

**Forest Management Plan**

**The Gould Lot- Tuftonboro Fire & Rescue Property**

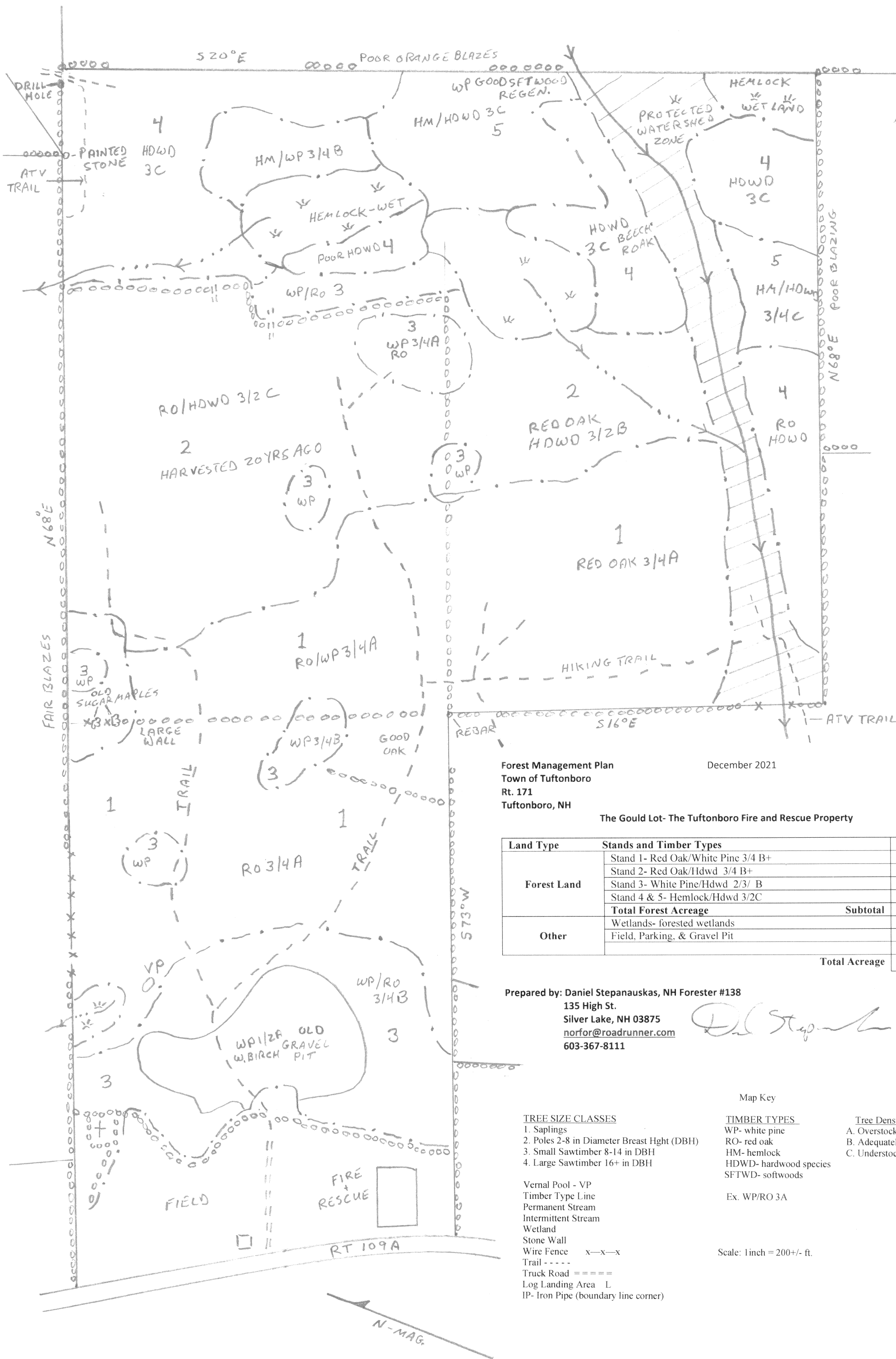
75 acres  
Rt 109  
Center Tuftonboro, NH

December 2021

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Forest Management Plan  
Town of Tuftonboro  
Rt. 171  
Tuftonboro, NH  
December 2021  
The Gould Lot- The Tuftonboro Fire and Rescue Property

Land Type	Stands and Timber Types	Acres
Forest Land	Stand 1- Red Oak/White Pine 3/4 B+	21.5
	Stand 2- Red Oak/Hdwd 3/4 B+	15.0
	Stand 3- White Pine/Hdwd 2/3/ B	6.6
	Stand 4 & 5- Hemlock/Hdwd 3/2C	20.0
	<b>Total Forest Acreage</b>	<b>Subtotal 63.1</b>
Other	Wetlands- forested wetlands	3.0
	Field, Parking, & Gravel Pit	8.9
<b>Total Acreage</b>		<b>75.0</b>

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*[Signature]*

- TREE SIZE CLASSES**

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

  - WP- white pine
  - RO- red oak
  - HM- hemlock
  - HDWD- hardwood species
  - SFTWD- softwoods
- Tree Density**

  - A. Overstocked
  - B. Adequately stocked
  - C. Understocked
- Vernal Pool - VP

Timber Type Line

Permanent Stream

Intermittent Stream

Wetland

Stone Wall

Wire Fence x—x—x

Trail - - - - -

Truck Road =====

Log Landing Area L

IP- Iron Pipe (boundary line corner)
- Map Key

Scale: 1 inch = 200+/- ft.

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## Acres & Timber Types

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### TREE SIZE CLASSES

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

### TREE STOCKING LEVELS/DENSITY

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

### SPECIES

- WP-white pine
- RO-red oak
- Hdwd-hardwood
- HM-hemlock

Ex. WP/Hdwd 3/2A

## Introduction

This property is identified in the Tuftonboro town tax maps as Map- 55 Lot- 2-6. This parcel of 75 acres is owned by the Town of Tuftonboro, NH. This parcel also houses the buildings and parking areas for the Tuftonboro Fire Rescue Department which was constructed on the parcel in 1987. The Town also owns an unoccupied house on the parcel. Forest management will only pertain to the land not used for other purposes by the Town.

This lot provides opportunities for both forest management, as well as recreational management. There is also the opportunity to allow the public to observe selected forest habitats to grow old while ecological processes take place without human intervention. This diversity of land ethics and opportunity will enable the public to observe, recreate on and enjoy a property that follows an ecosystem management approach to the entire property. This diverse property management scenario will benefit native flora, fauna and public welfare of the local community

The following pages are a suggested schedule of management activities to manage and sustain the forest resources on the property for the purpose of promoting good forest management, recreational opportunities and wildlife habitat on the Town of Tuftonboro's Gould Forest. The dates used are simply to create a sense of timeline, and they can be adjusted to fit the needs and time table of the Town and the Tuftonboro Conservation Commission.

## Management Objectives

- The goal for this tract is to manage the forest's timber resources sustainably and gently, while providing an array of habitat requirements for many species of native plants and wildlife.
- There is a trail network on this property which is regularly used by residents and visitors to the Town of Tuftonboro. This use is an integral value of this property.
- Forest management on this property will be of low intensity. This will allow for the maintenance of well stocked forest stands providing a sustainable rate of return, while providing recreational opportunities in a beautiful setting.

## Recent History

The western portion of this parcel was biomass (chip) harvested twenty years ago. The harvest removed the forest understory, along with a portion of the overstory trees. The southern and eastern portion of the land was last harvested 35 years ago. This was a discretionary harvest, which allowed for the residual forest to grow into a well-stocked stand of good quality trees.

An old gravel pit occupies an area north of the field. In the field there is an unoccupied house along with the Town's Firehouse & Rescue Station. There are also a few lovely old apple trees which the birds and wildlife use.

## Recreation

The property is not posted, and is open to the public for walking, horseback riding, skiing, hunting, fishing and snowshoeing. There is a well-marked trail network, along with a kiosk in the field. The trails follow old logging tote roads on the land, and extend onto neighboring properties. There is a proposal to develop a mountain bike trail on this property. From a forester's perspective, this would complicate carrying out forest management activities. Mountain bike trails are subject to erosion, along with unsanctioned proliferation of these trails.

