	6.93
Sugar Maple	10.34	4.54	10.41	9.05
Red Maple	14.94	8.77	14.31	21.08
White Ash	6.90	3.98	10.12	8.43
Yellow Birch	10.34	15.45	1.60	13.58
Black Birch	20.69	16.58	14.08	25.81
Beech	12.64	36.72	9.42	11.32
Basswood	1.15	.49	1.04	2.37
Red Oak	8.05	2.91	14.69	.00
Hophornbeam	1.15	2.65	.00	1.44

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	**3.17**	
> 18" DBH Cavity/Den Trees	3.00	
Overstory Snags	1.00	
Understory Snags	2.67	
Hard Mast (acorns, beechnuts, etc.)	2.50	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.33	SM,BE
Shrub Layer (woody plants 2'-10' high)	2.83	BE,HK,SM,SB,HM,WH
Midstory Layer (woody plants 10'-30' high)	3.17	SB,BE,HK,WH
Groundcover	1.67	FN
Dead & Down Trees	3.00	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 085HW**	***Acreage*:**	**8.9**
***Size Classification*:**	**PL (Pole)**	***Growing Density*:**	**3 - (80%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	33	369	0	3.7
8"-10"	73	183	0	18.9
12"-16"	23	26	1,388	1.9
18"-22"	7	4	444	.6
22"+	0	0	0	.0
TOTAL	**136**	**582**	**1,832**	**25.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	2.44	.41	9.62	3.10
Hemlock	7.32	7.22	24.27	2.59
Sugar Maple	4.88	9.49	.00	2.93
Red Maple	17.07	35.65	.00	21.28
White Ash	2.44	1.64	.00	3.33
Aspen	17.07	8.07	27.34	17.66
White Birch	9.76	5.39	.00	12.70
Yellow Birch	2.44	2.92	.00	2.32
Black Birch	26.83	20.63	.00	34.10
Red Oak	9.76	8.57	38.78	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.67	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	1.00	
Understory Snags	**3.00**	
Hard Mast (acorns, beechnuts, etc.)	2.67	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.33	
Shrub Layer (woody plants 2'-10' high)	2.67	WH,LR,RM
Midstory Layer (woody plants 10'-30' high)	2.67	WH,SB,BE,RM
Groundcover	2.00	FN
Dead & Down Trees	2.00	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 090MW**	***Acreage*:**	**13.8**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**1 - (40%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	40	335	0	6.5
8"-10"	40	100	0	7.6
12"-16"	25	30	940	2.1
18"-22"	2	1	210	.0
22"+	2	1	333	.0
TOTAL	**109**	**467**	**1,483**	**16.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	30.77	49.60	67.45	30.58
Hemlock	6.15	7.02	.00	4.43
Red Maple	4.62	4.66	.00	6.64
White Birch	1.54	1.02	.00	2.53
Black Birch	6.15	8.75	.00	5.60
Beech	1.54	1.82	.00	2.07
Red Oak	41.54	23.52	32.55	38.23
White Oak	3.08	1.48	.00	4.48
Black Oak	4.62	2.13	.00	5.45

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	2.33	
Understory Snags	3.00	
Hard Mast (acorns, beechnuts, etc.)	2.83	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.67	VA
Browse (woody plants)	1.50	VB,WO
Shrub Layer (woody plants 2'-10' high)	**3.17**	**WP,HK,OK**
Midstory Layer (woody plants 10'-30' high)	2.33	RM,WP,SB,CT,HK
Groundcover	2.33	FN,PB,MA,SA
Dead & Down Trees	2.33	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 095MW**	***Acreage*:**	**17.3**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**1 - (40%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	32	229	0	4.6
8"-10"	40	104	0	8.4
12"-16"	20	22	1,531	1.8
18"-22"	6	3	1,062	.0
22"+	1	1	124	.0
TOTAL	**99**	**359**	**2,717**	**14.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	38.75	37.34	81.61	35.63
Hemlock	1.25	1.77	.00	1.70
Sugar Maple	2.50	5.76	.00	1.86
Red Maple	3.75	8.98	.00	2.27
Black Birch	1.25	1.00	.00	1.21
Red Oak	50.00	42.38	18.39	53.93
White Oak	1.25	1.77	.00	1.00
Hickory	1.25	1.00	.00	2.39

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	2.00	
Overstory Snags	2.88	
Understory Snags	3.38	
Hard Mast (acorns, beechnuts, etc.)	3.25	
Soft Mast (fleshy fruits - apples, cherries, etc.)	2.50	VA
Browse (woody plants)	1.75	OK
Shrub Layer (woody plants 2'-10' high)	**3.50**	**WP,VA,WH,LR,RM**
Midstory Layer (woody plants 10'-30' high)	1.88	RM,WP,WH,CT
Groundcover	1.88	MS,PB
Dead & Down Trees	2.50	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 100MW**	***Acreage*:**	**10.4**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (70%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	22	176	0	2.7
8"-10"	40	94	0	11.0
12"-16"	54	52	4,161	2.7
18"-22"	18	8	3,246	.0
22"+	4	1	325	.4
TOTAL	**138**	**331**	**7,732**	**16.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	23.19	9.58	62.89	9.77
Hemlock	2.90	1.68	.00	3.65
Red Maple	36.23	67.70	3.84	53.47
White Birch	2.90	2.22	.00	6.73
Black Birch	1.45	3.08	.00	2.08
Red Oak	28.99	13.99	33.27	17.34
White Oak	4.35	1.75	.00	6.96

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	2.40	
Overstory Snags	2.60	
Understory Snags	2.00	
Hard Mast (acorns, beechnuts, etc.)	**3.20**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.20	
Browse (woody plants)	1.80	RO,WP,WA
Shrub Layer (woody plants 2'-10' high)	2.80	BE,LR,WP,HK,WH
Midstory Layer (woody plants 10'-30' high)	2.20	RM,BE,WH,RO
Groundcover	2.40	FN
Dead & Down Trees	1.40	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 105HW**	***Acreage*:**	**15.3**
***Size Classification*:**	**PL - (Poles)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	38	509	0	4.7
8"-10"	45	110	0	10.8
12"-16"	25	27	1,340	1.2
18"-22"	2	1	248	.0
22"+	0	0	0	.0
TOTAL	**110**	**647**	**1,588**	**16.7**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	6.06	2.08	29.73	2.65
Hemlock	4.55	3.36	.00	5.79
Sugar Maple	1.52	2.95	.00	.00
Red Maple	19.70	24.35	.00	25.24
White Ash	12.12	19.94	6.60	10.38
White Birch	3.03	1.78	.00	3.03
Yellow Birch	3.03	1.78	.00	4.05
Black Birch	1.52	1.31	.00	1.74
Red Oak	40.91	14.70	63.67	43.20
White Oak	1.52	.74	.00	1.45
Black Oak	1.52	.47	.00	2.47
Black Gum	4.55	26.53	.00	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.83	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	2.17	
Understory Snags	**3.00**	
Hard Mast (acorns, beechnuts, etc.)	2.67	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.33	VA
Browse (woody plants)	2.00	OK
Shrub Layer (woody plants 2'-10' high)	2.83	LR,BE,WP,OK,WH
Midstory Layer (woody plants 10'-30' high)	2.33	WA,GU,RM,SM
Groundcover	**3.00**	**FN,MS,PB**
Dead & Down Trees	1.50	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 110MW**	***Acreage*:**	**27.2**
***Size Classification*:**	**PL - (Poles)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	39	481	0	5.2
8"-10"	49	118	0	11.6
12"-16"	36	40	2,032	1.5
18"-22"	3	2	138	.3
22"+	1	1	200	.0
TOTAL	**128**	**642**	**2,370**	**18.6**

SPECIES COMPOSITION BY PERCENT

	Basal Area	***# of Trees***	***Board Feet***	***Cordwood***
White Pine	3.91	.79	14.23	2.46
Red Pine	.78	.20	2.84	.00
Hemlock	21.09	40.41	21.66	17.22
Sugar Maple	1.56	.99	2.65	1.19
Red Maple	6.25	6.30	.00	8.70
White Birch	6.25	5.38	2.65	7.19
Yellow Birch	.78	7.14	.00	.00
Black Birch	5.47	5.19	.00	7.19
Grey Birch	1.56	1.59	.00	1.61
Beech	7.03	12.11	.00	8.20
Red Oak	42.19	17.49	50.54	44.61
Black Oak	2.34	.63	5.42	1.63
Hophornbeam	.78	1.79	.00	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.70	
> 18" DBH Cavity/Den Trees	1.10	
Overstory Snags	1.60	
Understory Snags	2.40	
Hard Mast (acorns, beechnuts, etc.)	2.80	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.10	OK
Shrub Layer (woody plants 2'-10' high)	**2.90**	**LR,WH,HK,BE**
Midstory Layer (woody plants 10'-30' high)	2.80	HK,BE,RM,WH
Groundcover	1.30	
Dead & Down Trees	2.00	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 115HK**	***Acreage*:**	**12.8**
***Size Classification*:**	**LS - (Large Sawtimber)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	18	149	0	2.0
8"-10"	52	125	0	13.5
12"-16"	69	66	4,347	5.0
18"-22"	47	23	4,728	3.1
22"+	9	3	1,296	.2
TOTAL	**195**	**366**	**10,371**	**23.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	1.46	.25	6.05	.00
Hemlock	48.18	38.69	73.83	26.53
Red Maple	12.41	21.20	.00	26.28
White Birch	8.76	9.06	4.71	9.82
Black Birch	13.87	19.32	4.60	17.71
Grey Birch	.73	1.12	.00	1.48
Beech	4.38	3.55	1.20	7.96
Red Oak	8.76	4.98	9.60	6.90
White Oak	1.46	1.83	.00	3.32

