

Forest Management Plan

The Carleton Lot

The Town of Meredith, NH

July 2024

Prepared for The Meredith Conservation Commission

Northern Forest Resources

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The Town of Meredith
Forest Management Plan
Carleton Lot
Meredith, NH

July 2024

Acreages & Timber Types		
Land Type	Stands and Timber Types	Acres
Forest Land	Stand 1- Red Oak/White Pine 4/3 B	18.3
	Stand 2- White Pine/Red Oak 3/4/B	14.2
	Stand 3- Hemlock/Red Oak/Red Maple 3B	2
	Total Forest Plan Acreage	34.5
Other	Wetlands	2.2
	Landing, Pond Buffer, Woods Roads	1.1
Total Acreage =		37.8 acres

TREE SIZE CLASSES

1. Saplings
2. Poles 2-8 in Diameter Breast Height (DBH)
3. Small Sawtimber 8-14 in DBH
4. Large Sawtimber 16+ in DBH

TREE DENSITY

- A. Overstocked
- B. Adequately stocked
- C. Understocked

Ex. WP/HM 3/4A

TREE SPECIES

- WP- white pine
RO- red oak
HM- Hemlock
RM- Red Maple
SM- Sugar Maple
HD- Hardwood

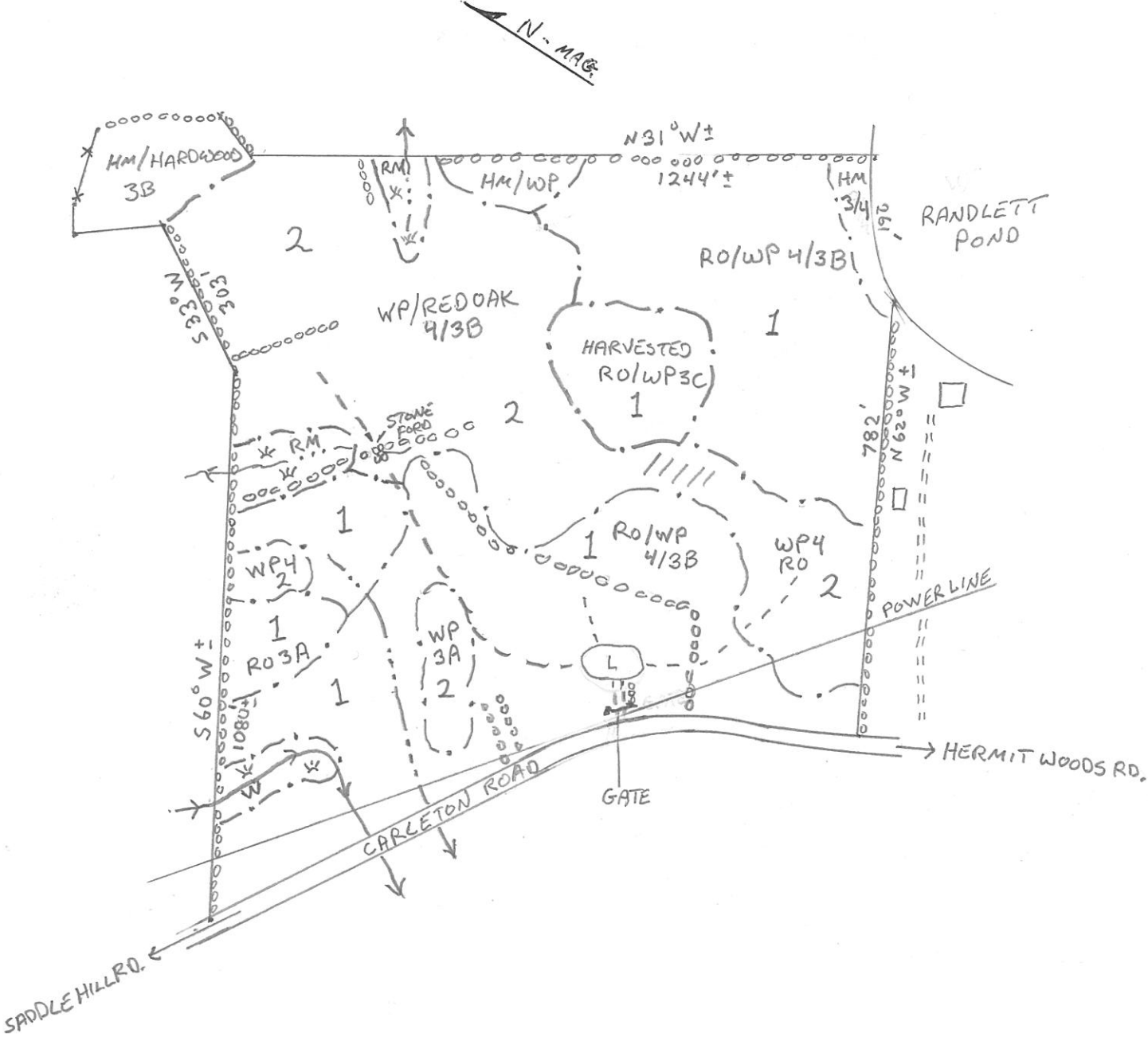
Forest Type Line — — — — —

- Permanent Stream ————
Intermittent Stream - - - - -
Wetland x x x x
Log Landing - L
Stone Wall o o o o
Trail/Skid Road - - - - -
Truck Road = = = = =
Open Water - W
Beaver Dam- xxx

Scale 1" = 300 ft.
300'

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Dan Stepanauskas



Introduction

The Carleton lot, Tax Map R-31-20, is 37.8 acres in size and located on Carleton Road in the southwestern section of the Town of Meredith. The Town was gifted the land on May 11, 2001 by George Leighton. This land is situated in an area that is predominantly used as forestland, along with some agricultural uses, by the neighboring landowners. However, there is significant development pressure evident in the surrounding landscape which increases the conservation value of protected lands owned by the Town of Meredith. Neighboring lands owned by the Town include the Hamlin/Eames Forest, and the Tucker Mountain tract, and the Leighton Forest. This leads to habitat connectivity and travel corridors for creatures that are dependent upon larger wild landscapes (see Wildlife).