## Topography

The land slopes gently uphill from Rt 109A. There are no significant slopes present on the property.

## Water Resources and Wetlands

There is a permanent brook which parallels the eastern boundary line. The brook did not appear to have a native brook trout population in it; however, it does drain directly into Lake Winnepesaukee. A second ephemeral brook drains a hemlock wooded swamp, from which it flows northward soon crossing onto M-56 lot-1-17. There is one vernal pool located above the gravel pit (see Type Map). This appears to be viable vernal pool, but would need to be verified during the late spring. Vernal pools are breeding locations for amphibians, a number of which are now protected in NH. An undisturbed perimeter of 75 feet is to be maintained around vernal pools. The northern 20% of this property contains irregular wooded wetlands which are drained by two ephemeral brooks, which flow in opposite directions. Much of this area has a high water table where forest management activities

will be very light. All wetlands in the State of NH are under the auspices of the NH Wetlands Board. Permits must be granted by the Board to allow for any incursion into hydric soils.

### Forest Protection

This land is owned by the Town of Tuftonboro, and is managed for the benefits it conveys to the people of Tuftonboro, NH. There are no additional protection measures in place for this property.

### Access

The only known access to the land is by a well-drained gravel road which extends from Route 109 just south of the house. This location is currently used as a parking area for hiking trails on the land. The log landing would have to be located in the field along edge of the forest. Woods roads on the property lead to this site. There is also a set of tote roads, used 30 years ago, leading into lots, 55-2-23 (a house site), and 56-1-17 which has frontage on Ledge Hill Road. It is not known whether access via these two routes would still be available for use by the town.

### Boundaries

Each one of this property's boundary lines is identified by stone walls. Nearly all of the wall boundaries are continuous. The exceptions with sporadic walls are the northern line, and the lower western line. The northern line also has a very poorly blazed line with faint orange paint, which needs to be repainted.

### Location

This forest is located behind the Tuftonboro Firehouse and Rescue building on Rt 109 in Center Tuftonboro. This is a wonderful location for the citizens of Tuftonboro to enjoy this land, with good public access.

### Cultural Resources

The Neal Cemetery is situated in the northeastern corner of the field. The parcel also has a network of stone walls which extend all the way to the back of the property. There are also stone piles on the lower slopes indicating that the land may have had some garden crop plantings. This was a good location for livestock grazing, with its year-round water sources. Near the house in the field, adjacent to the firehouse parking lot, there are two large, old oak trees which produce abundant crops of apples.

### Forest Health & Invasive Species

Fortunately, there are no invasive species issues in this forest. A small amount of Asian bittersweet is found behind the fire station, on the lower western boundary, and along Rt 109. The invasive hemlock wooly adelgid exists in Tuftonboro, and will begin to cause the hemlock trees to gradually decline and perish. The forester had a long discussion with NH's Forest Pathologist Kyle Lombard, while preparing to write this forest management plan. Kyle spoke to the fact that the hemlock wooly adelgid seems to have reached its current northern-most point of causing serious damage in northern Strafford County or southern Carroll County. This is due to our current winter low temperatures (-5 f) being just cold enough to cause 95% of the adelgids to not survive temperatures much below 0 F. As the climate continues to warm this control mechanism will likely become less

effective. This will be a gradual process. There is hope however, as biological controls have been implemented in NH. A few species of Asian black beetles sp. have been released throughout NH. The beetles have been found to prey solely upon the Asian hemlock wooly adelgid and they hold promise.

The mature ash trees will all die, due to the emerald ash borer. The small ash trees, not yet having developed the ash's corrugated bark, will likely not be affected, and they may live to see the biological controls that are being put in place lead to a good outcome. There is evidence that the western silver fly may help to control the hemlock wooly adelgid in the near future, while non-stinging wasps are being introduced to lay eggs in the larvae of the ash borer. White ash does not have a significant presence on this land.

### Aesthetics

This land has aesthetic appeal, particularly where the trails pass through stands of tall red oak forest in stand 1. The scattered sugar maples in the forest provide excellent foliage in the autumn. The trails and wood roads on the land are always pleasant to explore. The closed canopy oak forest will also provide a place to see and hear some of our beautiful forest birds, such as the scarlet tanager and the black-throated green warbler (see Forests for the Birds).

### Rare and Endangered Species



**Arethusa bulbosa- dragon's mouth orchid**

The NH Heritage report identified the spectacular *Arethusa bulbosa*, aka the dragon's mouth, as the only rare, threatened or species of concern known to exist on or close to the Gould lot. It lives in wetlands and wet meadows. See report in Appendix



Bears do live on the Gould Lot

## Wildlife

The wildlife species that inhabit the Gould lot encompass a broad array of the creatures native to NH. The land provides habitat features including red and white oak acorn production (mast), the high forest canopy, along with the shrub and understory layered canopies. Productive mast trees can often be identified by bear claw marks on beech trees and oak trees. Recent bear clawing was found on a red pine, their favorite tree for this form of territory marking. All mast trees greatly benefit a multitude of wild creatures such as deer, bear, grouse, and turkeys, along with a large number of smaller birds and mammals. There was evidence of deer yarding in stand 4, with young hemlock trees browsed, along with having their bark eaten during the winter. For this reason, timber harvests should encourage the regeneration of hemlock trees, despite the woolly adelgid (see Climate) whenever possible. There are scattered red spruce and balsam fir in Stand 4, which should be encouraged to regenerate, and take the place of the eastern hemlock for deer yard use. The release of trees with strong mast production, allows for the development of large, super-canopied trees. During the autumn, bears spend time in the tops of both beech and oak trees eating beech nuts and acorns building bear nests in the beech and oak trees. This is not really a nest at all, but simply their dinner chair. There are white oak trees on the land, which should not be harvested due to the high value of their acorns to wildlife. White oak acorns fall earlier than the red oak's and are higher in fat and caloric content. Timber marking and forest management can encourage the proliferation of soft mast (fruit) in the forest. Good sources of soft mast include black cherry, serviceberry (colloquially known as sugar plums), Rubus species (raspberry, blackberry, dewberry, and thimbleberry), blueberry, apple, hobblebush, viburnum, partridgeberry, bearberry and wintergreen etc. Think cedar waxwings. The soft mast shrub layer on this property includes maple leaf viburnum, hobblebush and serviceberry. A mature well-managed forest provides ample food sources for deer, moose and bear, along with many song-birds, ruffed grouse, turkeys, and raptors. The forester has seen sign of white tailed deer, turkey, and black bear on the land.

Timber harvests and timber stand improvement activities can often improve wildlife habitats. Harvesting and TSI creates an increase in browse availability, where deer can reach the branch tips, and berry bushes to feed upon. Grouse use the openings to feed upon ground vegetation such as dewberry, and partridgeberry, and to nest in young white pine growth. Cavity nesters will use trees girdled in TSI operations to create their nesting cavities. Please see, Forests for the Birds, Woody Debris, and Vertical Structure.

## Forests for the Birds

Stand 1 provides a tall closed canopy oak stand which is home to some wonderful birds including, scarlet tanagers, black throated green and Blackburnian warblers, along with oven birds and wood thrushes. Sadly, stands such as this are becoming scarce. The high canopy bird songs in a stand of large hardwoods can be amazing. The largest tall canopy trees should be allowed to remain there whenever possible on Conservation Commission lands. There are older white pine trees on the property that provide perch and nesting habitats for ravens, and raptors (birds of prey) primarily of the Buteo family ( red-tailed, broad winged hawks, red-shouldered etc). The portion of Stand 2 which was biomass harvested 20 years ago (see type map) has resulted in a forest with a strong midstory of 4-12" DBH oak and northern hardwood trees, with scattered sunlight descending to the forest floor. This mid-level canopy has created a habitat for birds, such as redstarts, black throated blue warblers, and wood thrushes, which inhabit the higher, mid-level canopy layer (see Vertical Structure). The development of multi-layered tree and shrub canopies greatly enrich bird habitats, along with the ability to sequester a higher amount of carbon dioxide per acre. Additional softwood regeneration is a goal on the property, which would improve the habitat for the Canada warbler, the black-throated blue warbler, and the wood peewee.