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	**3.00**	
> 18" DBH Cavity/Den Trees	2.71	
Overstory Snags	1.00	
Understory Snags	2.14	
Hard Mast (acorns, beechnuts, etc.)	2.57	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.00	
Shrub Layer (woody plants 2'-10' high)	2.14	HK,LR
Midstory Layer (woody plants 10'-30' high)	2.14	HK,BE,SB,WH
Groundcover	1.29	MS
Dead & Down Trees	2.14	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 120MW**	***Acreage*:**	**35.7 (1.6 rms inclusion)**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (55%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	16	194	0	1.8
8"-10"	28	67	0	6.6
12"-16"	40	37	2,999	2.0
18"-22"	22	12	2,615	1.0
22"+	5	2	541	.8
TOTAL	**111**	**312**	**6,155**	**12.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	25.64	25.87	50.47	22.71
Hemlock	1.28	.87	.00	1.73
Sugar Maple	1.92	1.30	.82	3.31
Red Maple	11.54	27.86	.00	17.25
White Ash	1.28	.95	.97	1.47
White Birch	.64	.66	.00	1.15
Black Birch	9.62	18.03	2.59	14.64
Beech	.64	.42	.00	1.93
Red Oak	29.49	11.78	32.85	18.16
White Oak	5.13	6.04	2.20	5.23
Black Oak	9.62	3.98	8.37	7.87
Hickory	3.21	2.24	1.74	4.54

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.64	
> 18" DBH Cavity/Den Trees	2.71	
Overstory Snags	1.00	
Understory Snags	3.07	
Hard Mast (acorns, beechnuts, etc.)	**3.36**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.29	OK
Shrub Layer (woody plants 2'-10' high)	2.50	WH,WP,WO,RM,CT
Midstory Layer (woody plants 10'-30' high)	2.64	RM,SB,WP,CT,HK
Groundcover	2.36	FN,SA
Dead & Down Trees	3.07	BD,OL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 125RO**	***Acreage*:**	**7.4**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**3 - (80%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	33	462	0	4.4
8"-10"	80	195	0	12.6
12"-16"	13	14	834	.4
18"-22"	0	0	0	.0
22"+	0	0	0	.0
TOTAL	**126**	**671**	**834**	**17.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	18.42	35.08	38.62	18.06
Hemlock	2.63	.91	.00	1.93
Red Maple	2.63	22.76	.00	.00
Red Oak	73.68	39.83	61.38	78.27
White Oak	2.63	1.42	.00	1.74

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	*Mean*	*Remarks*
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	2.33	
Understory Snags	3.33	
Hard Mast (acorns, beechnuts, etc.)	**4.00**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	2.67	VA
Browse (woody plants)	1.67	
Shrub Layer (woody plants 2'-10' high)	2.67	WP,RM,WO
Midstory Layer (woody plants 10'-30' high)	1.33	
Groundcover	3.00	LI,MS
Dead & Down Trees	2.00	

***Forested Habitat*:**	**JE - 130MW**	***Acreage*:**	**10.4 (1.5 wp inclusion)**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (70%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	25	261	0	3.2
8"-10"	45	103	0	10.1
12"-16"	50	55	2,831	4.5
18"-22"	12	6	1,740	.8
22"+	10	3	2,034	.0
TOTAL	**142**	**428**	**6,605**	**18.6**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	15.79	2.64	66.57	.00
Hemlock	31.58	49.99	13.24	40.73
Red Maple	5.26	7.62	.00	5.63
White Birch	7.02	3.63	2.38	10.63
Black Birch	10.53	12.40	2.38	12.11
Red Oak	22.81	18.24	15.43	18.96
White Oak	7.02	5.48	.00	11.93

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	**3.00**	
> 18" DBH Cavity/Den Trees	2.50	
Overstory Snags	1.75	
Understory Snags	**3.00**	
Hard Mast (acorns, beechnuts, etc.)	2.50	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.00	
Shrub Layer (woody plants 2'-10' high)	2.50	LR,HK,WH
Midstory Layer (woody plants 10'-30' high)	2.50	HK,WH
Groundcover	1.50	MS
Dead & Down Trees	2.25	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 135MW**	***Acreage*:**	**29.6 (3.0 hk inclusion)**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	28	250	0	3.5
8"-10"	41	99	0	10.6
12"-16"	57	59	3,827	2.1
18"-22"	21	10	2,659	.0
22"+	3	1	350	.0
TOTAL	**150**	**419**	**6,836**	**16.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	5.00	1.70	15.76	2.29
Hemlock	30.42	39.83	35.46	23.76
Red Maple	10.00	15.48	.58	19.99
White Birch	3.33	1.87	2.52	3.79
Black Birch	15.83	19.24	2.55	27.67
Beech	5.42	10.19	1.28	7.70
Red Oak	28.75	11.08	40.68	13.87
White Oak	1.25	.60	1.18	.93

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.06	
> 18" DBH Cavity/Den Trees	2.25	
Overstory Snags	2.13	
Understory Snags	2.63	
Hard Mast (acorns, beechnuts, etc.)	**3.13**	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.19	SM
Shrub Layer (woody plants 2'-10' high)	2.50	LR,HK,WH,SM,HM
Midstory Layer (woody plants 10'-30' high)	2.56	HK,BE,RM,WH,SB
Groundcover	1.44	MS
Dead & Down Trees	2.31	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**JE - 140MW**	***Acreage*:**	**21.1**
***Size Classification*:**	**PL - (Poles)**	***Growing Density*:**	**1 - (35%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	41	570	0	4.2
8"-10"	44	112	0	10.0
12"-16"	18	18	1,026	.7
18"-22"	3	2	216	.2
22"+	0	0	0	.0
TOTAL	**106**	**702**	**1,242**	**15.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	1.89	.54	5.64	1.69
Hemlock	18.87	15.84	51.16	11.96
Sugar Maple	.94	1.63	.00	.00
Red Maple	8.49	37.79	.00	2.05
White Birch	11.32	9.25	.00	13.44
Black Birch	1.89	1.45	.00	1.97
Grey Birch	1.89	1.45	.00	2.65
Beech	2.83	1.12	.00	4.38
Red Oak	45.28	22.30	29.24	57.77
Black Oak	5.66	2.11	13.96	4.10
Other Hardwoods	.94	6.53	.00	.00

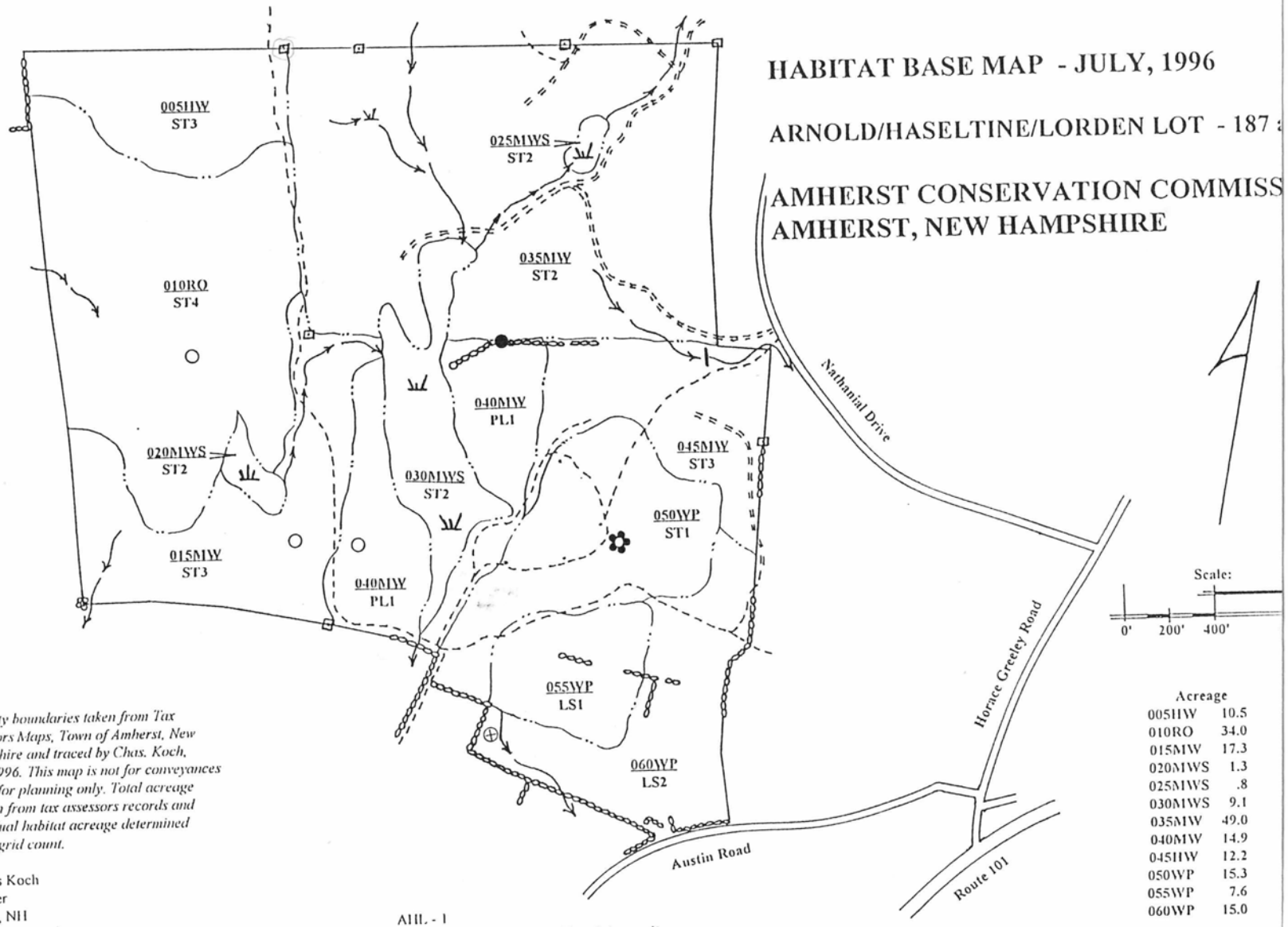
STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.70	
> 18" DBH Cavity/Den Trees	1.10	
Overstory Snags	2.00	
Understory Snags	3.00	
Hard Mast (acorns, beechnuts, etc.)	2.90	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.30	VA
Browse (woody plants)	1.20	
Shrub Layer (woody plants 2'-10' high)	**3.40**	**LR,WH,HK**
Midstory Layer (woody plants 10'-30' high)	2.50	HK,WH,BE,RM
Groundcover	1.60	MS
Dead & Down Trees	2.00	BD