Management Goals

- Sustainable management of the forest with a strong emphasis upon a well-stocked, productive forest outcome
- Maintaining and enhancing the habitat for a wide array of wildlife species
- Employ the practice of climate sensitive forestry, designed to propagate and grow trees that are projected to successfully adapt to a changing climate
- Rare ecotypes, unusual species, large hardwood trees, nesting and denning sites, along with natural anomalies will be preserved

Description

The forest is predominantly stocked with large white pine and red oak. This forest type is common in central New Hampshire. In our time of a changing climate, this forest type has been deemed to be resilient to warming temperatures for decades to come (see Climate Change). There is a small stand of well-formed younger red oaks adjacent to the northern boundary line.

Field Work

The field work was carried out in early May of 2024. A systematic sampling was carried out using parallel lines upon which sample points were taken at predetermined intervals. The software cruise results for the 18 sample points was conducted for one stand. There are two stands of timber described in this plan, however, the acreages were too small to process the data for more than one stand, whilst maintaining a viable sampling error. The results had a confidence limit with 90% surety that the cruise results were +/- 18% of the actual forest volumes present.

Access

There is a well-placed log landing on the property. The road access to the landing area is gated. The skid roads leading from the landing are in good condition, and provide adequate access for all activities for the entire property.

Boundaries & Cultural Resources

Nearly all of the property lines on the parcel are stone walls, with a small section of wire fence line in the small 'camping area' in the northeastern corner of the property. The found cultural resources are limited to stone walls, and logging roads. Crossing the largest brook an old farm road has an old stone ford still in place. There are extensive interior walls found in the level portions of the property. The walls demonstrate that the land was well suited for agrarian purposes, just as it is now suitable for growing high quality forests (see Soils).

History

A gentle harvest was conducted on the lot by an unknown forester some nine years ago. This is evident by timber marking paint which can still be seen on a few trees that were marked for harvest, and not cut. The agricultural history is old. The oldest living trees on the property are over 130 years old. This agricultural land was likely abandoned in the late 19th century.

Recreation

This Town property is public land. It is open to all forms of non-motorized recreation. There is no trail network on the property, as the parcel is not of an adequate size for one. There are old farm and logging roads that do provide limited access for activities such as walking, snowshoeing and cross country skiing.

Aesthetics

This land is covered by a forest with stands of large trees. The predominant species are white pine, and red oak. The stand pockets of large red oaks are particularly striking as they provide a view of vibrant, fast growing oak trees with a closed canopy layer. This allows for an open understory. Although the views of Russell Pond are limited, it is attractive and valuable to preserve undeveloped shore frontage.

Wetlands and Waterways- 2.2 acres

Wetlands are limited to the northwestern corner of the property. The waterways are composed of three small class one brooks. The wetlands are all wooded swamps formed by extended perimeters of these brooks. Two of the brooks enter the NW corner of the land and soon leave it again. One brook originates on the property, and crosses Carlton Road. Many species of wildlife use wetland habitats, with numerous species of native birds that depend upon them.

Forest Protection

With the current spread of invasive species in the forests of New England, along with our rapidly changing climate, the protection of our forests has become an issue of increasing concern. As we know, the ash species are all rapidly dying. The hemlock wooly adelgid will continue to gradually erode this species' position in our forests. This decline will be gradual as the adelgid populations are reduced by up to 95% whenever winter temperatures fall to below 0 degrees F. The next significant tree species to decline is the American beech. The beech leaf disease was found in the Town of Meredith last year. This will become readily apparent in Meredith in 2025 when the beech understories begin to die. This 'disease' was named when forest researchers had yet to learn of its cause. We now know that it is caused by a microscopic nematode. The tiny nematode and its eggs are spread by nearly everything in the forest, insects, birds, mammals, and even by the wind. Initially it kills the beech understory, with the mortality gradually moving higher into the mid-story canopy and eventually up to the overstory. There appears to be no inherent resistance of the beech to this infestation. It will kill the entire beech understory within two years of its arrival. The question then arises what will grow to take its place? This query is a work in progress; however, one given is to facilitate the regeneration of trees that are suited to growing on that particular site. Growing the wrong tree on a site is a waste of time (see Climate). A tree species site index rating will be a strong determining factor for what is suited to grow where. The red pine scale (a tiny insect) is also advancing northward. Nearly all of the red pine south of Concord are dead or dying. It would be wise to preemptively harvest red pine trees, while replacing them with white pine regeneration, as there is no short-term cure in sight for this insect infestation. The only solution to invasive species is to find biological control agents that are either predatory or pathogenic (fungal) and determined to be safe for release without collateral impacts.

One important consideration here is that invasive tree and shrub species will seek to capitalize upon canopy openings. The greatest threat on this front is the buckthorn. This species is a European native, with two species present in NH the glossy and common. Both are equally bad. They need to be eliminated as soon as they are detected, as they spread fast by growing berries that birds eat, thereby facilitating their spread. Once they spread the only effective treatment is through the use of chemical herbicides. Monitoring our forests is now more important than ever to prevent invasive infestations from becoming unmanageable.

The Climate

The changing climate has become one of our leading silvicultural considerations. Most of the trees in NH take at least 85 years to approach economic maturity, and far longer to achieve biological maturity. Maintaining adequate stocking levels in our forests will preserve adequate soil moisture levels which will help to keep our forest soils moist and cool. The Northern Institute of Applied Climate Science is a branch of the US Forest Service. Their research has found that the ranges of tree species such as paper birch (white birch), balsam fir, black spruce, tamarack, serviceberry, quacking aspen among others will move northward.