Cavity nesting birds are dependent upon trees that they can easily excavate into nesting sites. These birds include, flickers, woodpeckers, nuthatches, wrens, flycatchers, tufted titmice, barred and saw-whet owls, along with many mammal species. Senescent (easily excavated, low density trees) such as aspens, basswood, and red maple are easily excavated by the birds. Forest management can provide an opportunity to encourage and release these species. Big-tooth aspen is the best tree of all for this purpose.

## Woody Debris

Large downed woody material is referred to as coarse woody debris. There is a moderate supply of this material on much of this property. A simple and accurate way to view this issue is that the more organic debris there is in a forest the more life there will be in that forest. The wood on the forest floor is a significant feature for the maintenance of biodiversity in the forest. It is where much of the basis of the food chain is grown. The wood grows vegetation and fungus upon which insects feed, which in turn feeds birds and small mammals, deer and bear. A goal to leave woody debris throughout the forest when timber harvests take place is recommended. Woody debris (slash) on the forest floor is the way a forest has always worked, and forest management that imitates nature is a wise way to proceed. During timber harvests, the cull (decayed) butt portions of logs are best bucked off in the forest, versus on the log landing, to enhance the habitat throughout the forest with coarse woody debris. These large tree butts are valuable as den sites, shelter, and habitat for mammals, birds, reptiles, insects, and amphibians. Bears and woodpeckers use them extensively for feeding on grubs, they serve as drumming locations for ruffed grouse, and provide direct and indirect food sources for all manner of forest creatures. Large woody debris is also very beneficial as a repository of symbiotic miccorrhizal fungi, which have a symbiotic relationship with tree roots. These fungi provide minerals and soil nutrients to the roots, while the trees return the favor by providing carbohydrates to the fungal mycelium.

## Vertical Structure and Crown Closure

Vertical structure is the layering of both live and dead, woody plant crowns within a forest stand. Forest management encouraging the development of diverse age classes with varying degrees of crown closure throughout the forest is a goal. In a closed canopy, mature red oak stand, such as that found in stand 1, structure is lacking due to the growth pattern and development of a closed canopy red oak stand. In stands with shade tolerant softwood trees such as the spruces and eastern hemlock, there is good vertical structure. This is due to the fact that shade tolerant trees have live limbs lower on their stems, as they do not die from lack of light. Uneven-aged and older forests are well stratified with layers of limbs and understory trees that will support a far greater array of plant and animal species than will an even-aged stand of trees. Typical late successional over-stories in north-central NH (a long-term goal) are composed of hemlock, spruce, beech, yellow birch, sugar maple, and red maple along with red oak, and basswood. In this forest red oak is the predominant large hardwood present in all of the stands, combined with a good representation of sugar maples in Stand 1.

Uneven-aged management, which encourages the growth and layering of vertical crown structure, is important to the habitat requirements of many songbirds, as it provides perching habitat. Single tree removal timber harvesting can be used to increase the amount of understory and mid-story vegetation, with even a small amount of light reaching the forest floor.

When harvesting trees in this forest it is important to regenerate an understory of both desirable future canopy tree species, along with shade tolerant shrub layers of species such as maple leaf viburnum, hobblebush, and hophornbeam. Tree species such as red spruce, hemlock, beech, and sugar maple are shade tolerant and can survive for many years in the understory (advance regeneration). Many will begin rapid growth when a timber harvest, or a natural disturbance, allows the sunlight to penetrate to the forest floor. This will allow the forest to develop multi-layered canopies.

## The Climate

Currently, a leading silvicultural consideration is the warming of our climate. Most of our trees will take 85+ years to mature. There is a wide range of species projected to decline in the warming trend (fir, spruce, paper birch, aspens, etc.). The species that we wish to regenerate on the land will be those trees possessing a genotype and phenotype projected to endure or thrive in the projected warming scenarios (red & white oaks, maples, yellow birch, white pine). This is silviculturally accomplished by the harvest or the retention of chosen tree species, the season of harvest, the size of harvest openings, and the timing of harvests to coincide seed production of desired tree species. The US Forest Service's projection of the list of trees that will be resilient to the warming include: white pine, red and white oaks, yellow and black birch and the maples. Species management will be carried out to gently encourage the projected thrivers, versus gently reducing the stocking of the species more susceptible to decline as the climate changes proceed. Never-the-less, maintaining a diversity of species along with maintaining high stocking levels is currently a safe mechanism to employ.

Certain trees have already begun to decline, both due to the reduction of calcium levels in the soils as a result of acid precipitation, along with the introduction of alien insects and pathogens. Paper birch no longer lives as long as they once did due to the legacy of acid rain, drought cycles, and climate change. Mature white ash will not survive the emerald ash borer (an insect pest from Asia). The hemlock wooly adelgid is also an Asian insect pest which is present in Tuftonboro. The adelgid will cause this pivotal species to decline (see Forest Health).

Regardless, the hemlock decline will be gradual, aided by cold nights below -5 degrees F., which thus far, appears to have greatly reduced the adelgid numbers for a year or two following the cold. The slowing of the jet stream has allowed the polar vortex to occasionally swing southward to allow for outbreaks of cold to continue and protect the hemlock from disaster. Foresters in southern NH have stated that once the infestation is fully seated, the decline will lead to ensuing mortality in three years' time. There is hope for the eastern hemlock.

## Fieldwork

This inventory was conducted using a systematic grid pattern of 48 points. At each point location an assessment was made of forest conditions, habitat features, tree health, tree pathogens species and processes, bird and wildlife signs, nests, and all manner of pertinent features. The assessments of each sample point also including extensive notes, the drawing of the forest type map including forest and land features, wildlife habitats, land use history, along with the general condition of the forest leading to a full assessment of the stand. The forest inventory was only carried out only in stands where forest age classes and stocking levels would allow silvicultural work to take place within the next twenty years.



The soils data below is useful in deciding how to manage your land. Soils are the basis of terrestrial life, and have immense value in determining which trees to propagate and grow on your land.

### Soil Descriptions

#### Carroll County Area, New Hampshire

<u>Map Unit Symbol</u>	<u>Map Unit Name</u>	
35B	Champlain loamy sand, 3 to 8 percent slopes	2.9
459B	Metacomet fine sandy loam, 3 to 8 percent slopes, very stony	7.8
977B	Acton fine sandy loam, cool, 0 to 8 percent slopes, very stony	0.1
980C	Henniker-Gloucester fine sandy loams, cool, 8 to 15 percent slopes, very stony	49.3

**980C-** This soil is engaged in growing good quality red oak trees on this property. This fine sandy loam is well suited to the growth of red oak, along with white pine. There is good availability of ground water in this soil, which is critical for the growth of red oak. These well drained soils pose no difficulties for timber management work, other than the spring and fall mud seasons when it would cause soil rutting and root damage.

**459B-** The Metacomet soils are also well suited to the growth of red oak and white pine forests. However, they are not as productive for the growth of high quality red oak as the Henniker-Gloucester soils, due to a lower available water capacity, along with coarser soil particles leading to lower levels of available nutrients. On this soil the growth of white pine should be encouraged.

**977B-** This soil has a high water table. The above NRCS soils map underrepresents the acreage of this soil type on the Gould Lot. The area of wooded wetland, along with a hemlock stand with a water table within 1 foot of the ground level covers 2.9 acres. The only management work to take place here would be to encourage the regeneration of hemlock in order to improve its deer yard capabilities.