HABITAT BASE MAP - JULY, 1996

ARNOLD/HASELTINE/LORDEN LOT - 187 a

AMHERST CONSERVATION COMMISS
AMHERST, NEW HAMPSHIRE



Property boundaries taken from Tax Assessors Maps, Town of Amherst, New Hampshire and traced by Chas. Koch, June 1996. This map is not for conveyances and is for planning only. Total acreage is taken from tax assessors records and individual habitat acreage determined by dot grid count.

Charles Koch
Forester
Jaffrey, NH

AHL - 1
(see Appendix 6 & 7 Map Key & Legend)

Acreage	
005HW	10.5
010RO	34.0
015MW	17.3
020MWS	1.3
025MWS	.8
030MWS	9.1
035MW	49.0
040MW	14.9
045HW	12.2
050WP	15.3
055WP	7.6
060WP	15.0

TOTAL SAWTIMBER AND CORDWOOD INVENTORY

AMHERST CONSERVATION COMMISSION
ARNOLD/HASELTINE/LORDEN LOT; AUSTIN ROAD
187 Timbered Acres
187 Acres Total
July, 1996

	Sawtimber (Board feet - International 1/4 Rule)	Cordwood (Cords)
White Pine	246,354	797
Pitch Pine	3,605	0
Hemlock	181,575	853
Red Maple	14,496	631
White Ash	8,825	100
Aspen	0	5
Black Cherry	2,035	18
White Birch	13,250	125
Yellow Birch	3,038	17
Black Birch	20,424	297
Grey Birch	0	8
Beech	41,212	307
Red Oak	193,223	446
White Oak	14,175	94
Black Oak	22,807	78
Black Gum	0	27
Hickory	1,826	111
All Softwoods	431,534	1,650
All Hardwoods	335,311	2,264
All Species	766,844 ± 11%	3,914 ± 15%

I am confident that the total volume for this woodlot lies somewhere within the interval of 692,491 BF and 861,195 BF for the sawtimber and 3,327 cords and 4,501 cords for the cordwood. The procedure used will generate correct statements 95 out of 100 times (using a 10 factor prism on 92 sample plots, located on a 295' square grid pattern).

Timber

The Arnold/Haseltine/Lorden Lot consists of the following habitats by acreage:

Upland Forested Habitats	175.8
Forested Wetland Habitats	11.2
Wetlands	0.0
Open/Field	0.0
Total Acreage	**187.0**

Calculation of Harvest Rate:
Rotation Age - 120 years
Harvest Rate - 175.8 acres ÷ 120 years = 1.46 acres per year

This lot is a consolidation of 3 previous ownerships and the diversity of habitats found on this property is a reflection of the management practices of these past ownerships. Some habitats were left to grow in a relatively unmanaged state and others are a result of moderate to heavy cutting. The present forest structure shows a large surplus in the sawtimber habitat and most cuttings for this planning period will be directed to redistributing the sawtimber habitat class into the smaller sapling habitat class. Most of this redistribution will involve group selection cuttings to establish new regeneration and some improvement cuttings to release an already established understory. The forest structure graph (AHL - 6) shows that there will be a surplus of seedling/sapling habitat created during this planning period which, in turn, will create a surplus of sapling/pole habitat during the next planning period. This surplus is more of a consequence of past cutting and not a decision to cut heavily during this planning period.

The harvesting operations will be separated into to distinct areas. These areas are determined by access points. Access exists off Nathanial Drive which will be used for the harvesting proposed in 035MW (roughly the old Lorden Lot). A landing can be located anywhere along the existing access woods road. Minimal capital will be necessary to build a landing for this operation.

Other areas of the property are so far from the access at Nathanial Road that the extreme skid distance would make harvesting uneconomical. There is an access point off Austin Road that could be used. However, the skid distances would be very long if a landing was located at Austin Road. It is recommended that an access road be built from Austin Road through forested habitats 060WP and 055WP as close to the 030MWS wetland as possible. This would reduce all skid distances to a more economical distance. Clearing, stumping, and grading of approximately 1,200' of roadway would be necessary. A rough estimate of the cost to build such a road is approximately $1,200.00. This access point could serve as a parking area after the harvesting operations are completed.

It appears that a conventional logging (cable skidder) operation can be used for the timber removal if there is a pulpwood market. If a pulpwood market does not exist at the time of harvesting, a biomass operation may need to be employed.

Recreation
Well marked hiking trails occur in the southeast portion of this property which has as an entry point at Nathanial Drive (Arnold Trail). These trails connect with the Bicentennial Trail near the southern border of this property. The Bicentennial Trail runs north/south through the middle of this property and connects with the Joe English Reservation to the north and Austin Road to the south. The Haseltine Lot is located a short distance to the west along Austin Road.

Old skid roads in the northeast section of this property provide some access and can be used as trails. Some connections would have to be located in order to connect the skid trails to the existing hiking network. Opportunities for viewing wildlife might be enhanced if a trail was located parallel to the east side of forested wetland 035MWS.

Wildlife
All wildlife elements occur throughout the property. The only wildlife element that might be considered deficient is browse. The group selection cuttings should alleviate this deficit.

In addition, early successional habitat is present off the property to the north and west. There has been very heavy cutting there and these areas should provide excellent browse and cover for another 15 years. As these areas age it may be necessary to provide early successional habitat on the AHL property.

Vernal pools are found in 010RO, 015MW, and 040MW.

Aesthetics
See Part 1, page 4 - *Aesthetics*. Out standing features such as specimen trees are shown on the Habitat Base Map.

Cultural Features
The only cultural features found are some interior stone walls and a dug well in the southerly portion of the property along Austin Road. This area id generally without surface rock and may have been improved pasture at one time.

Boundaries
A portion of the north and east boundaries are blazed and painted. The north portion with yellow paint and the east portion with faded red paint. Approximately 2 miles of boundaries are unmarked, except for scattered flagging and it is recommended that these bounds be located, blazed, and painted.