Forest managers can improve the carbon capture capacity of forest stands by keeping forests well stocked. Foresters can also increase the rate of photosynthetic carbon sequestration in a stand by managing forests to encourage the growth of trees that are well adapted to the site upon which they grow. Trees growing on appropriate sites are able to grow a higher volume of timber/acre at a faster pace, thereby capturing more carbon/acre. In hardwood stands the height of the tree canopy is directly correlated to the site index for that a particular species.

Vertical Structure and Crown Closure

Vertical structure is the layering of live and dead limbs on trees within a forest stand. Uneven aged forest management can be achieved using light group selection harvests. This allows enough peripheral light for trees to grow limbs lower in the canopy layer. The Carleton lot has a prevalence of tall super canopy white pines, combined with layering provided by hemlock, red oak, and red maple. This feature provides habitat for a wide array of neo-tropical* bird species (see Forests for the Birds). The small hemlock stand found adjacent to the back boundary provides live limbs low in the canopy layer. This combined with a forested wetland on the neighboring property, contributes a great deal to the vertical structure habitats. The NH Threatened American pine marten is primarily arboreal and thrives hunting in forests with structure hunting from canopy to canopy.

Habitat & Coarse Woody Debris

Coarse woody debris is composed of dead limbs and downed trees lying on the forest floor. Undisturbed older forests are laden with this material. This is again to the point that forest management should imitate nature. When harvested trees are limbed in the forest it provides a similar affect on the forest floor. The downed woody material is an asset to the ecology of the forest. It facilitates the successful germination of tree seeds, as they are able to fall into the spaces between pieces of wood where adequate summer moisture is easily maintained. Woody debris leads to the proliferation of wood decay fungi, which is fed upon by the insects, they are fed upon by rodents and birds, which are fed upon by predators. It also allows for the growth of both herbaceous and woody ground vegetation helping to feed wildlife while again serving as a foundation to the forest's food chain, from the ground up. The mycorrhizal fungi grown in woody debris conduct nutrients and minerals from the soil into the fine root tips of trees, while

the trees symbiotically provide a return flow carbohydrates from trees to the fungi. The presence of this fungi dramatically accelerates tree growth rates. Decaying woody debris returns the nutrients in the trees back to the forest soils, providing a full nutrient cycle. The sum total of organic material in a forest ecosystem correlates directly to the amount of life in that forest. Shrew populations provide a good metric for this, although this would be difficult to measure.

Invasive Species

The forester is pleased to report that, during the field work, there were no invasive species found on the Carleton lot. Periodic monitoring will be needed to prevent their occurrence.

Forests for the Birds

The forester both heard and saw numerous bird species while cruising the Carleton lot. The list includes the black throated blue warbler and black throated green warblers, blue headed vireo, veeries, red-eyed vireo, hermit thrush, Blackburnian warbler, and a broad wing hawk. Large super canopy white pines provide a sense of security for many arboreal species, such as ravens, pine siskins, and numerous species of raptors.

Most neo-tropical birds and warblers feed upon caterpillars that inhabit the leaves and flowers of hardwood trees. Oak trees provide habitat for a far greater number of caterpillar species and diversity of birds than any native tree genus, while also doing the same for its warbler populations. The timing of caterpillar hatches is straying further from historical norms. The timing of bird arrivals and caterpillar hatches is now falling out of sync, which has a negative impact on the number of bird eggs laid, and upon the survival of newly hatched nestlings.

Large big-tooth aspen and all hardwood species provide den tree habitats for cavity nesting birds and mammals. Large hardwood trees (22"DBH* +) that are showing signs of decay in their upper stems or have existing holes should be retained for habitat. Old maple and yellow birch trees can have flaking bark which provides roosting habitat for endangered forest bats

* Neo-tropical birds migrate south for the winter

Wildlife

Rich wildlife habitat exists on the Carleton lot. There is a good stocking of large red oak trees on the property. The mast (acorn) crops, provided every three years or so provide the richest source of nutrients found in a forest ecosystem. The fat content of the nuts allows deer to survive difficult winters. A mast year can also determine whether bears will have cubs, and can increase the number of cubs born. All manner of wildlife will take advantage of acorn, or beech nut crops. Bears will climb into beech and oak trees during mast years where they will break off limbs to eat the nuts. They will then place the broken limbs in a suitable location for making a

nest, which they will then use as a dinner chair to eat the nuts from the successive broken limbs.

This property is an oak/pine ecosystem. In this case there is a strong representation of large red oak present enriching the habitat. Large hardwood trees are relatively rare in our forests as timber harvesting activities have reduced their proportionate numbers. The larger red oak trees on this property will be retained. These trees are often full of animal habitat, including roosting bats. The richest habitats exist in trees that have cavities, and decayed centers. The older a large hardwood gets the better the habitat gets. These trees provide habitats for fisher, marten, flying squirrels, bats, chickadees nuthatches, flickers, owls, woodpeckers, and an array of rodents.

Aspen and red maples are preferred species, having low density woods that are easily excavated by cavity nesting species. Woodpeckers and flickers generally create the initial irregular cavities, followed by the mammals who refine the openings into nearly perfect cylinders. The dense canopy layers found in unbroken hemlock overstories provide habitat for the American marten, as these predators tend to be arboreal as they travel from tree to tree through unbroken canopies.

Forest management can be used to encourage the proliferation of soft mast (fruit) trees and shrubs in the forest. Forest fruit is produced by black cherry trees, which the bears will climb in July to eat cherries. Good sources of fruit include the serviceberry (aka Juneberry, shadbush, sugar plum) which is the earliest fruit producer. Red berried elder, found on sites with enriched soils, is next. Other sources include hobblebush, species of the Genus Rubus which includes raspberry, blackberry, thimbleberry, dewberry, partridgeberry, viburnum, bearberry, apple and wintergreen.