### General Silvicultural Recommendations and Forest Health

The forests of northern New England are diverse in both age class and species distribution. Therefore, written silvicultural prescriptions are but generalizations, as the composition of each location in a forest stand varies considerably. Only by careful selection of when, if, and how to manage, whether to harvest, which trees to harvest etc., can the best decisions be made for the management and regeneration of our heterogeneous forests. Higher site index locations with good moisture levels, rich soils, and favorable slope positions allow timber to be maintained at higher stocking levels, while conversely, lower site indexes, such as on the shallow soils should be maintained at lower ranges of the allowable stocking levels in order to grow quality trees at a healthy rate. During a stand harvest there must be areas in each stand which are not included in the harvest area. There are numerous benefits to leaving exclusion zones in any harvest area. These areas allow for the maintenance of lower quality trees to fill out the volumes needed to conduct subsequent economically viable, light timber harvests without having to harvest the high-quality trees. There is also the benefit of full crown closure, which have a higher level of standing snags and defective trees, which are favored habitat for numerous bird and mammal species. Light harvests allow for a sustainable yield in a forest stand over a long period of time. A general rule of thumb is to leave a basal area of 80-90 ft<sup>2</sup>/acre in a harvested hardwood stand with 120 ft<sup>2</sup>/acre in softwood stands. Stand 1 on this property is an intact forest

## Timber & Climate

Climate is the most important consideration in the management of our forests. The primary management goals for this forest are to properly space the existing trees in each stand, while maintaining high stocking levels. Growing the correct species on the soils that favor them leads to higher volume growth rates/acre, along with higher grades of hardwood timber. These management priorities lead to higher levels of carbon sequestration by the forest. A sensitivity to the forest's aesthetics along the hiking trails should be maintained during any timber harvests. A forest under management by a forester should be walked through by the forester every five years. The harvest prescribed in this plan is scheduled to take place within the next ten years. The harvest will result in proceeds, net to Tuftonboro, of approximately \$14,475. See the stands below for details



Red Oak in Stand 1

## **Stand 1- Red Oak 3/4 B+ 21.5 acres**

### **Stand Description**

This fine red oak stand is interspersed with large white pine trees. This stand had limited harvested activity during the past forty years, while other nearby stands were harvested more extensively. This is likely due to the fact there were few white pine trees in the stand, along with the immature age of this red oak stand when these harvests took place. The stand is now a healthy well-stocked stand with high grade red oak trees, that now have become over-stocked in portions of the stand. There is very little tree decay in this stand, although there are trees that have become suppressed due to overstocking. There are point tallies in this stand where red oak stands have basal areas of 180ft<sup>2</sup>/acre.

The forest inventory results for the stand (see appendix) show that the stand is well-stocked, with an average basal area\* of 120 ft sq/acre along with 7540 board feet/acre of sawtimber, along with an additional of 2,870 board feet/acre of lower grade or smaller diameter pallet logs. A total bd ft/acre of 10,410 bd. ft/acre is a high volume for a stand that is comprised of 83% red oak. The individual inventory points show a wide range of basal areas in each sample point. The results vary from 80ft<sup>2</sup>/acre to 180ft<sup>2</sup>/acre. Red oak trees in the 20-22" DBH size class are common throughout the stand.

### **Prescriptions**

The intermediate and suppressed trees in this stand occur in overstocked patches. They have been in this condition for decades. Some of these trees have very slow growth rates, and were they released they would not be able to increase this growth rates significantly. Conducting light thinnings in these overstocked areas would be appropriate. This prescription is to be scheduled during or immediately prior to an upcoming white pine seed year. In 2–10 years a single tree selection thinning would be appropriate, preferentially using a small cable skidder. This harvest will be scheduled either during late summer to mid-autumn (preferred), or during the winter.

The trees chosen for harvest would be trees with poor prospects due to suppression, along with those suffering from serious decay. A harvest of this kind will not allow much light into the understory, and will not predispose the residual stand to be taken over by a beech/ striped maple understory. White pine is under-represented in this stand. Most of the scattered healthy white pines will be retained to allow for the regeneration of this important species. The dominant and co-dominant high canopy trees in this stand are exhibiting good growth rates, and have good form. These high quality trees will not be marked for this harvest. During the harvest the trees felled will be limbed where they fall, versus being skidded out with their crowns intact, this will greatly reduce residual tree injuries. The cut limbs will be left 4+ feet high to prevent the deer from eating the oak sapling regeneration, while it grows above deer browse height. This harvest method will also return and distribute the nutrients and organic matter from the limbs back to the soil (see Woody Debris). Simply put, the more organic material there is in a forest the more life there is in the forest.

During this harvest the *average* current basal area of 120ft<sup>2</sup>/acre will be reduced to 110. Nearly all of this harvest will take place in stands where the *actual* basal areas are over 150ft<sup>2</sup>. The inventory shows that 3,025 bd ft/acre of tree volume is in trees that are  $\approx$  16" DBH. The current total sawlog volume/acre of 10,410 bd ft will be reduced to 9,440/ac. The harvest will remove a total of 8,900 bd ft of white pine @ \$150./m, along with 12,000 bd ft of red oak @ \$325, and 600 tons of firewood/hardwood pulp @ 6/ton, net to Tuftonboro. The net

return to the Town from the harvest in Stand 1 will be \$8,835+/- . This harvest will focus upon the removal of lower value red oak trees , as these trees will be suppressed with much slower growth rates and less potential. After this thinning the stand should be looked at by the town's forester every 5 years. Post-harvest, this stand will grow into a beautiful forest of large, tall red oak trees. Managing this forest with the intent of maintaining high stocking levels populated with large majestic trees should continue to be the goal in this stand. The goal of this initial thinning is not to create a high level of net income, rather it is to enhance the growth and health of this fine forest.

After this initial thinning the dominant and co-dominant trees will begin to grow rapidly, and in 18-20 years there will be many red oak trees from 24-28" DBH. Over this period of time, trees will again become crowded with developing health issues as some trees in these large size classes begin to reach biological maturity. A light harvest will again be appropriate to retain good growth rates. The forester who conducts this work will abide by the conservative forest management that has been undertaken here, in which only a small percentage of the timber volume is removed during each harvest entry.

At this time there will be trees that are large enough to prescribe the harvest of some quality veneer trees. When trees of this size are felled it creates openings in the stand for the large crown to fall. In most cases a few perimeter trees will also be marked to allow favorable species to have enough light the regenerate and grow well in these patch cuts. Red oak trees 24 DBH and larger have reached a size when their growth rates begin to slow, and tree defects begin to increase. These patch cuts will be relatively small, and will occur during the fall or winter in conjunction with an acorn crop year. This harvest will include the requirement that the logging contractor cut all of the understory to the ground in each patch cut. The cut limbs will again be left 3+ feet high to prevent the deer from eating the oak regeneration. The patch cut openings will be roughly 100' X 80' with their long axis' facing to the SSW. This harvest will again include thinning poor quality trees. This patch cut scenario is best case, and will not be realistic in all of the locations. Five years after this harvest timber stand improvement will be appropriate in the stand.

There is only one potential negative repercussion that can be attributed to the management of this forest. A harvest will leave some limbs, and perhaps a small amount of rutting, on the trails where logging trails cross. The logger will be asked to clean the trails, as part of the timber sale contract.



Young Red Oak/ Hardwood in Stand 2

## Stand 2- Red Oak, Hardwood 3/2 B- 15.1 acres

### Description

This stand is a red oak, red maple and beech stand, although the oak trees are somewhat shorter, and do not grow as well here as in Stand 1. There is also a higher percentage of white pine in the stand, which is correlated to the poorer soils in this stand. The Metacomet soil here does not provide as high a site index as is found in the Henniker Gloucester soils of Stand 1. The forest type lines here coincide remarkably well with the soil type lines. This demonstrates the importance of matching the soils with the tree species that are to be grown upon them. Most of the stand has an understocked overstory of red oak, combined with a higher proportion of white pines, red maple and beech trees.

The basal area in the stand is 113 bd ft<sup>2</sup>/acre indicates that the stand needs time to grow before harvesting takes place. Most of this stand had a biomass harvest conducted in it 20 years ago creating a two age stand. There are scattered white oak trees in the stand. This biomass cutting was focused upon the removal of the small understory trees, along with some larger hardwood and white pines. This harvest also resulted in a thick pole sized tree (2-4" DBH) understory of beech, and red maple along with some good red oak poles.