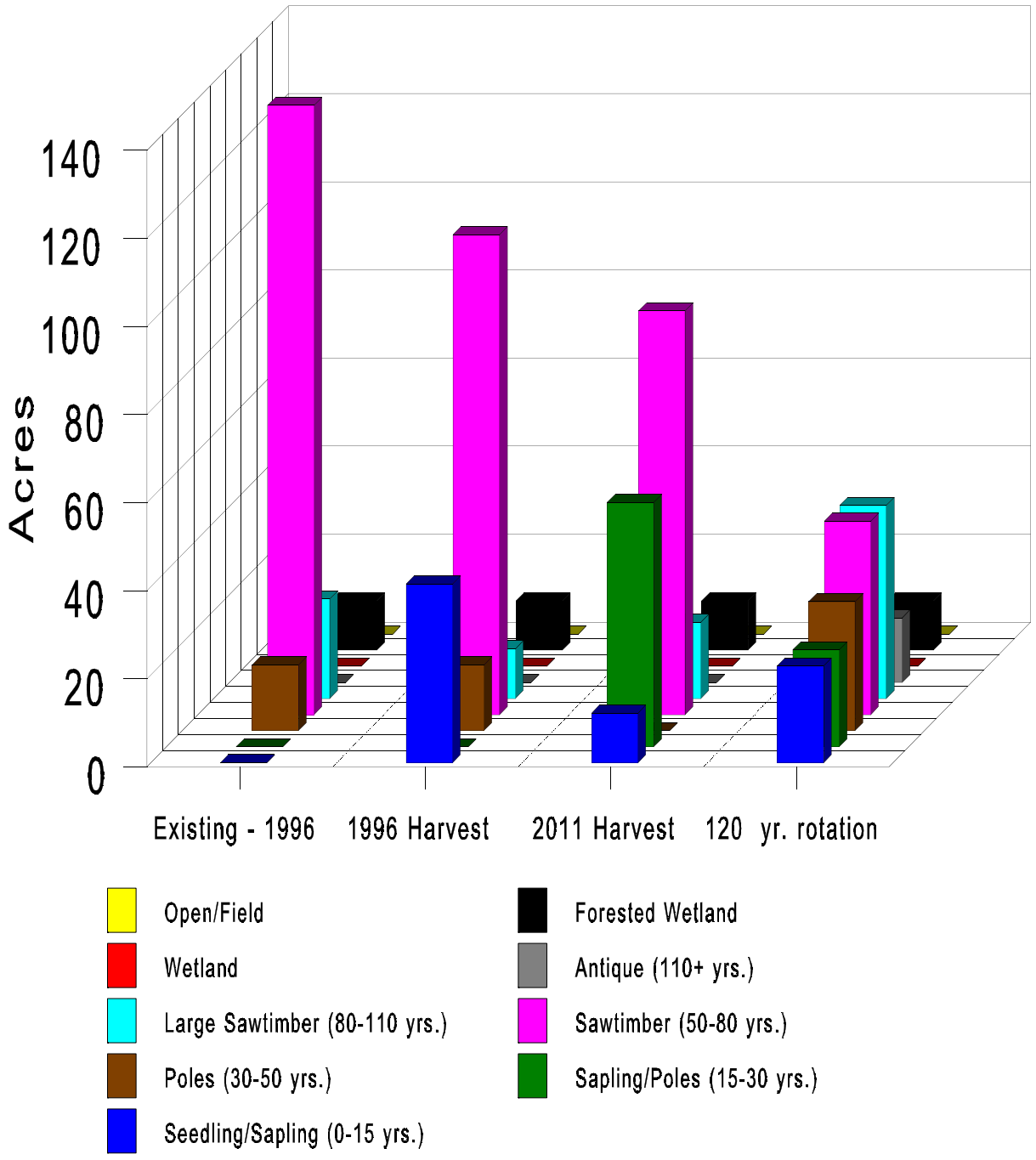
Summary of Timber Revenues and Expenses (1996-2011)

		MBF	cords	Revenue (Expense)
Natanial Road Access		75	400	5,000
Austin Road Access		125	885	15,000
Total Gross		**200**	**1,285**	**20,000**
Timber Sale Administration	Marking			(4,455)
	Commission			(2,400)
Boundary Maintenance	2.0 miles			(700)
Road Construction	1,200' + Misc.			(1,700)
Total Net				**10,745**

The following pages show the forest structure in graphic and tabular form; the summary of silvicultural recommendations in tabular and narrative form; and specific timber and wildlife data for each forested habitat.

FOREST STRUCTURE

Arnold/Haseltine/Lorden



Arnold/Haseltine/Lorden - Forest Structure (acres per habitat class)
Existing (1996) Habitats; Habitats after Silvicultural Recommendations; and Long Term Goal Habitats

Habitat	**Existing 1996**	**After 1996 Silviculture**	**After 2011 Silviculture**	**Long Term Goal**
Open/Field	0.0	0.0	0.0	0.0
Forested Wetland	11.2	11.2	11.2	11.2
Wetland	0.0	0.0	0.0	0.0
Antique (AT)	0.0	0.0	0.0	14.7
Large Sawtimber (LS)	22.6	11.3	17.3	43.9
Sawtimber (ST)	138.3	109.0	91.7	43.9
Pole (PL)	14.9	14.9	0.0	29.3
Sapling/Pole (SP)	0.0	0.0	55.5	22.0
Seedling/Sapling (SA)	0.0	40.6	11.3	22.0

(See Appendix 6 - **Forested Habitat Size Classification**)

Arnold/Haseltine/Lorden (AHL) - Silvicultural Recommendations and Anticipated Habitat Classes
Rotation Age - 120 years; Harvest Rate - 1.46 acres per year

Habitat	Habitat Class 1996	Silviculture 1996	BF 1996	CDs. 1996	Habitat Class After Treatment (1996)	Habitat Class 2011 (15 years growth)	Silviculture 2011	Habitat Class After Treatment (2011)
005HW	ST (10.5)	CT,LT	5,000	50	ST (10.5)	ST (10.5)	CT	ST (10.5)
010RO	ST (34.0)	CT,LT	25,000	250	ST (34.0)	ST (34.0)	CT	ST (34.0)
015MW	ST (17.3)	CT,LT	25,000	100	ST (17.3)	LS (17.3)	CT	LS (17.3)
020MWS	forested wetland		0	0	forested wetland	forested wetland		forested wetland
025MWS	forested wetland		0	0	forested wetland	forested wetland		forested wetland
030MWS	forested wetland		0	0	forested wetland	forested wetland		forested wetland
035MW	ST (49.0)	GS	75,000	400	ST (25.0); SA (24.0)	ST (25.0); SP (24.0)	LT,CT	ST (25.0); SP (24.0)
040MW	PL (14.9)	LG	0	0	PL (14.9)	PL (14.9)	IC	SP (14.9)
045HW	ST (12.2)	LT	0	60	ST (12.2)	ST (12.2)	CT	ST (12.2)
050WP	ST (15.3)	IC	0	50	ST (10.0); SA (5.3)	ST (10.0); SP (5.3)	CT,LT	ST (10.0); SP (5.3)
055WP	LS (7.6)	GS,IC	35,000	125	LS (3.8); SA (3.8)	LS (3.8); SP (3.8)	GS,IC	SA (3.8); SP (3.8)
060WP	LS (15.0)	GS,IC	35,000	250	LS (7.5); SA (7.5)	LS (7.5); SP (7.5)	GS,IC	SA (7.5); SP (7.5)
Totals			**200,000**	**1,285**				

SW - Shelterwood
GS - Group Selection
IC - Improvement Cutting
CT - Crown Thinning
LT - Low Thinning
LG - Let Grow
(See Appendix 9 - **Silvicultural Systems**)

Arnold/Haseltine/Lorden Lot - Silvicultural Recommendations by Habitat

005HW - This is an adequately stocked to overstocked hardwood habitat which is dominated by a mixture of red oak and beech sawtimber. Hard mast, consisting of acorns and beech nuts, is the most prominent wildlife feature in this habitat. It is recommended that the hard mast component be encouraged with low and crown thinnings for this planning period as well as the period starting in 2011.

010RO - This is an overstocked hardwood sawtimber habitat dominated by red oak with a minor black and white oak component. The most apparent wildlife feature is hard mast (acorns from the red, black, and white oak). Some hemlock occurs here also; dead standing hemlock is found in the southern section of this habitat and were probably the victims of gypsy moth defoliation. It is recommended that the hard mast component be encouraged with low and crown thinnings for this planning period as well as the period starting in 2011.

015MW - This habitat is an adequately stocked sawtimber sized area, with white pine and hemlock dominating, and a lesser amount of red oak mixed throughout. White pine expresses a more dominant position in the western half of this habitat. Again, the most apparent wildlife feature is hard mast (acorns from the red, black, and white oak). It is recommended that the hard mast component be encouraged and the remaining overstory trees given room to expand their crowns by conducting low and crown thinnings for this planning period as well as the period starting in 2011. Hemlock is becoming established in the understory of this habitat. A decision needs to be made if it is desirable for this habitat to eventually turn into a hemlock habitat. Heavier cuttings such as group selection or shelterwood cuttings may be desirable if hemlock is to be discouraged here.

020MWS, 025MWS, 030MWS - These habitats are mixedwood wetlands with red maple and hemlock dominating. Some black gum occurs along the habitat boundaries of 030MWS. Since these habitats are forested wetlands, no actions are recommended and will be allowed to develop unmanaged and grow to biological maturity.

035MW - This habitat was cut heavily about 10 years ago. Some areas are well stocked sawtimber areas dominated by hemlock and red oak with very little understory present. Other areas are open (where the heaviest cutting occurred) with some hardwood regeneration of black birch and beech. These openings are scattered throughout the habitat and are usually no more than ½ acre in size. The most apparent wildlife feature is the shrub layer and it is found in the openings created by the last harvest. It is recommended that the existing openings be expanded in size by cutting openings from 1 to 2 acres in size to encourage new reproduction. Any harvesting operation should be scheduled during the summer or fall months in order that the soil can be scarified exposing mineral soil. Those areas which have a continuous canopy and consist of good quality sawtimber and cordwood should be left alone during this planning period and low and crown thinnings scheduled for the next planning period starting in 2011.

040MW - This habitat was cut very heavily 10-20 years ago. Excellent patches of white pine regeneration about 10' tall is found throughout this habitat. However there is a poor quality overstory which consists of poles and small sawlogs of red oak, white oak, white pine, and hemlock. This pole habitat is understocked. The most apparent wildlife feature is the shrub layer which consists of the white pine reproduction and laurel. This shrub layer is almost continuous throughout this habitat. There is not enough volume present to make a timber harvest economical here at this time. It is recommended that this habitat be allowed to grow

until 2011. If there is enough volume to justify a harvest and at that time, conduct an improvement cutting which would remove the poor quality, understocked overstory and release the sapling sized white pine.