Soils

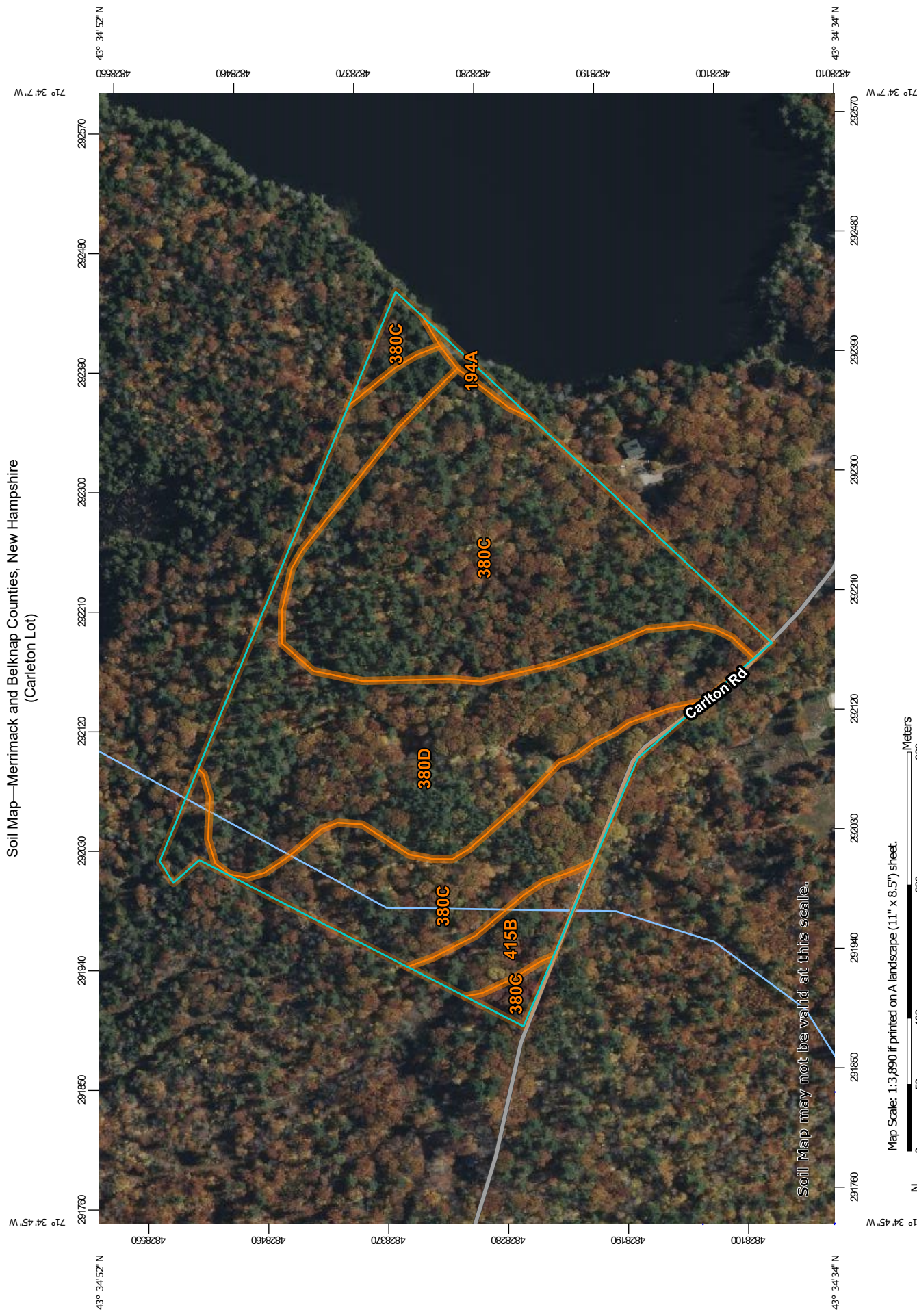
Soils are the basis for all that lives and grows in a forest. They ultimately determine which trees are best suited to growing on each particular site.

The predominant soil found on the Carleton Lot is Tunbridge Lyman and Becket, as their title clearly shows this soil is an amalgamation of soil types. This group has soil locations that are purely Becket or Tunbridge, along with locations that are a mixture.

Becket- This soil is rich and provides an excellent site for the growth of high quality northern hardwoods and red oak. However, it will also grow fine white pine trees. A rich site will have the ability to grow softwood trees along with hardwoods. The reverse is less often true, in that a softwood soil will rarely have the capacity to grow quality northern hardwoods.

Lyman- This is a shallow soil with limited seasonal water and ledge often within 2 feet of the surface. It is best suited for the growth of northern hardwood and red oak. Care must be taken

Soil Map—Merrimack and Belknap Counties, New Hampshire (Carleton Lot)



Map Scale: 1:3,890 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



MAP LEGEND

- Area of Interest (AOI)
 Area of Interest (AOI)
- Soils
 Soil Map Unit Polygons
 Soil Map Unit Lines
 Soil Map Unit Points
- Special Point Features
 Blowout
 Borrow Pit
 Clay Spot
 Closed Depression
 Gravel Pit
 Gravelly Spot
 Landfill
 Lava Flow
 Marsh or swamp
 Mine or Quarry
 Miscellaneous Water
 Perennial Water
 Rock Outcrop
 Saline Spot
 Sandy Spot
 Severely Eroded Spot
 Sinkhole
 Slide or Slip
 Sodic Spot

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire
Survey Area Data: Version 29, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
194A	Catden mucky peat, 0 to 1 percent slopes, ponded	0.2	0.6%
380C	Tunbridge-Lyman-Becket complex, 8 to 15 percent slopes, very stony	18.2	57.9%
380D	Tunbridge-Lyman-Becket complex, 15 to 25 percent slopes, very stony	11.8	37.4%
415B	Moosilauke fine sandy loam, 3 to 8 percent slopes, very stony	1.3	4.2%
Totals for Area of Interest		31.5	100.0%

when harvesting trees on Lyman soils as their shallow root systems make them susceptible to being blown over by wind storms.