### Prescriptions

The forest type lines on this property are often ambiguous, with small stand inclusions though out the forest. A light TSI operation is prescribed to take place in this stand ASAP. This will constitute having a person with a chainsaw spend a few days to girdle poor overstory trees, along with releasing one or two sides of good quality pole-sized trees. The forester will mark some of the trees to cut as the contractor learns how to carry out the operation. When a harvest takes place the adjacent Stand 1, this stand will also have a light thinning conducted in it. There are portions of Stand 2 which are stocked with poor quality red maple and red oak trees. In these areas the removal of the poorest and damaged trees would be used to release the higher quality pole-sized trees. This practice will lead to the long-term appreciation and development of this stand. This low-intensity small harvest can take place in 2 - 10 years. After this thinning takes place, this stand will be left to grow undisturbed for 20 years while the younger pole trees grow, at which time the stand can be reassessed. One goal is to initiate some white pine regeneration in the stand when harvesting takes place. To accomplish this the harvesting activity will be scheduling prior to, or during, a white pine seed year.

This upcoming light harvest will focus upon the removal of poor quality overstory trees, along with thinning small sawtimber trees and pulpwood from the stand. This activity will be marked by the forester to release many of the pole-sized trees. The harvest will likely take place upon 9 of the 15 acres in the stand. The basal area will be lowered from an average of 113ft<sup>2</sup>/acre to 90. The average board feet/acre in the stand is 7,600 bd ft/acre, along with 13.6 tons of pulpwood. Ninety percent of the sawlog volume is 16" DBH or smaller, which is a reflection of the previous harvest 20 years ago. The upcoming harvest will only reduce the basal area from 113 to 90. The sawlog volumes cut will be 1,000 bd ft/acre on 9 acres of the stand, along with 9 tons of pulpwood/acre. The timber harvested will consist primarily of poor grade and pallet logs, focusing upon the red maple and injured trees. The net proceeds to the Town will be; 9,000 board feet @ \$200/m, or \$1,800 with 9tons/acre x 9 acres @ 6/ton = \$486, being a total of \$2286. of proceeds from Stand 2. (see Activities Schedule).



White pine in Stand 3

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### Stand 3 White Pine/Red Oak 3/4C-6.6Acres

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#### **Description**

The southern portion of this stand, adjacent to the gravel pit, has numerous trees that were damaged during a tree harvest associated with the gravel pit. There are but a few good quality trees here, and the next harvest will remove the poor red oaks and along with the damaged white pine trees. The remaining portions of Stand 3 occur in patches with good quality trees which often have serious 25 year old butt scars with advancing decay. These stands all serve a purpose in providing a source of white pine seed for this property. The regeneration of white pine is an important goal in Stand 3. The seeds of the white pine can travel a long distance through the forest to regenerate. In most locations there are good quality mature red oak and overmature red maple trees amongst the white pine trees. These small stands are well-stocked.

The stand has 11,185 board feet of sawlog volume per acre, with an average basal area of 109ft<sup>2</sup>/acre. The log volume is 8218 bd ft white pine with 2050' of red oak, along with 917' of pallet logs. There is 4,706 bd ft logs @ 18" DBH or larger.

#### **Prescriptions**

A light harvest in two to ten years will be used to remove the defective trees, along with an occasional mature or suppressed white pine, from these stands. The thinning will also harvest red maple trees over 16" DBH. This harvest will take place just prior to or during a white pine seed year, preferably during light, or snow-free, conditions to help scarify the soil in order to assist with successful pine germination. The harvest will involve cutting perhaps 1,400 bd ft of white pine/acre @ \$150/m bd ft., along with 4 tons of hardwood pulp/acre @ \$6/ton. White pine will regenerate successfully, and will frequently outcompete its hardwood competitors along the stand edges, and in patch cut openings of sufficient size. Afterwards the stand will be assessed 5 years after harvest to see whether TSI is required, and will be allowed to grow for 15-20 years to coincide with the next harvest in adjacent stands. The harvested will earn the Town \$1,544 net.

A subsequent harvest in this stand scheduled in 18-20 years will expand the perimeter openings around the white pine regeneration, following the same scenarios as in the previous harvest. The forester who conducts this work will abide by the conservative forest management that has been undertaken here, in which only a small percentage of the timber volume is removed during each harvest entry.

### Stands 4 & 5 Hemlock/ Red Oak/ Hardwood 3/2/4 C - 20 acres

#### **Description**

Stand 4 is a heavily cut-over hardwood hemlock stand with scattered good quality hemlock trees and poor quality residual hardwood trees in it. There is white pine regeneration in the stand, along with extensive beech and red maple sapling growth. It is a poorly stocked stand with an average basal area of 97 in a stand of hemlock, red maple, beech, hemlock and red oak trees with 60% of the trees having a diameter of 14" DBH or less. Many of these trees were left by the previous logger due to their low quality and value. The areas of Stand 4 between the permanent brook and the boundary line do have some large high quality red oaks in them, although these small areas will not likely justify creating a brook crossing to gain access to these small stands.

Stand 5 is a poorly stocked hemlock/ hardwood stand which was harvested 25 years ago during mud season. As a result, it has deep skidder ruts in its tote roads. However, this stand has some well distributed pockets of mature hemlock trees, along with large white pines and red maple trees. It also contains some red spruce along with a few balsam firs.

Much of the stand has a high water table, and is adjacent to wetlands. The previous harvest led to a growth of hemlock saplings. The young hemlock show that the deer have used this stand as a yard during recent snowy winters. The bark and twig tips on the young hemlock have been heavily browsed during these winters. The stand also includes the riparian area along the unnamed brook which parallels the southern boundary. A 60 foot buffer will be maintained area on either side of the brook. There is 3,975 bd ft/acre of sawtimber, and 19.5 tons of pulp in these stands

### **Prescriptions**

Stand 4 has extensive understory of beech, red maple, hemlock and white pine saplings. This stand would be well-served by having more of its overstory removed to provide adequate sunlight to allow the red oak, white pine, red and sugar maple saplings to outcompete the beech regeneration. Enough hemlock will be retained in the stand to meet the habitat requirements for bird and wildlife species. Enough red oak and beech will be retained to provide ample seed mast sources. This harvest will have to take place within 10 years, along with the work in the other stands, in order for it to be economically viable. This harvest will be limited to the removal of injured trees, and poor quality tree where the additional light will facilitate the growth of the saplings in the heavily cut stands. This will also provide increased browse for deer that winter in these stands.

Stand 5 is best utilized as a deer yarding area. In order to improve the potential for this purpose, the large red maples in the stand will be harvested, during the next thinning, to facilitate hardwood sprouting and hemlock regeneration. Many of the scattered red oaks and beech should be retained for their mast (nut) production, which the deer will dig out through the snow. There are white pines and red spruce, along with the few balsam firs in stand 5 which should not be cut. These trees should be retained to regenerate and eventually replace the deer yard cover previously afforded by the hemlock trees prior to the woolly adelgid. The adelgid is not yet present on this property, although it will be soon enough (see Climate and Forest Health).

The harvest in these stands will be light. The volumes to be cut will be 300bd ft of beech and red maple/acre @ \$170/m, 800' of hemlock @ \$50/m, and 10 tons of pulp @ 6/ton. This will lead to a net return for the two stands of \$1,810. After this harvest there will be a sapling stand of good regeneration, including red oak, hemlock, white pine, and sugar maple. The stand will be inspected five years after this harvest to assess the need for timber stand improvement. There are no additional harvests scheduled in this stand for the next 20 years, although it could be checked by the forester to see how the deer yard is functioning.

### **Old Gravel Pit**

This pit area is largely stocked with dense white pine pole trees, along with grey and white birch. In the areas stocked with white pine trees a TSI operation to cut the grey and white birch trees should take place as soon as possible. The areas that are primarily birch the grey birch trees should be cut to release the white birch trees.

### **Activities Schedule- also see Stand Prescriptions**

## Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

- A Light harvest in all of the stands is scheduled to occur in 2-10 years, in conjunction with a good white pine seed year.
- Timber stand improvement is scheduled to occur ASAP in Stand 2, and 5 years after harvest in stands 3,4, and 5.
- The forester will inspect the stands in 5 years after the initial thinning.
- The forester will assess the need for a subsequent harvest in 18-20 years in stands 1,2, and 3.