045HW - This is an adequately stocked to overstocked sawtimber habitat dominated by a mixture of hardwoods of red and black oak, and white and black birch, with lesser amounts of white pine and hemlock. The most apparent wildlife feature found in this habitat is the hard mast from the red and black oak. The southeast portion of this habitat has some classic old growth/antique forest characteristics present (large dead and down trees and cavity/den trees). It is recommended that a low thinning that would remove overtopped cordwood sized trees be removed to encourage a sawtimber sized, park like character in this habitat.

050WP - This is an understocked sawtimber habitat dominated by white pine and a cordwood sized hardwood component consisting of mainly red maple, hickory, and white ash. The western half of this habitat has patches of excellent white pine reproduction present which are usually overtopped by red maple poles. The white pine reproduction also provides a strong shrub layer which is the most prominent wildlife feature in this habitat. This habitat is unique among all the habitats inventoried in that a very strong hickory component is present. It is recommended that this habitat be managed for hickory where it dominates. The cutting recommendation for this planning period is to release the overtopped white pine reproduction by conducting an improvement cutting . Where the white pine is overtopped by red maple, remove the red maple. Where the white pine is overtopped by the hickory, leave the hickory.

055WP - This is an understocked, large sawtimber habitat dominated by poorly formed pasture pine. The quality of the timber here is very poor. There are scattered areas of good reproduction of white pine, white ash, cherry, and red maple. This reproduction provides a strong shrub layer which is the most prominent wildlife feature in this habitat. Because of this habitat's poor quality, it is recommended that it be liquidated in stages. The cutting for this planning period would be improvement cuttings to remove the poor quality pines in order to release the existing reproduction and group selection openings. Both cuttings would remove approximately ½ of the canopy area in this habitat. Another similar cutting in 2011 would remove the remaining canopy.

060WP - This is an understocked, large sawtimber habitat dominated by poorly formed white pine. The southeast corner of this habitat has excellent white pine regeneration throughout and white ash reproduction occurs in the western portion of this habitat on wetter soils. This white pine and white ash reproduction also provides a good shrub layer which is the strongest wildlife feature in this habitat. Because of this habitat's poor quality, it is recommended that it be liquidated in stages. The cutting for this planning period would be improvement cuttings to remove the poor quality pines in order to release the existing reproduction and group selection openings. Both cuttings would remove approximately ½ of the canopy area in this habitat. Another similar cutting in 2011 would remove the remaining canopy.

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 005HW**	***Acreage*:**	**10.5**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**3 - (80%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	16	188	0	2.2
8"-10"	50	112	0	12.3
12"-16"	44	42	3,063	1.5
18"-22"	8	4	395	.8
22"+	0	0	0	.0
TOTAL	**118**	**346**	**3,458**	**16.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	***# of Trees***	***Board Feet***	***Cordwood***
Hemlock	5.08	5.00	6.55	5.55
Red Maple	1.69	2.93	.00	2.23
White Birch	1.69	1.06	.00	3.97
Black Birch	16.95	12.94	.00	22.70
Beech	38.98	57.44	43.61	32.37
Red Oak	33.90	19.90	47.50	33.17
White Oak	1.69	.73	2.34	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.80	
> 18" DBH Cavity/Den Trees	2.80	
Overstory Snags	1.00	
Understory Snags	2.00	
Hard Mast (acorns, beechnuts, etc.)	**4.00**	**RO,BE**
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.00	
Shrub Layer (woody plants 2'-10' high)	2.80	BE,LR,WP
Midstory Layer (woody plants 10'-30' high)	2.60	BE
Groundcover	1.40	
Dead & Down Trees	2.00	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 010RO**	***Acreage*:**	**34.0**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**4 - (100%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	28	475	0	2.3
8"-10"	47	109	0	11.5
12"-16"	57	62	3,018	2.5
18"-22"	9	4	795	.5
22"+	1	1	63	.0
TOTAL	**142**	**651**	**3,876**	**16.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	1.33	.37	5.40	1.43
Hemlock	9.29	10.19	7.86	9.64
Red Maple	4.42	6.17	1.06	4.53
White Birch	5.75	3.45	1.01	10.42
Yellow Birch	.88	.61	.00	1.29
Black Birch	10.62	7.78	1.70	16.03
Beech	16.37	49.74	7.99	14.72
Red Oak	42.48	15.01	60.29	37.78
White Oak	2.65	.76	4.16	1.60
Black Oak	5.75	1.50	10.53	2.56
Other Hardwoods	.44	4.40	.00	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.94	
> 18" DBH Cavity/Den Trees	1.44	
Overstory Snags	1.44	
Understory Snags	3.44	
Hard Mast (acorns, beechnuts, etc.)	**3.81**	**RO,WO,BO**
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.75	
Shrub Layer (woody plants 2'-10' high)	2.94	HK,BE,LR,WH
Midstory Layer (woody plants 10'-30' high)	2.06	BE,HK
Groundcover	1.81	
Dead & Down Trees	2.38	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 015MW**	***Acreage*:**	**17.3**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	28	320	0	3.6
8"-10"	43	105	0	11.1
12"-16"	47	45	2,796	4.1
18"-22"	41	20	3,619	3.6
22"+	1	1	227	.0
TOTAL	**160**	**491**	**6,642**	**22.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	16.67	10.23	38.94	14.11
Hemlock	36.11	48.34	37.87	31.67
Red Maple	9.72	14.99	.00	14.65
Aspen	.69	.65	.00	1.24
White Birch	3.47	1.98	1.46	5.38
Black Birch	8.33	5.84	.00	11.98
Grey Birch	.69	1.15	.00	.61
Beech	6.94	7.50	2.95	8.68
Red Oak	14.58	6.97	18.78	7.16
White Oak	1.39	1.30	.00	1.98
Black Oak	.69	.42	.00	1.23
Black Gum	.69	.65	.00	1.30

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.11	
> 18" DBH Cavity/Den Trees	1.56	
Overstory Snags	1.00	
Understory Snags	1.78	
Hard Mast (acorns, beechnuts, etc.)	**2.89**	**RO,WO,BO**
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.44	
Shrub Layer (woody plants 2'-10' high)	2.66	WH,HK,LR
Midstory Layer (woody plants 10'-30' high)	1.89	
Groundcover	1.44	
Dead & Down Trees	1.88	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 020MWS**	***Acreage*:**	**1.3**
	AHL - 025MWS		**0.8**
	AHL - 030MWS		**9.1**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	***Basal Area***	***# of Trees***	***Board Feet***	***Cords***
2"-6"	20	222	0	1.8
8"-10"	38	89	0	9.0
12"-16"	45	46	1,709	7.0
18"-22"	8	5	859	.5
22"+	2	1	0	.6
TOTAL	**113**	**363**	**2,568**	**18.9**

SPECIES COMPOSITION BY PERCENT

	Basal Area	***# of Trees***	***Board Feet***	***Cordwood***
White Pine	1.47	.43	7.45	.00
Hemlock	36.76	29.09	46.19	34.45
Red Maple	36.76	17.76	30.55	44.97
White Ash	5.88	5.55	4.08	5.93
Yellow Birch	10.29	42.35	.00	4.68
Black Birch	2.94	3.65	.00	3.26
Beech	2.94	.76	4.26	3.26
Red Oak	1.47	.26	7.47	.00
Black Gum	1.47	.15	.00	3.44

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.17	
> 18" DBH Cavity/Den Trees	1.83	
Overstory Snags	3.00	
Understory Snags	2.50	
Hard Mast (acorns, beechnuts, etc.)	1.33	
Soft Mast (fleshy fruits - apples, cherries, etc.)	2.50	VA
Browse (woody plants)	2.33	
Shrub Layer (woody plants 2'-10' high)	3.66	LR,HK
Midstory Layer (woody plants 10'-30' high)	2.00	
Groundcover	**3.83**	**FN**
Dead & Down Trees	2.50	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 035MW**	***Acreage*:**	**49.0**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (65%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	21	288	0	1.7
8"-10"	34	81	0	9.0
12"-16"	65	64	3,626	6.3
18"-22"	9	5	886	.5
22"+	1	1	59	.1
TOTAL	**130**	**439**	**4,571**	**17.6**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	5.85	2.53	13.56	5.94
Hemlock	50.15	50.73	47.26	50.81
Red Maple	4.62	3.73	1.34	8.25
White Birch	1.23	2.34	.94	.53
Yellow Birch	.62	.15	1.36	.00
Black Birch	8.62	9.05	5.87	7.60
Beech	11.08	23.96	4.57	13.39
Red Oak	15.38	6.35	21.97	12.42
White Oak	1.54	.68	2.43	.58
Black Oak	.92	.49	.71	.47