Tunbridge- This is a deeper loamy glacial till soil containing many rocks. It is well drained and best suited to growing white pine trees.

General Silvicultural Principles

Silviculture is the science and art of growing and managing forests. The forests of northern New England are diverse both in age class and species distribution. Written forest management plan prescriptions generalize, as the actual composition of each location in a natural forest is unique. An average 90 year old forest stand will tend to have from 120 to 200 trees per acre. The silvicultural decisions made for each individual location involve tree health, growth rates, species adaptability to the site, moisture levels, stand density, and climate considerations. High site index locations in a hardwood forest can grow more trees/acre than on a poor site. High nutrient levels and adequate moisture levels can more than compensate for less photosynthesis in each tree crown. A general rule of thumb is to leave 60 – 80 sq. feet of basal area in a post-harvest hardwood forest, with 120 sq. feet in softwood stands. When conducting a timber harvest in a diverse, intact forest, the land is best served by working in portions of the forest that demonstrate a clear need while leaving other portions to grow undisturbed. Undisturbed stands serve as a refuge for wildlife.

Shade tolerant species such as red spruce, hemlock and sugar maple can survive for many years in the understory of a well-stocked stand. When additional sunlight becomes available their growth rates will quickly increase accordingly. In most mature harvest scenarios, it works best to harvest trees in groups or patches. In a natural northeastern forest this is how foresters are able to imitate nature. After all, this is how we originally learned to conduct forest management.

In this age of invasive species forests need to be regularly inspected to guard against invasive species. When caught early they can be eliminated, if ignored it becomes too late. The European buckthorn (glossy and common) is the most invasive species threat to our forest ecosystems, other than climate change.



A fast growing sugar maple in Stand 1

Forest Stands

The oak/pine forests found on the Carleton lot are typical of central NH. They are very productive forests. Stands 1 and 2 have similar species profiles of predominantly white pine and red oak. They also share a 50/30 % proportionality of the two dominant species. The

difference is that Stand 1 is 50% red oak and 30% white pine, while Stand 2 is reversed with 50% white pine and 30% red oak. In comparing the forest type map with the soils type map there is found a general correlation of the soils types abilities to grow their appropriate tree species more effectively (see Soils). This is a testament in regard to the influence of soils upon forest composition and productivity. It also demonstrates why soils growing the wrong tree species are wasteful, and where possible, forest stands should be gradually converted to those tree species suited to grow upon suitable soils (site index*). In this forest this need is limited to ensuring that the correct species continue to grow where they are. Carbon dioxide is absorbed faster by a fast growing forest (see Climate).

Both of the forest stands on this lot are well stocked with large trees. The combined volumes of white pine and red oak in both stands are 10,000 bd. ft. of white pine and 4,000 bd. ft. of red oak per acre. An appropriate thinning would remove no more than 15% of the total volume present. The 2024 white pine seed year, along with the adequate moisture this spring and summer, has left the forest floor in both of these stands covered in white pine seedlings. 2024 promises to provide a crop of red oak acorns. Four to five years after a forest harvest the forest

* Site index is a measure of how tall each tree species can grow on a specific site over a period of +/- 50 years.

will be assessed to see whether a forest stand improvement (FSI) operation is needed to cut off inappropriate tree species growing over the appropriate species (ex. striped maple). The need to grow the right species of trees is ever present. If too long a period passes prior to releasing the desired species', it becomes cost prohibitive to turn back the clock.



A vibrant red oak tree in Stand 1

Stand 1 Red Oak/White Pine 4/3- 18.3 acres

Stand Description

Portions of this stand are underlain by enriched Becket soils (see Soils), which provide a higher level of soil moisture levels along with available calcium. This feature is evidenced by the increased height of the red oak trees, along with the relatively smooth bark relative to their age, indicating a rapid growth rate. As in stand 2, this is a mixed stand primarily composed of red oak and white pine, although in stand 1 there is a higher proportion of oak than was found in stand 2. On the timber type map there are variations of stand 1, such as a younger red oak 3A

stand. (3A refers to size class and density, see type map). Hardwood stands are by nature more variable than softwood stands. This is primarily due to their growth response to varying soil types. In those portions of the stand that were previously thinned, the additional space created enhanced the growth of the younger oak trees. The white pines in the stand are similar to those found in stand 2, with a proportion of large, slow growing trees intermixed with more vigorous younger trees. The oak trees growing on sites that have wet or shallow soils have trees that are growing slowly, and in cases declining.

Stand 1 Prescriptions

The prescription for stand 1 is similar to the one written for stand 2. However, in this stand there will be more focus placed upon growing red oaks. A light harvest would be appropriate in this stand in 0 – 10 years.

A harvest would take place when the appropriate tree seedlings, or tree seed crops are present to ensure that the resulting regeneration would be composed of red oak or white pine. This year there are red oak acorns growing. It has been a few years since the last acorn crop, so a successful seed crop is in the offing. The trees marked for harvest would focus upon those that have either been suppressed, or are growing on a poor red oak site.