### **New Hampshire Natural Heritage Data Check**

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission



## New Hampshire Natural Heritage Bureau

DNCR - Division of Forests & Lands  
172 Pembroke Road, Concord, NH 03301  
Phone: (603) 271-2214 Fax: (603) 271-6488

To: Daniel Stepanauskas  
Northern Forest Resources  
135 High Street  
Silver Lake, NH 03875

From: NH Natural Heritage Bureau

Date: 2021-12-07

Re: Review by NH Natural Heritage Bureau of request dated 2021-11-19

NHB File ID: 3799

Project type: Landowner Request

Town: Tuftonboro, NH

Location: 55-2-6, Town of Tuftonboro

We have searched our database for records of rare species and exemplary natural communities on the property(s) identified in your request. Our database includes known records for species officially listed as Threatened or Endangered by either the state of New Hampshire or the federal government, as well as species and natural communities judged by experts to be at risk in New Hampshire but not yet formally listed.

NHB records on the property(s): **None**

NHB records within one mile of the property(s):

Plant Species	Last Reported	Listing Status		Conservation Rank	
		Federal	NH	Global	State
dragon's-mouth - <i>Arethusa bulbosa</i>	2015	--	E	G5	S1

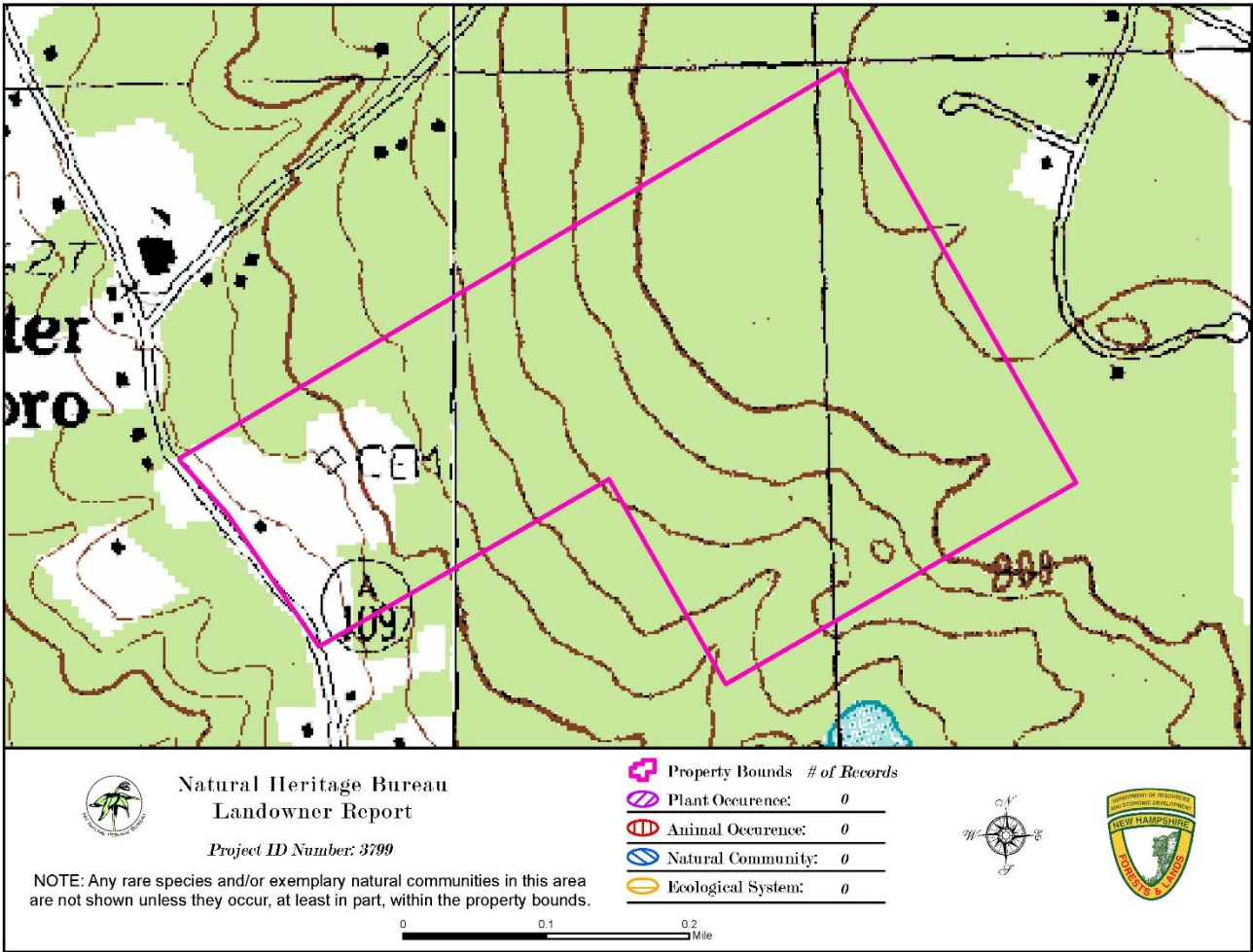
Listing codes: T - Threatened, E - Endangered, SC - Special Concern

Rank prefix: G - Global, S - State, T - Global or state rank for a sub-species or variety (taxon)

Rank suffix: 1-5 - Most (1) to least (5) imperiled, "--", U, NR - Not ranked, B - Breeding population, N - Non-breeding, II - Historical, X - Extirpated.

A negative result (no record in our database) does not mean that no rare species are 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.

**NOTE: This review cannot be used to satisfy a permit or other regulatory requirement to check for rare species or habitats that could be affected by a proposed project, since it provides detailed information only for records actually on the property.**



# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 1

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

Forest Tally  
by  
Loon's Echo

Date Run: 12/07/21

B.A.F. = 20.00

NUMBER OF POINTS SAMPLED = 21

DIAMETER CLASS SIZE = 1

STAND # 1

ACREAGE OF TRACT = 21.50

CONFIDENCE LEVEL = .90

LEVEL = ALL Trees

Licensed To

Forest Land Improvement

Donald Johnson

P. O. Box 188

Tamworth NH 03886

(603) 323-8298

Serial Number

900401-0002

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 2

Job Title--GOULD LOT: 63.2F0, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 1: R0/WP 3/4

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*****
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*                               ALL SPECIES                               LEVEL = ALL Trees
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*****
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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 :	10.5 :	30.0 :	93.4 :	2.7 :	.0 :	15.5 :	.0 :	.0
10 :	22.9 :	41.9 :	43.8 :	5.5 :	.0 :	575.4 :	.0 :	.0
12 :	20.0 :	25.5 :	783.0 :	2.7 :	.0 :	924.9 :	.0 :	.0
14 :	17.1 :	16.0 :	1569.6 :	1.0 :	.0 :	506.0 :	.0 :	.0
16 :	21.9 :	15.7 :	2019.0 :	1.7 :	83.7 :	438.4 :	.0 :	.0
18 :	16.2 :	9.2 :	1522.9 :	1.5 :	29.6 :	254.5 :	.0 :	.0
20 :	5.7 :	2.6 :	738.5 :	.1 :	.0 :	125.3 :	.0 :	.0
22 :	2.9 :	1.1 :	278.9 :	.3 :	.0 :	16.9 :	.0 :	.0
24 :	1.9 :	.6 :	322.6 :	.1 :	.0 :	13.4 :	.0 :	.0
26 :	1.0 :	.3 :	168.9 :	.0 :	.0 :	.0 :	.0 :	.0
TOTAL :	120.0 :	142.8 :	7540.7 :	15.6 :	113.2 :	2870.2 :	.0 :	.0
S.E. :	:	:	± 19% :	± 13% :	± 130% :	± 27% :	± 0% :	± 0%
C.V. :	:	:	51% :	34% :	353% :	74% :	0% :	0%