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	**2.92**	
> 18" DBH Cavity/Den Trees	1.28	
Overstory Snags	1.68	
Understory Snags	2.08	
Hard Mast (acorns, beechnuts, etc.)	2.76	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.16	VA
Browse (woody plants)	1.72	
Shrub Layer (woody plants 2'-10' high)	**2.60**	**HK,BE,BB,WP,WH**
Midstory Layer (woody plants 10'-30' high)	2.32	
Groundcover	2.04	
Dead & Down Trees	2.88	SL,BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 040MW**	***Acreage*:**	**14.9**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**1 - (<50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	21	234	0	3.3
8"-10"	46	118	0	10.9
12"-16"	32	34	1,603	2.8
18"-22"	4	2	0	1.1
22"+	0	0	0	.0
TOTAL	**103**	**388**	**1,603**	**18.1**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	12.05	8.08	24.91	16.60
Hemlock	21.69	30.69	14.35	20.89
Red Maple	13.25	8.42	.00	19.93
White Birch	3.61	1.41	9.81	2.31
Black Birch	4.82	17.51	.00	3.33
Red Oak	13.25	8.19	37.62	6.22
White Oak	12.05	8.49	10.02	10.07
Black Oak	13.25	7.68	3.29	14.96
Black Gum	4.82	5.84	.00	5.69
Other Hardwoods	1.20	3.69	.00	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.88	
> 18" DBH Cavity/Den Trees	1.25	
Overstory Snags	2.63	
Understory Snags	2.00	
Hard Mast (acorns, beechnuts, etc.)	3.13	RO,WO,BO
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.00	
Shrub Layer (woody plants 2'-10' high)	**3.88**	**LR,WP**
Midstory Layer (woody plants 10'-30' high)	1.75	
Groundcover	2.38	MS
Dead & Down Trees	2.13	SL

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 045HW**	***Acreage*:**	**12.2**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**3 - (90%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	36	397	0	4.5
8"-10"	56	144	0	13.0
12"-16"	44	49	1,918	4.0
18"-22"	8	4	616	.7
22"+	0	0	0	.0
TOTAL	**144**	**594**	**2,534**	**22.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	2.78	4.17	9.05	.00
Hemlock	27.78	37.82	8.93	29.61
Red Maple	16.67	15.30	.00	23.49
White Birch	11.11	20.14	15.11	7.39
Black Birch	12.50	10.15	11.68	12.41
Beech	1.39	.15	.00	3.30
Red Oak	9.72	2.54	34.03	4.98
White Oak	11.11	7.98	.00	16.58
Black Oak	6.94	1.76	21.20	2.24

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.80	
> 18" DBH Cavity/Den Trees	1.80	
Overstory Snags	1.00	
Understory Snags	2.20	
Hard Mast (acorns, beechnuts, etc.)	**3.20**	**RO,WO,BO**
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	1.20	
Shrub Layer (woody plants 2'-10' high)	3.00	WP,HK,LR
Midstory Layer (woody plants 10'-30' high)	2.40	BR,HK
Groundcover	1.80	
Dead & Down Trees	2.20	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 050WP**	***Acreage*:**	**15.3**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**1 - (<50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	13	180	0	1.5
8"-10"	55	136	0	13.2
12"-16"	36	38	1,650	5.4
18"-22"	13	6	1,703	1.0
22"+	10	3	457	2.4
TOTAL	**127**	**363**	**3,810**	**23.5**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	29.82	40.63	84.29	18.37
Hemlock	5.26	4.46	.00	4.43
Red Maple	25.44	22.21	.00	31.55
White Ash	11.40	8.40	6.22	11.80
White Birch	2.63	2.23	1.91	1.88
Black Birch	1.75	1.27	2.43	.92
Grey Birch	1.75	1.44	.00	1.77
Red Oak	1.75	.26	2.02	1.32
Black Oak	1.75	1.27	.00	2.37
Hickory	18.42	17.84	3.13	25.59

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.89	
> 18" DBH Cavity/Den Trees	2.88	
Overstory Snags	1.11	
Understory Snags	1.66	
Hard Mast (acorns, beechnuts, etc.)	2.66	RO,HI
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.22	VA
Browse (woody plants)	1.33	
Shrub Layer (woody plants 2'-10' high)	**3.22**	**WP,BE,WA,HK**
Midstory Layer (woody plants 10'-30' high)	2.78	HI,BE,HK,WP,OK
Groundcover	1.56	
Dead & Down Trees	2.11	BD

***Forested Habitat*:**	**AHL - 055WP**	***Acreage*:**	**7.6**
***Size Classification*:**	**LS - (Large Sawtimber)**	***Growing Density*:**	**1 - (<50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	3	28	0	0
8"-10"	25	61	0	7.1
12"-16"	37	40	1,028	7.5
18"-22"	53	25	4,022	6.6
22"+	20	6	915	5.2
TOTAL	**138**	**160**	**5,965**	**26.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	58.18	28.96	87.25	54.53
Pitch Pine	1.82	.72	7.95	.00
Red Maple	16.36	36.08	.00	17.22
White Ash	12.73	19.15	1.24	19.02
Black Cherry	9.09	14.50	1.70	9.23
Red Oak	1.82	.59	1.86	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	3.25	
Overstory Snags	1.00	
Understory Snags	1.50	
Hard Mast (acorns, beechnuts, etc.)	2.00	RO
Soft Mast (fleshy fruits - apples, cherries, etc.)	2.00	CH
Browse (woody plants)	1.75	WA
Shrub Layer (woody plants 2'-10' high)	**3.50**	**WP,WA,CH,RM**
Midstory Layer (woody plants 10'-30' high)	2.50	CH,BE,RO,SB,RM
Groundcover	2.25	
Dead & Down Trees	1.75	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**AHL - 060WP**	***Acreage*:**	**15.0**
***Size Classification*:**	**LS - (Large Sawtimber)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	10	320	0	0
8"-10"	46	105	0	16.4
12"-16"	46	49	1,358	12.5
18"-22"	46	22	2,228	8.9
22"+	16	5	1,259	2.1
TOTAL	**164**	**501**	**4,845**	**39.9**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	68.29	24.95	88.84	77.04
Red Maple	20.73	45.66	1.80	18.70
White Ash	2.44	.45	4.77	1.15
Black Cherry	1.22	.37	1.74	.00
Black Birch	1.22	18.29	.00	.00
Red Oak	1.22	.23	2.85	.00
Hickory	4.88	10.06	.00	3.11

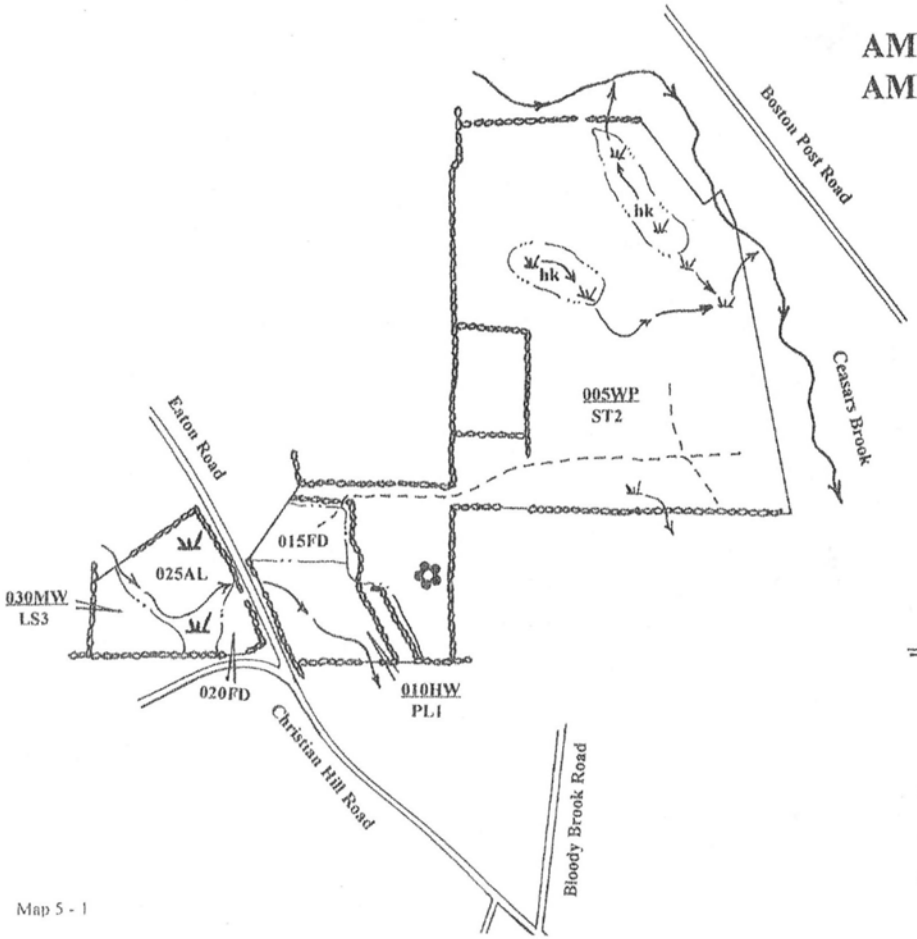
STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.60	
> 18" DBH Cavity/Den Trees	2.40	
Overstory Snags	1.00	
Understory Snags	2.20	
Hard Mast (acorns, beechnuts, etc.)	1.40	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.60	WA,RO,WP
Shrub Layer (woody plants 2'-10' high)	**2.80**	**WA,WP,BE,RO,HI**
Midstory Layer (woody plants 10'-30' high)	2.00	
Groundcover	3.00	
Dead & Down Trees	1.40	

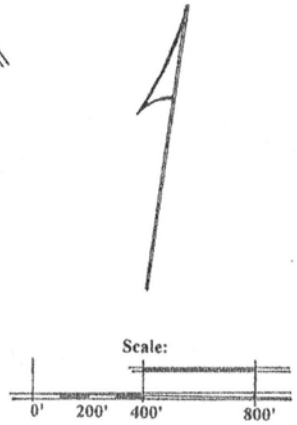
HABITAT BASE MAP - JULY, 1996

MAP 5 LOT 5-130,135 - 58.7 acres

AMHERST CONSERVATION COMMISSION
AMHERST, NEW HAMPSHIRE



Map 5 - 1



Acreage	
005WP	48.2
010HW	4.6
015FD	1.9
020FD	.5
025AL	2.3
030MW	1.2

Property boundaries taken from Tax Assessors Maps, Town of Amherst, New Hampshire and traced by Chas. Koch, June 1996. This map is not for conveyances and is for planning only. Total acreage is taken from tax assessors records and individual habitat acreage determined by dot grid count.