Stand 2 – Large white pines



A dead black cherry tree with white pines in Stand 2

Stand 2 White Pine/Red Oak 4/3 B- 14.2 acres

Stand Description

This stand is dominated by large white pine trees, combined with a significant proportion of red oaks. There are scattered hemlocks throughout the stand. The largest white pines in the stand (> 24" dbh) are growing slowly. Trees of this diameter do not have the ability to respond to a thinning with an increase in their growth rates. However, most of the healthy older trees will continue to remain healthy for decades to come. There are trees present with logging injuries, that have developed into significant decay. Small bark injuries on white pine trees have the ability to heal with only a small isolated decay zone. Larger wounds tend to overwhelm the tree's ability to build protective walls around the wound allowing the decay to spread readily. White pine decay, which is not due to injury, is present in some mature trees growing on moist

sites. This is a common development in white pines growing on moist soils. This fungus is of a different genus than decay caused by an injury, and develops in a scattered shot fashion throughout the tree. There are white pines in the stand which are infected with this fungus. This multi-aged stand has older trees intermixed with younger trees. This stand's higher proportion of white pine than red oak is directly influenced by the soils in this stand, which are not as well suited for the growth of red oak as those found in stand 2.

This past year's strong white pine seed year, boosted by this year's regular rainfall events has led to a remarkably high germination rate for white pine seeds. As a result, there are dense pine seedlings growing over most of this property. Growing seedlings densely leads to the development of tall straight trees.

Stand 2 Prescriptions

This well stocked stand of white pine and red oak is in good condition. The harvest that was carried out some eight to nine years ago was prudent, and left the harvested stand with a good distribution of mature timber. While there is no silvicultural need for an immediate harvest in the stand, a light thinning would be appropriate to remove the slower growing and/or damaged trees. Trees marked for harvest would allocate the increased in available light to promising young trees. The use of a small cable skidder with one person using a chain saw is the harvest method that works best in a natural forest. It is as close as timber harvesting can come to imitating the natural way in which mature trees fall to the forest floor and are replaced by younger trees in the forest. During the next harvest the regeneration plan will be for a mix of white pine and hemlock saplings to provide structural integrity to the new supple saplings. This effort will be made to prevent the pine saplings from being laid flat by the dense, wet snowfalls that is becoming common. This silvicultural objective will demonstrate an effort to counteract this unanticipated consequence of our warming climate.

Stand 3 Hemlock/Hardwood/White Pine 3B – 2 acres

These small stands have a dense and deep hemlock canopy which provides excellent bird habitats, and wildlife refugia. Animals are drawn to these sites for cover when they feel threatened, which is why this stand will remain undisturbed.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: daniel stepanauskas
135 high st.
silver lake, NH 03875

From: NH Natural Heritage Bureau

Date: 6/14/2024 (This letter is valid through 6/14/2025)

Re: Review by NH Natural Heritage Bureau of request dated 6/14/2024

Permit Type: forest management plan

NHB ID: NHB24-1868

Applicant: daniel stepanauskas

Location: Meredith
Tax Map: R31, Tax Lot: 20
Address: carlton road

Proj. Description: The preparation of a forest management plan.

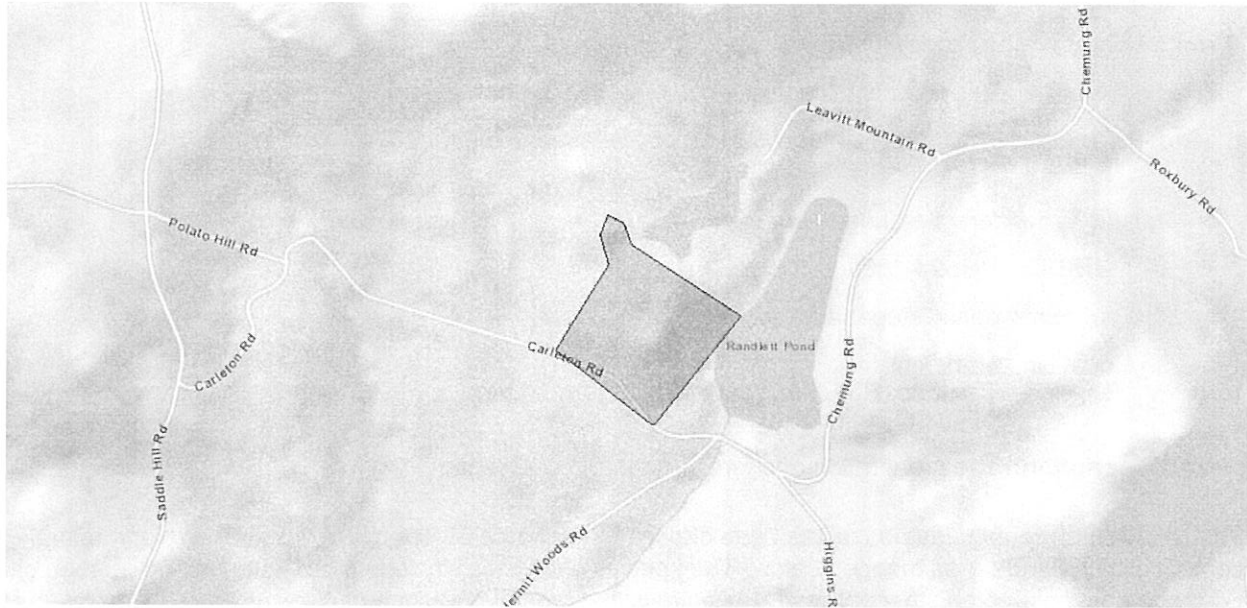
The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: NHB24-1868