MEAN STAND DIAMETER = 12.4

MERCHANTABLE M.S.D. = 12.4

PERCENT CRUISE = 4.1%

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 3

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

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*
*                               SPECIES COMPOSITION BY PERCENT                               *
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			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	VOLUME
WHITE PINE	9.52	8.06	16.51	8.13	100.00	.00	.00	.00
BEECH	3.17	3.17	.00	6.64	.00	.00	.00	.00
RED OAK	76.98	74.00	82.88	62.21	.00	100.00	.00	.00
RED MAPLE	7.94	10.79	.61	17.09	.00	.00	.00	.00
WHITE BIRCH	2.38	3.98	.00	5.92	.00	.00	.00	.00
ALL SOFTWOODS	9.52	8.06	16.51	8.13	100.00	.00	.00	.00
ALL HARDWOODS	90.48	91.94	83.49	91.87	.00	100.00	.00	.00

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 4

Job Title--GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

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

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	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	1244.8	1.3	113.2	.0	.0	.0
BEECH	.0	1.0	.0	.0	.0	.0
RED OAK	6249.6	9.7	.0	2870.2	.0	.0
RED MAPLE	46.3	2.7	.0	.0	.0	.0
WHITE BIRCH	.0	.9	.0	.0	.0	.0
ALL SOFTWOODS	1244.8	1.3	113.2	.0	.0	.0
ALL HARDWOODS	6295.8	14.4	.0	2870.2	.0	.0
ALL SPECIES	7540.7	15.6	113.2	2870.2	.0	.0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 5

Job Title--GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 1: R0/WP 3/4

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*****
*
*                                VOLUME TOTALS EXPANDED BY ACREAGE                                LEVEL = ALL Trees
*
*
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	SAWLOG	PULP	BOX PINE	PALLET	VENEER	MAT LOG
INT. 1/4"	INT. 1/4"	CORDS	INT. 1/4"	INT. 1/4"	INT. 1/4"	INT. 1/4"
VOLUME	VOLUME	VOLUME	VOLUME	VOLUME	VOLUME	VOLUME
WHITE PINE	26764	27	2434	0	0	0
BEECH	0	22	0	0	0	0
RED OAK	134366	209	0	61710	0	0
RED MAPLE	995	57	0	0	0	0
WHITE BIRCH	0	20	0	0	0	0
ALL SOFTWOODS	26764	27	2434	0	0	0
ALL HARDWOODS	135361	309	0	61710	0	0
ALL SPECIES	162125	336	2434	61710	0	0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 6

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 2: RO 3

Forest Tally  
by  
Loon's Echo

Date Run: 12/07/21

B.A.F. = 20.00

NUMBER OF POINTS SAMPLED = 6

DIAMETER CLASS SIZE = 1

STAND # 2

ACREAGE OF TRACT = 15.10

CONFIDENCE LEVEL = .90

LEVEL = ALL Trees

Licensed To

Forest Land Improvement

Donald Johnson

P. O. Box 188

Tamworth NH 03886

(603) 323-8298

Serial Number

900401-0002

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 7

Job Title--GOULD LOT: 63.2F0, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 2: RO 3

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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	:	23.3 :	66.8 :	.0 :	7.1 :	.0 :	.0 :	.0 :	.0
10	:	26.7 :	48.9 :	306.9 :	6.4 :	.0 :	509.7 :	.0 :	.0
12	:	6.7 :	8.5 :	440.7 :	.6 :	.0 :	243.3 :	.0 :	.0
14	:	23.3 :	21.8 :	1908.9 :	1.9 :	.0 :	675.3 :	.0 :	.0
16	:	26.7 :	19.1 :	1841.9 :	2.2 :	.0 :	855.0 :	.0 :	.0
18	:	6.7 :	3.8 :	803.7 :	.4 :	.0 :	77.5 :	.0 :	.0
TOTAL	:	113.3 :	168.9 :	5302.1 :	18.6 :	.0 :	2360.8 :	.0 :	.0
S.E.	:	:	:	± 35% :	± 26% :	± 0% :	± 54% :	± 0% :	± 0%
C.V.	:	:	:	43% :	32% :	0% :	66% :	0% :	0%

MEAN STAND DIAMETER = 11.1

MERCHANTABLE M.S.D. = 11.1

PERCENT CRUISE = 1.3%

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 8

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 2: RO 3

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\*  
\* 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	:	17.65	:	15.06	:	30.29	:	16.89	:	.00	:	4.11	:	.00
RED OAK	:	58.82	:	58.11	:	51.40	:	50.19	:	.00	:	95.89	:	.00
SUGAR MAPLE	:	5.88	:	9.27	:	.00	:	11.04	:	.00	:	.00	:	.00
RED MAPLE	:	17.65	:	17.56	:	18.31	:	21.88	:	.00	:	.00	:	.00
ALL SOFTWOODS	:	17.65	:	15.06	:	30.29	:	16.89	:	.00	:	4.11	:	.00
ALL HARDWOODS	:	82.35	:	84.94	:	69.71	:	83.11	:	.00	:	95.89	:	.00

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 9

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 2: RO 3

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*****
*
*                                     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	1606.0	3.1	.0	97.0	.0	.0
RED OAK	2725.1	9.4	.0	2263.8	.0	.0
SUGAR MAPLE	.0	2.1	.0	.0	.0	.0
RED MAPLE	970.9	4.1	.0	.0	.0	.0
ALL SOFTWOODS	1606.0	3.1	.0	97.0	.0	.0
ALL HARDWOODS	3696.0	15.5	.0	2263.8	.0	.0
ALL SPECIES	5302.1	18.6	.0	2360.8	.0	.0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 10

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 2: RO 3

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*****
*
*                                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	:	24251	:	48	:	0	:	1465	:	0	:	0
RED OAK	:	41150	:	141	:	0	:	34184	:	0	:	0
SUGAR MAPLE	:	0	:	31	:	0	:	0	:	0	:	0
RED MAPLE	:	14661	:	62	:	0	:	0	:	0	:	0
ALL SOFTWOODS	:	24251	:	48	:	0	:	1465	:	0	:	0
ALL HARDWOODS	:	55810	:	234	:	0	:	34184	:	0	:	0
ALL SPECIES	:	80062	:	282	:	0	:	35648	:	0	:	0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 11

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

Forest Tally

by

Loon's Echo

Date Run: 12/07/21

B.A.F. = 20.00

NUMBER OF POINTS SAMPLED = 9

DIAMETER CLASS SIZE = 1

STAND # 3

ACREAGE OF TRACT = 6.60

CONFIDENCE LEVEL = .90

LEVEL = ALL Trees

Licensed To

Forest Land Improvement

Donald Johnson

P. O. Box 188

Tamworth NH 03886

(603) 323-8298

Serial Number

900401-0002

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 12

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

```
*****
*
*                                ALL SPECIES                                LEVEL = ALL Trees
*
*****
```

		: 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" :	INT. 1/4"
CLASS :	ACRE :	ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE :	VOL / ACRE
8	:	11.1 :	31.8 :	.0 :	3.7 :	.0 :	.0 :	.0 :	.0
10	:	15.6 :	28.5 :	204.6 :	3.2 :	.0 :	280.2 :	.0 :	.0
12	:	4.4 :	5.7 :	298.9 :	.8 :	.0 :	.0 :	.0 :	.0
14	:	13.3 :	12.5 :	1669.0 :	1.0 :	.0 :	52.2 :	.0 :	.0
16	:	26.7 :	19.1 :	3483.3 :	1.9 :	.0 :	155.3 :	.0 :	.0
18	:	20.0 :	11.3 :	2399.3 :	1.2 :	32.8 :	272.8 :	.0 :	.0
20	:	6.7 :	3.1 :	753.5 :	.5 :	191.7 :	.0 :	.0 :	.0
22	:	8.9 :	3.4 :	1194.6 :	.9 :	49.4 :	.0 :	.0 :	.0
24	:	2.2 :	.7 :	367.6 :	.1 :	40.2 :	.0 :	.0 :	.0
TOTAL	:	108.9 :	116.0 :	10370.8 :	13.3 :	314.1 :	760.5 :	.0 :	.0
S.E.	:	:	:	± 17% :	± 53% :	± 151% :	± 46% :	± 0% :	± 0%
C.V.	:	:	:	29% :	89% :	251% :	76% :	0% :	0%

