FOREST MANAGEMENT PLAN

LYME ADIRONDACK TIMBERLANDS

Adirondack Park Region, New York

2025-2035

Table of Contents

INTRODUCTION AND GENERAL DESCRIPTION

This Forest Management Plan (FMP) is part of The Lyme Timber Company's overall forest management system and will be used to guide management on the 234,000-acre Lyme Adirondack Timberlands property through 2035. It will be reviewed every five years and updated, if necessary, at those intervals. A full update will be completed every 10 years.

Lyme Adirondack Timberlands is owned by an investment fund managed by The Lyme Timber Company. At the time of the writing of this plan the property consisted of 234,315 acres. During the normal process of managing the land, adjustments are made to the GIS maps to more accurately reflect on-the-ground boundary line locations. The GIS will continue to be updated and modified as more detailed information becomes available and as parcels are sold or purchased. This plan is written based on the current state of the GIS as of 1/01/2025, and all acreage figures and tables in this plan represent the current condition.

Lyme Adirondack Forest Company LLC (LAFCo), with offices in Queensbury, Tupper Lake, and Chestertown New York, is a forest management company owned by the same investment fund as the timberlands and is charged with the primary responsibility for overseeing the day-to-day management of the Lyme Adirondack Timberlands. Additional consultants are employed on an as-needed basis for special projects. LAFCo reports to the Managing Directors at The Lyme Timber Company (Lyme Timber) with day-to-day oversight from two of the Managing Directors, Sarah Kitz and Sean Ross. Lyme Timber serves as the landowner and investment manager for the property.

The property has been certified to the Sustainable Forestry Initiative (SFI®) standard since 2006 and to the Forest Stewardships Council (FSC®) – US Forest Management Standard since 2008.

Lyme Adirondack Timberlands I LLC

Lyme Adirondack Timberlands II

Lyme Adirondack Forest Company LLC

Signature Page

The Lyme Timber Company LP, Lyme Adirondack Timberlands I LLC, Lyme Adirondack Timberlands II LLC, and Lyme Adirondack Forest Company LLC (Lyme) are committed to conducting forest management activities in a manner that supports the Forest Stewardship Council Principles and Criteria (www.fscus.org).

Plan Prepared by: Sean Ross and Brendan Moore, The Lyme Timber Company LP as landowner representative

Sean Ross 1/01/2025

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Sean Ross Date
Director of Forestry Operations,
The Lyme Timber Company LP

Lyme is grateful to the many people who contributed their time, intellect, and expertise to the writing and development of this Forest Management Plan.