Job Title---CARLTON-MEREDITH CONSERVATION COMMISSION 34.5F,2W,1.3PE&L=37.8 TOT A

Stand Title--STAND 1: WP/RO 4/3 B

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*****
*
*
*          ALL SPECIES                      LEVEL = ALL Trees
*
*
*****
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	: BASAL AREA :	TREES :	SAWLOG :	PULP :	BOX PINE :	PALLET :	VENEER :	MAT LOG
DIAMETER :	PER :	PER :	INT. 1/4" :	CORDS :	INT. 1/4" :	INT. 1/4" :	INT. 1/4" :	INT. 1/4"
CLASS :	ACRE :	ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE
8 :	7.8 :	22.3 :	.0 :	2.3 :	.0 :	.0 :	.0 :	.0
10 :	5.6 :	10.2 :	.0 :	1.7 :	.0 :	.0 :	.0 :	.0
12 :	2.2 :	2.8 :	260.9 :	.3 :	.0 :	.0 :	.0 :	.0
14 :	4.4 :	4.2 :	408.7 :	.6 :	.0 :	.0 :	.0 :	.0
16 :	16.7 :	11.9 :	2389.6 :	.9 :	.0 :	.0 :	.0 :	.0
18 :	16.7 :	9.4 :	2385.3 :	1.1 :	.0 :	.0 :	.0 :	.0
20 :	18.9 :	8.7 :	2724.4 :	1.1 :	.0 :	.0 :	.0 :	.0
22 :	16.7 :	6.3 :	2717.4 :	.6 :	.0 :	.0 :	.0 :	.0
24 :	15.6 :	5.0 :	2527.0 :	1.0 :	.0 :	.0 :	.0 :	.0
26 :	7.8 :	2.1 :	1410.3 :	.6 :	.0 :	.0 :	.0 :	.0
28 :	1.1 :	.3 :	218.0 :	.0 :	.0 :	.0 :	.0 :	.0
TOTAL :	113.3 :	83.1 :	15041.6 :	10.1 :	.0 :	.0 :	.0 :	.0
S.E. :	:	:	± 18% :	± 19% :	± 0% :	± 0% :	± 0% :	± 0%
C.V. :	:	:	45% :	48% :	0% :	0% :	0% :	0%

MEAN STAND DIAMETER = 15.8

MERCHANTABLE M.S.D. = 15.8

PERCENT CRUISE = 3.6%

Job Title---CARLTON-MEREDITH CONSERVATION COMMISSION 34.5F,2W,1.3PE&L=37.8 TOT A

Stand Title--STAND 1: WP/RO 4/3 B

*
* SPECIES COMPOSITION BY PERCENT LEVEL = ALL Trees *
*

	:	:	:	SAWLOG	:	PULP	:	BOX PINE	:	PALLET	:	VENEER	:	MAT LOG
	:	BASAL	:	INT. 1/4"	:	CORDS	:	INT. 1/4"	:	INT. 1/4"	:	INT. 1/4"	:	INT. 1/4"
SPECIES	:	AREA	:	TREES	:	VOLUME	:	VOLUME	:	VOLUME	:	VOLUME	:	VOLUME
WHITE PINE	:	48.04	:	29.86	:	66.24	:	24.25	:	.00	:	.00	:	.00
HEMLOCK	:	4.90	:	3.59	:	5.40	:	2.37	:	.00	:	.00	:	.00
RED PINE	:	.98	:	.96	:	1.22	:	.52	:	.00	:	.00	:	.00
BEECH	:	.98	:	3.83	:	.00	:	3.26	:	.00	:	.00	:	.00
RED OAK	:	33.33	:	28.35	:	27.13	:	32.43	:	.00	:	.00	:	.00
RED MAPLE	:	11.76	:	33.41	:	.00	:	37.17	:	.00	:	.00	:	.00
ALL SOFTWOODS	:	53.92	:	34.41	:	72.87	:	27.14	:	.00	:	.00	:	.00
ALL HARDWOODS	:	46.08	:	65.59	:	27.13	:	72.86	:	.00	:	.00	:	.00

Job Title---CARLTON-MEREDITH CONSERVATION COMMISSION 34.5F,2W,1.3PE&L=37.8 101 A

Stand Title--STAND 1: WP/RO 4/3 B

*
* VOLUME TOTALS FOR ALL SPECIES LEVEL = ALL Trees *
*

	SAWLOG	PULP	BOX PINE	PALLET	VENEER	MAT LOG
	INT. 1/4"	CORDS	INT. 1/4"	INT. 1/4"	INT. 1/4"	INT. 1/4"
SPECIES	VOL / ACRE	VOL / ACRE	VOL / ACRE	VOL / ACRE	VOL / ACRE	VOL / ACRE
WHITE PINE	9963.5	2.5	.0	.0	.0	.0
HEMLOCK	813.0	.2	.0	.0	.0	.0
RED PINE	183.6	.1	.0	.0	.0	.0
BEECH	.0	.3	.0	.0	.0	.0
RED OAK	4081.4	3.3	.0	.0	.0	.0
RED MAPLE	.0	3.8	.0	.0	.0	.0
ALL SOFTWOODS	10960.1	2.8	.0	.0	.0	.0
ALL HARDWOODS	4081.4	7.4	.0	.0	.0	.0
ALL SPECIES	15041.6	10.1	.0	.0	.0	.0

Job Title---CARLTON-MEREDITH CONSERVATION COMMISSION 34.5F,2W,1.3PE&L=37.8 TOT A

Stand Title--STAND 1: WP/RO 4/3 B

*
* VOLUME TOTALS EXPANDED BY ACREAGE LEVEL = ALL Trees *
*

	:	SAWLOG	:	PULP	:	BOX PINE	:	PALLET	:	veneer	:	MAT LOG
	:	INT. 1/4"	:	CORDS	:	INT. 1/4"	:	INT. 1/4"	:	INT. 1/4"	:	INT. 1/4"
	:	VOLUME	:	VOLUME	:	VOLUME	:	VOLUME	:	VOLUME	:	VOLUME
WHITE PINE	:	343741	:	85	:	0	:	0	:	0	:	0
HEMLOCK	:	28047	:	8	:	0	:	0	:	0	:	0
RED PINE	:	6336	:	2	:	0	:	0	:	0	:	0
BEECH	:	0	:	11	:	0	:	0	:	0	:	0
RED OAK	:	140810	:	113	:	0	:	0	:	0	:	0
RED MAPLE	:	0	:	130	:	0	:	0	:	0	:	0
ALL SOFTWOODS	:	378125	:	95	:	0	:	0	:	0	:	0
ALL HARDWOODS	:	140810	:	255	:	0	:	0	:	0	:	0
ALL SPECIES	:	518935	:	350	:	0	:	0	:	0	:	0

Glossary and Acronyms

basal area (of a tree) - the cross-sectional area of the trunk 4 1/2 feet above the ground; (per acre) the sum of the basal areas of the trees on an acre; used as a measure of forest density.