Charles Koch
Forester
Jaffrey, NH

TOTAL SAWTIMBER AND CORDWOOD INVENTORY
AMHERST CONSERVATION COMMISSION
MAP 5 LOT; EATON & CHRISTIAN HILL ROAD
54.0 Timbered Acres
58.7 Acres Total
July, 1996

	Sawtimber (Board feet - International 1/4 Rule)	Cordwood (Cords)
White Pine	526,097	262
Hemlock	12,099	126
Sugar Maple	0	4
Red Maple	19,384	293
White Ash	542	3
Aspen	4,354	7
Black Cherry	0	3
White Birch	0	25
Yellow Birch	0	6
Black Birch	1,860	0
Basswood	0	2
Red Oak	43,825	44
White Oak	2,879	7
Black Oak	4,799	0
All Softwoods	538,196	388
All Hardwoods	77,643	394
All Species	615,839 ± 23%	782 ± 24%

I am confident that the total volume for this woodlot lies somewhere within the interval of 474,196 BF and 757,482 BF for the sawtimber and 595 cords and 969 cords for the cordwood. The procedure used will generate correct statements 95 out of 100 times (using a 10 factor

prism on 22 sample plots, located on a 295' square grid pattern).

Timber
The Map 5 Lot consists of the following habitats by acreage:

Upland Forested Habitats	54.0
Forested Wetland Habitats	0.0
Wetlands	2.3
Open/Field	2.4
Total Acreage	**58.7**

Calculation of Harvest Rate:
Rotation Age - 100 years
Harvest Rate - 54.0 acres ÷ 100 years = .54 acres per year

From a management perspective, this property is unique amongst the Amherst properties studied. Most other Amherst properties provided diversity by having a number of individual forested habitats that were different to start with. Almost 90% of the upland forest on this property is one individual forested habitat. The diversity of forest habitats or forest structure obtainable in the other Amherst properties may not be as easily obtained here. As can be seen on the forest structure graph (Map 5 - 4), almost 50 acres is in the sawtimber class and this 50 acres is one habitat. Without exceeding the harvest rate, this habitat will continue to grow well beyond the desired rotation age and may take 50-60 years before the forest structure is even near the desired proportions. So, even though the rotation age has been set at 100 years, the forest structure will consist of areas that will be allowed to grow well beyond the antique class.

Group selection cuttings as well as low and crown thinnings are recommended for this planning period and group selection, coupled with a shelterwood cutting are recommended for the next planning period (2011). One small habitat due to its small size and remoteness to other management areas will be allowed to grow unmanaged to biological maturity.

This property is easily accessed for logging operations. Access is available into the field (015FD) which can be used as a landing area. Some berm work may be necessary at Eaton Road in order to access the field. Minimum capital will be required to improve this access.

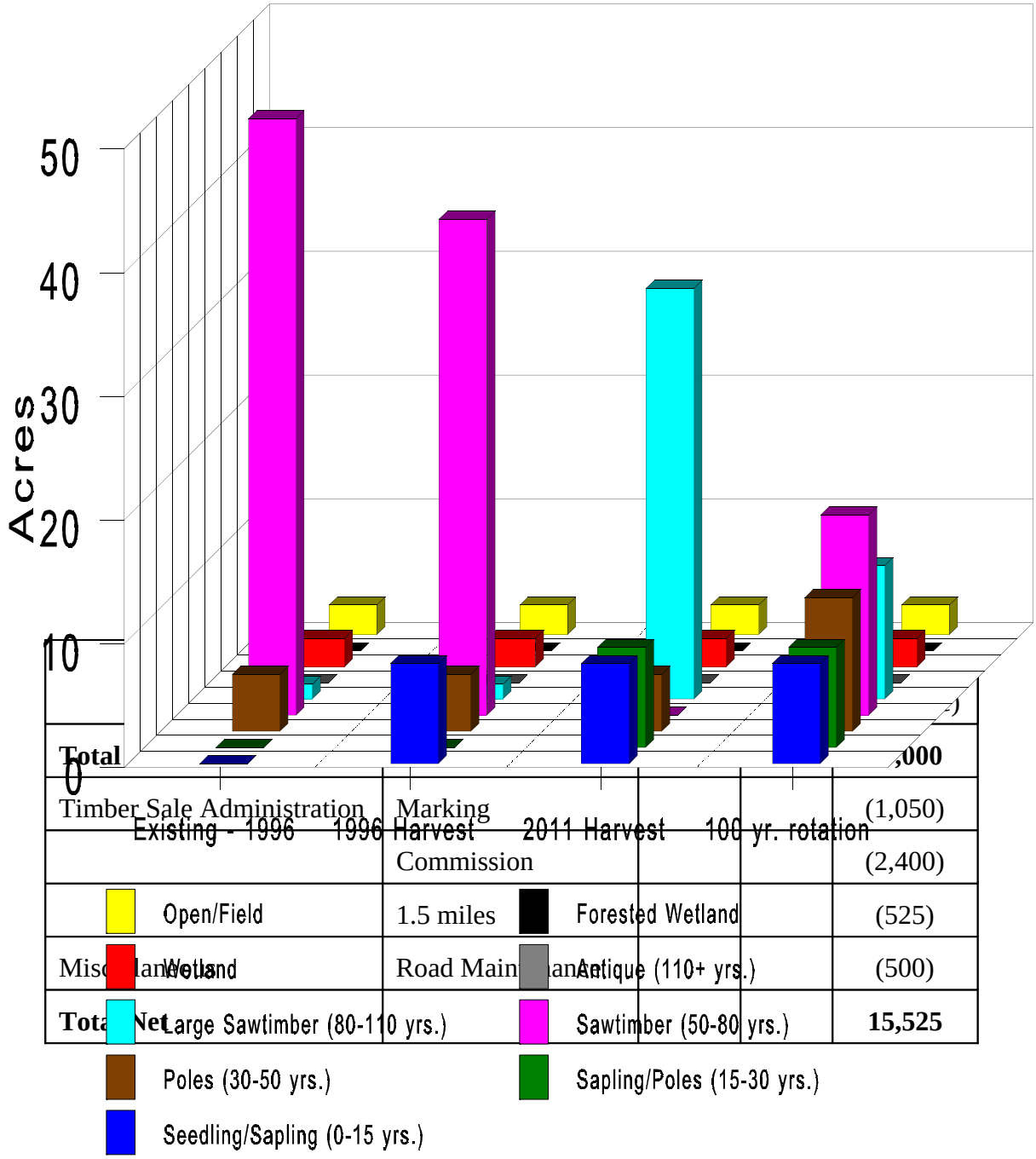
Conventional logging (cable skidder) is recommended for the timber removal on this property.

Recreation
There is no developed recreation sites or trails on this property. However, there is a trail that extends east from the field (015FD) off Eaton Road and continues almost to Ceasars Brook. A loop off this trail which accesses the northern portion of this property could easily be incorporated into a timber harvest.

A possibility that could be explored is to link this property with the Great Meadow Outdoor Education Boardwalk which is to the east and south on Ceasars Brook.