MEAN STAND DIAMETER = 13.1

MERCHANTABLE M.S.D. = 13.1

PERCENT CRUISE = 6.4%

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 13

Job Title--GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

```
*****
*
*                               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	VOLUME
WHITE PINE	61.22	52.11	79.25	54.95	100.00	.00	.00	.00
RED PINE	2.04	3.51	.99	3.77	.00	.00	.00	.00
RED OAK	32.65	36.45	19.76	31.29	.00	100.00	.00	.00
RED MAPLE	4.08	7.93	.00	10.00	.00	.00	.00	.00
ALL SOFTWOODS	63.27	55.63	80.24	58.72	100.00	.00	.00	.00
ALL HARDWOODS	36.73	44.37	19.76	41.28	.00	100.00	.00	.00

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 14

Job Title—GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

```
*****
*
*                                     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	: 8218.8	: 7.3	: 314.1	: .0	: .0	: .0
RED PINE	: 102.3	: .5	: .0	: .0	: .0	: .0
RED OAK	: 2049.7	: 4.2	: .0	: 760.5	: .0	: .0
RED MAPLE	: .0	: 1.3	: .0	: .0	: .0	: .0
ALL SOFTWOODS	: 8321.1	: 7.8	: 314.1	: .0	: .0	: .0
ALL HARDWOODS	: 2049.7	: 5.5	: .0	: 760.5	: .0	: .0
ALL SPECIES	: 10370.8	: 13.3	: 314.1	: 760.5	: .0	: .0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 15

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

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

```

*****
*
*                                     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	: 54244	:	48	:	2073	:	0	:	0	:	0
RED PINE	: 675	:	3	:	0	:	0	:	0	:	0
RED OAK	: 13528	:	27	:	0	:	5020	:	0	:	0
RED MAPLE	: 0	:	9	:	0	:	0	:	0	:	0
ALL SOFTWOODS	: 54919	:	52	:	2073	:	0	:	0	:	0
ALL HARDWOODS	: 13528	:	36	:	0	:	5020	:	0	:	0
ALL SPECIES	: 68447	:	88	:	2073	:	5020	:	0	:	0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 16

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 455: HW/HM 3/2

Forest Tally  
by  
Loon's Echo

Date Run: 12/07/21

B.A.F. = 20.00

NUMBER OF POINTS SAMPLED = 12

DIAMETER CLASS SIZE = 1

STAND # 4

ACREAGE OF TRACT = 20.00

CONFIDENCE LEVEL = .90

LEVEL = ALL Trees

Licensed To

Forest Land Improvement

Donald Johnson

P. O. Box 188

Tamworth NH 03886

(603) 323-8298

Serial Number

900401-0002

DAN STEPANAUSKAS  
 Job Title—GOULD LOT: 63.2F0, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL  
 Stand Title--STAND 4&5: HW/HM 3/2

PAGE 17

\*\*\*\*\*  
 \*  
 \* ALL SPECIES LEVEL = ALL Trees \*  
 \*  
 \*\*\*\*\*

	: 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 :	10.0 :	28.6 :	.0 :	2.9 :	.0 :	.0 :	.0 :	.0
10 :	21.7 :	39.7 :	.0 :	6.0 :	.0 :	.0 :	.0 :	.0
12 :	10.0 :	12.7 :	354.1 :	2.0 :	.0 :	139.4 :	.0 :	.0
14 :	20.0 :	18.7 :	820.0 :	3.8 :	.0 :	.0 :	.0 :	.0
16 :	20.0 :	14.3 :	1230.5 :	3.0 :	.0 :	108.8 :	.0 :	.0
18 :	13.3 :	7.5 :	1086.4 :	1.7 :	.0 :	.0 :	.0 :	.0
22 :	1.7 :	.6 :	236.6 :	.1 :	.0 :	.0 :	.0 :	.0
TOTAL :	96.7 :	122.3 :	3727.6 :	19.5 :	.0 :	248.1 :	.0 :	.0
S.E. :	:	:	± 37% :	± 21% :	± 0% :	± 106% :	± 0% :	± 0%
C.V. :	:	:	72% :	40% :	0% :	208% :	0% :	0%

MEAN STAND DIAMETER = 12.0

MERCHANTABLE M.S.D. = 12.0

PERCENT CRUISE = 2.4%

PAGE 17

Stand Title--STAND 4&5: HW/HM 3/2

ALL SPECIES                      LEVEL = ALL Trees

---

	: 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 :	10.0 :	28.6 :	.0 :	2.9 :	.0 :	.0 :	.0 :	.0
10 :	21.7 :	39.7 :	.0 :	6.0 :	.0 :	.0 :	.0 :	.0
12 :	10.0 :	12.7 :	354.1 :	2.0 :	.0 :	139.4 :	.0 :	.0
14 :	20.0 :	18.7 :	820.0 :	3.8 :	.0 :	.0 :	.0 :	.0
16 :	20.0 :	14.3 :	1230.5 :	3.0 :	.0 :	108.8 :	.0 :	.0
18 :	13.3 :	7.5 :	1086.4 :	1.7 :	.0 :	.0 :	.0 :	.0
22 :	1.7 :	.6 :	236.6 :	.1 :	.0 :	.0 :	.0 :	.0
TOTAL :	96.7 :	122.3 :	3727.6 :	19.5 :	.0 :	248.1 :	.0 :	.0
S.E. :	:	:	± 37% :	± 21% :	± 0% :	± 106% :	± 0% :	± 0%
C.V. :	:	:	72% :	40% :	0% :	208% :	0% :	0%

MERCHANTABLE M.S.D.  $\approx 12,0$

PERCENT CRUISE = 2.4%

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 18

Job Title--GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 455: HW/HM 3/2

```
*****
*
*                               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	VOLUME
WHITE PINE	5.17	3.48	11.47	4.08	.00	.00	.00	.00
HEMLOCK	34.48	30.52	55.73	26.13	.00	.00	.00	.00
BEECH	20.69	18.38	11.41	23.28	.00	.00	.00	.00
RED OAK	12.07	12.46	11.27	10.03	.00	100.00	.00	.00
RED MAPLE	25.86	34.18	10.11	34.09	.00	.00	.00	.00
WHITE BIRCH	1.72	.98	.00	2.38	.00	.00	.00	.00
ALL SOFTWOODS	39.66	34.00	67.20	30.21	.00	.00	.00	.00
ALL HARDWOODS	60.34	66.00	32.80	69.79	.00	100.00	.00	.00

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 19

Job Title-----GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 455: HW/HM 3/2

```

*****
*
*                                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	427.6	.8	.0	.0	.0	.0
HEMLOCK	2077.5	5.1	.0	.0	.0	.0
BEECH	425.4	4.5	.0	.0	.0	.0
RED OAK	420.2	2.0	.0	248.1	.0	.0
RED MAPLE	377.0	6.6	.0	.0	.0	.0
WHITE BIRCH	.0	.5	.0	.0	.0	.0
ALL SOFTWOODS	2505.1	5.9	.0	.0	.0	.0
ALL HARDWOODS	1222.6	13.6	.0	248.1	.0	.0
ALL SPECIES	3727.6	19.5	.0	248.1	.0	.0

# Gould Lot Forest Management Plan 2021 Tuftonboro Conservation Commission

DAN STEPANAUSKAS

PAGE 20

Job Title---GOULD LOT: 63.2FO, 2.9WET, 8.9FLD/GRVLPT = 75 ACS TOTAL

Stand Title--STAND 4&5: HW/HM 3/2

```

*****
*
*                                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	8551	16	0	0	0	0
HEMLOCK	41550	102	0	0	0	0
BEECH	8507	91	0	0	0	0
RED OAK	8403	39	0	4963	0	0
RED MAPLE	7540	133	0	0	0	0
WHITE BIRCH	0	9	0	0	0	0
ALL SOFTWOODS	50101	118	0	0	0	0
ALL HARDWOODS	24451	272	0	4963	0	0
ALL SPECIES	74552	390	0	4963	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, but any shape containing 144 cubic inches of wood equals one board foot.

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 un-evenaged 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.