BMPs - Best Management Practices: a set of guidelines to protect water quality. BMPs focus on careful road construction and maintenance, careful timber harvesting, minimal impact site preparation and protection of streamside management zones and wetlands.

board foot - a unit for measuring wood volume in a tree, log, or board. A board foot is commonly 1 foot by 1 foot by 1 inch thick.

browse - parts of woody plants, including twigs, shoots, and leaves, eaten by forest animals.

canopy - the continuous cover formed by tree crowns in a forest.

cord - a unit of wood cut for fuel that is equal to a stack 4 x 4 by 8 feet or 128 cubic feet. A cord is the legal measure of fuelwood volume in Maine and New Hampshire.

diameter at breast height (dbh) - standard measurement of a tree's diameter, usually taken at 4 1/2 feet above the ground.

DBH – tree diameter breast height

even-aged stand - a stand in which the age difference between the oldest and youngest trees is minimal, usually no greater than 10 to 20 years. Even-aged stands are perpetuated by cutting all the trees within a relatively short period of time.

forest types - associations of tree species that have similar ecological requirements. Northern New England forest types include white pine, spruce-fir, hemlock, northern hardwood, oak-pine, and others.

group selection - a process of harvesting patches of trees to open the forest canopy and encourage the reproduction of unevenaged stands.

herbaceous vegetation - low-growing, non-woody plants, including wildflowers and ferns, in a forest understory.

high grading—The practice of removing only the biggest and best trees from a stand during a harvest operation and leaving only the poorest, lowest quality culls to dominate the site.

intolerance - a characteristic of certain tree species that does not permit them to survive in the shade of other trees.

landing - a cleared area within a timber harvest where harvested logs are processed, piled, and loaded for transport to a sawmill or other facility.

MBF - Thousand board feet. A unit of measure for tree volume or sawed lumber.

marking timber - indicating by paint or other means which trees are to be cut or otherwise treated. It is advisable to mark trees to be harvested twice-once at eye level and once on the stump.

mast - Fruits or nuts used as a food source by wildlife. Soft mast includes most fruits with fleshy coverings, such as persimmon, dogwood seed or black gum seed. Hard mast refers to nuts such as acorns and beech, pecan and hickory nuts.

overstocked - the situation in which trees are so closely spaced that they compete for resources and do not reach full growth potential.

pole timber - trees 4 to 10 inches dbh.

precommercial treatments - forestry operations that require landowner investment, such as cleaning or weeding stands to remove trees that have little or no cash value.

pruning - the act of sawing or cutting branches from a living tree. In forest management, pruning is done to promote the growth of clear, valuable wood on the tree bole.

pulpwood - wood suitable for use in paper manufacturing.

regeneration - the process by which a forest is reseeded and renewed. Advanced regeneration refers to regeneration that is established before the existing forest stand is removed.

regeneration cut - a timber harvest designed to promote natural establishment of trees.

release - to remove overtopping trees that compete with understory or suppressed trees.

residual stand - the trees remaining intact following any cutting operation.

sapling stand - a stand of trees whose average dbh is between 1 and 4 inches.

sawlog - a log large enough to be sawed economically on a sawmill. Sawlogs are usually at least 8 inches in diameter at the small end.

seed-tree harvest - the felling of all the trees in an area except for a few desirable individuals that provide seed for the next forest.

seep - where water comes to the surface of the ground at the head of drainage-ways. This most often occurs in rich forest soils settings.

selection harvest - the harvest of all individual trees or small groups at regular intervals to maintain an uneven-aged forest. Selection harvests are used to manage species that do not need sunlight to survive.

shelterwood harvest - the harvest of all mature trees in an area in a series of two or more cuts, leaving enough trees of other sizes to provide shade and protection for forest seedlings.

significant wildlife habitat – habitats identified and mapped by the Maine Inland Fisheries and Wildlife Department and afforded special protection including deer wintering areas, bald eagle nests, shorebird nesting areas, etc., or identified by NH Fish & Game's Wildlife Action Plan. However, the NH Action Plan provides no special protection for these critical areas.

site index - a measure of the quality of a site based on the height of dominate trees at a specified age (usually 25 or 50 years), depending on the species.

stocking level – the density of trees by species or timber type in a particular area

slash - branches and other woody material left on a site after logging.

slope – a measure of steepness of terrain and a feature that can limit equipment use; it is the vertical gain (rise) divided by the horizontal distance cover (run).

snag - a dead tree that is still standing. Snags provide important food and cover for a wide variety of wildlife species.

stand - a group of forest trees of sufficiently uniform species composition, age, and condition to be considered a homogeneous unit for management purposes.

stand density - the quantity of trees per unit area, usually evaluated in terms of basal area, crown cover and stocking.

stocking - the number and density of trees in a forest stand. Stands are often classified as understocked, well-stocked or overstocked.

stumpage - the value of standing trees in a forest.

thinning - a partial cut in an immature, overstocked stand of trees used to increase the growth of existing trees by concentrating on individuals with the best potential, no regeneration results

tolerance - a tree species' capacity to grow in shade.

understocked - a stand of trees so widely spaced, that even with full growth potential realized, crown closure will not occur.

understory - the level of forest vegetation beneath the canopy.

uneven-aged stand - Three or more age classes of trees represented.

well-stocked - the situation in which a forest stand contains trees spaced widely enough to prevent competition yet closely enough to utilize the entire site.

NH Natural Heritage Bureau Report