FOREST STRUCTURE

Map 5



Total			**,000**
Timber Sale Administration	Marking		(1,050)
	Commission		(2,400)
	1.5 miles		(525)
Misc	Road Main		(500)
Tota	**Net**		**15,525**

Map 5 - Forest Structure (acres per habitat class)
Existing (1996) Habitats; Habitats after Silvicultural Recommendations; and Long Term Goal Habitats

Habitat	**Existing 1996**	**After 1996 Silviculture**	**After 2011 Silviculture**	**Long Term Goal**
Open/Field	2.4	2.4	2.4	2.4
Forested Wetland	0.0	0.0	0.0	0.0
Wetland	2.3	2.3	2.3	2.3
Antique (AT)	0.0	0.0	0.0	0.0
Large Sawtimber (LS)	1.2	1.2	33.2	10.8
Sawtimber (ST)	48.2	40.1	0.0	16.2
Pole (PL)	4.6	4.6	4.6	10.8
Sapling/Pole (SP)	0.0	0.0	8.1	8.1
Seedling/Sapling (SA)	0.0	8.1	8.1	8.1

(See Appendix 6 - **Forested Habitat Size Classification**)

Map 5 - Silvicultural Recommendations and Anticipated Habitat Classes
Rotation Age - 100 years; Harvest Rate - .54 acres per year

Habitat	Habitat Class 1996	Silviculture 1996	BF 1996	CDs 1996	Habitat Class After Treatment (1996)	Habitat Class 2011 (15 years growth)	Silviculture 2011	Habitat Class After Treatment (2011)
005WP	ST (48.2)	GS,CT,LT	200,000	150	ST (40.1); SE (8.1)	ST (40.1); SP (8.1)	GS,SW	LS (32.0); SE (8.1); SA (8.1)
010HW	PL (4.6)	LG	0	0	PL (4.6)	PL (4.6)	LG	PL (4.6)
015FD	field		0	0	field	field		field
020FD	field		0	0	field	field		field
025AL	wetland		0	0	wetland	wetland		wetland
030MW	LS (1.2)	LG	0	0	LS (1.2)	LS (1.2)	LG	LS (1.2)
Totals			**200,000**	**150**				

GS - Group Selection
SW - Shelterwood
CT - Crown Thinning
LT - Low Thinning
LG - Let Grow

(See Appendix 9 - **Silvicultural Systems**)

Map 5 Lot - Silvicultural Recommendations by Habitat

005WP - This is an adequately stocked sawtimber habitat dominated by white pine. Most areas within this habitat appear to be going to hemlock which comprises most of the shrub layer. Also, this shrub layer is the most prominent wildlife feature found in this habitat. There is a red oak component that does provide hard mast. Included in this habitat are 2 inclusions which are dominated by hemlock sawtimber. It is recommended that the hemlock inclusions be managed for hemlock and only hardwood cordwood which occurs in the understory should be cut during this planning period. The other areas which are dominated by pine should have group selection openings cut where the hemlock understory is the most dense (logging disturbance may give white pine a chance to occupy this area). The logging operation should be conducted in the summer or fall of a good white pine seed year. The other areas should be low and crown thinned. Red oak should be left as a hard mast component. The planned management for 2011 will consist of another round of group selection openings as well as the first cut of a 3 cut shelterwood.

010HW - This is an understocked pole sized habitat which is dominated by red maple and white pine. It appears that this is an somewhat recently abandoned field (@ 30 years ago) and is generally very wet. Groundcover, a shrub layer of brambles, and a midstory layer are the most prominent wildlife features in this habitat. It is recommended that this habitat continue growing for another 15 years and be reevaluated at that time.

030MW - This is a large sawtimber habitat dominated by white pine, aspen, and red oak. The most prominent wildlife feature in this habitat is hard mast provided by the red oak. Due to its small size (1.2 acres) and its remoteness to other forested habitats, it is recommended that this habitat be left alone and be allowed to develop to its biological maturity.

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**Map 5 - 005WP**	***Acreage*:**	**48.2 (3.0 hk inclusion)**
***Size Classification*:**	**ST - (Sawtimber)**	***Growing Density*:**	**2 - (50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	16	179	0	2.1
8"-10"	33	82	0	0.2
12"-16"	55	52	4,654	2.5
18"-22"	42	21	6,847	.5
22"+	6	2	944	.1
TOTAL	**152**	**157**	**12,445**	**14.4**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	56.62	28.79	87.08	35.35
Hemlock	11.03	23.08	1.73	17.37
Red Maple	19.85	39.56	2.98	36.20
Sugar Maple	.37	.84	.00	.63
White Birch	1.10	1.62	.00	2.72
Yellow Birch	.37	.15	.00	.85
Black Birch	.37	.09	.31	.00
Red Oak	8.82	4.98	6.63	5.90
White Oak	.74	.63	.48	.99
Black Oak	.74	.25	.80	.00

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	2.47	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	1.11	
Understory Snags	2.59	
Hard Mast (acorns, beechnuts, etc.)	2.23	RO
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.06	RO,WH
Shrub Layer (woody plants 2'-10' high)	**2.65**	**WH,HK,RO**
Midstory Layer (woody plants 10'-30' high)	2.18	HK,WH
Groundcover	2.76	
Dead & Down Trees	1.82	BD

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**Map 5 - 010HW**	***Acreage*:**	**4.6**
***Size Classification*:**	**PL - (Pole)**	***Growing Density*:**	**1 - (<50%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	35	382	0	5.9
8"-10"	35	85	0	6.7
12"-16"	20	22	328	3.2
18"-22"	0	0	0	.0
22"+	0	0	0	.0
TOTAL	**90**	**489**	**328**	**15.8**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	16.67	10.01	.00	23.19
Hemlock	5.56	.96	.00	5.13
Red Maple	61.11	77.31	100.00	54.76
Aspen	5.56	1.30	.00	7.31
Black Cherry	5.56	5.21	.00	4.07
White Birch	5.56	5.21	.00	5.54

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	1.50	
> 18" DBH Cavity/Den Trees	1.00	
Overstory Snags	1.00	
Understory Snags	1.00	
Hard Mast (acorns, beechnuts, etc.)	1.00	
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.50	
Shrub Layer (woody plants 2'-10' high)	3.00	BR
Midstory Layer (woody plants 10'-30' high)	3.00	
Groundcover	**3.50**	
Dead & Down Trees	1.00	

(See Appendix 6 & 8 for definitions)

***Forested Habitat*:**	**Map 5 - 030MW**	***Acreage*:**	**1.2**
***Size Classification*:**	**LS - (Large Sawtimber)**	***Growing Density*:**	**3 - (75%)**

PER ACRE SUMMARY BY DBH CLASS

dbh Class	*Basal Area*	*# of Trees*	*Board Feet*	*Cords*
2"-6"	20	133	0	3.1
8"-10"	35	85	0	10.1
12"-16"	35	27	3,311	0.0
18"-22"	45	24	6,405	0.0
22"+	15	4	2,302	0.0
TOTAL	**150**	**273**	**12,018**	**13.2**

SPECIES COMPOSITION BY PERCENT

	Basal Area	*# of Trees*	*Board Feet*	*Cordwood*
White Pine	13.33	22.75	25.99	.00
Hemlock	13.33	13.35	11.94	9.36
Red Maple	6.67	14.54	.00	15.23
White Ash	10.00	11.77	3.76	19.05
Aspen	20.00	9.07	30.19	13.11
White Birch	3.33	3.35	.00	10.77
Basswood	3.33	3.35	.00	15.36
Red Oak	30.00	21.82	28.12	17.11

STRUCTURAL WILDLIFE FEATURES
(1 = none; 2 = low; 3 = medium; 4 = high)

Features	***Mean***	***Remarks***
< 18" DBH Cavity/Den Trees	3.00	
> 18" DBH Cavity/Den Trees	2.00	
Overstory Snags	1.00	
Understory Snags	2.50	
Hard Mast (acorns, beechnuts, etc.)	**4.00**	**RO**
Soft Mast (fleshy fruits - apples, cherries, etc.)	1.00	
Browse (woody plants)	2.00	
Shrub Layer (woody plants 2'-10' high)	2.00	
Midstory Layer (woody plants 10'-30' high)	2.50	
Groundcover	3.50	
Dead & Down Trees	2.00	

Bill:
Here's a quick summary of what I've done since the 1996 plan. The *Anticipated Start* dates are from the plan. All other columns are what we've actually accomplished. For those lots that have been harvested, another harvest/reassessment would be appropriate 15 years after the completion dates.

Parcel	Anticipated Start	Actual Start	Completion Year	Sawtimber Volume (board feet)	Cordwood Volume (cords)	Net Revenue ($)
Ceasers Brook	1997	1997	1998	119,765	12	10,794
Haseltine	1999	1998	1999	149,315	128	17,567
Joe English (Unit 1)	2007	2000	2001	132,265	69	14,532
Woolsey	2005	2005	2005	59,685	0	6,698
Boutelle (Map 5)	2009	2007	ongoing			
AHL (Austin Rd.)	2001					
AHL (Nathaniel Rd.)	2005					
Joe English (Unit 2)	2007					
Joe English (Unit 3)	2003					
Dacquino	2011					
			Totals	**461,030**	**209**	**$49,591**

I believe my silvicultural recommendations for all the woodlots would be the same now (2007) as they were in 1996. Of course this assumes that conditions in the field are relatively the same. Assuming a 2.5% annual growth rate, the volumes for all properties would have increased ~28% since 1996.

My concerns about the lots that have not been cut follow:

1. Long skid distances limit the accessibility on AHL. If Austin Rd. is used as the primary access point, maximum skid distances would be about 4,000'. For comparison, Boutelle is about 2,100' and JE1 was about 2,500'. If Nathaniel Dr. is used, a ROW is needed to access the woodlot. Maximum skid distances would be shorter at about 3,200'. To make the skid distances shorter, truck roads would have to be built. Over the ROW from Nathaniel Rd. and/or from Austin Rd. up the hill to habitat #055. The road construction vs. long skids issue needs to be addressed. Basically, does the Commission want to get into the road building business?

2. Access is the limiting factor for harvesting Joe English 2&3. Was there land acquired recently that might provide access for Unit 3 to Brook Road? Unit 2 is difficult if using the Brook Rd. extension north of the parking lot is not an option. My feeling is that the access issue for both #2 & #3 needs to be addressed to see if harvesting is feasible.

3. Daquino could be started without any unusual preparation.

Charles Koch
February 20, 2007