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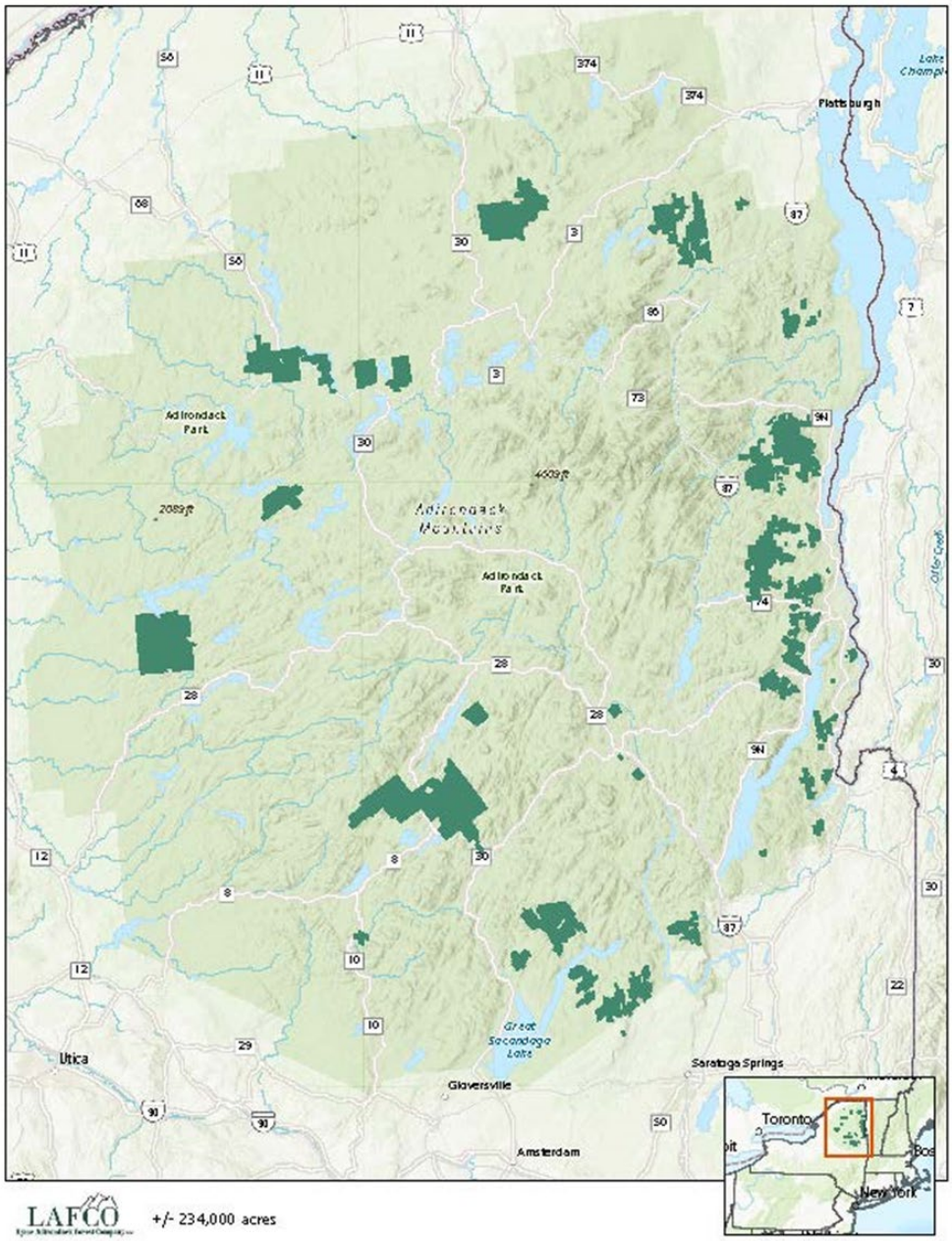
PROPERTY OVERVIEW

A. Description of Property

The Lyme Adirondack Forest Company (LAFCO) is situated in the Adirondack Mountains region of northeastern New York State. The property is located entirely within the Adirondack Park. The forest is composed of twenty-five tracts ranging in size from 750 acres to 26,000 acres.



B. Past Ownership History

The property was purchased by Lyme in 2006 and consists of the former International Paper Company (IP) lands along with a couple hundred acres that have been added through purchases of small adjoining parcels from other private landowners. IP had owned portions of the property for close to 100 years with the most recent acquisitions made in the 1960's from a variety of former industrial owners who owned the property for iron ore extraction.

C. Adjacent Neighborhood Profile

The neighboring economic area comprises what is known as the Adirondacks of New York. The important regional economic influences are tourism, agriculture, state agencies, including the New York prison system, and healthcare. Towns and villages within the Adirondack Park region are small with an average population of 1,000 – 4,000 people. The closest significant population centers in the region are Glens Falls, NY where the greater metropolitan regional population is 125,000, and Plattsburg, NY with a population of 30,000 people. However, New York City, with the greater metro area having a population of close to 25 million people, is a half days drive. To the north Montreal and Ottawa are within three hours and have a combined population of 6 million people

The property falls within a vast forested landscape of large private ownerships and almost 3 million acres of public lands that are constitutionally protected as wildness areas where forest management of all types is prohibited.

D. Physical

Landscape Ecology and Climate

Landscape ecology is a concept with variable definitions. The boundaries used in forest management are no longer merely at a stand, compartment or tract level, but include ecosystems as well. The SAF dictionary of forest terms defines an ecosystem as a spatially explicit, relatively homogenous unit of the earth that includes interacting organisms and components of the abiotic environment within its boundaries.

The LAFCo property lies primarily in the Northeastern Highlands ecoregion (58) which covers the northern and mountainous parts of New England as well as the Adirondacks and higher Catskills in New York. It is a relatively sparsely populated region characterized by hills and mountains, a mostly forested land cover, nutrient-poor soils, and numerous high-gradient streams and glacial lakes. Forest vegetation is somewhat transitional between the boreal regions to the north in Canada and the broadleaf deciduous forests to the south. Typical forest types include northern hardwoods (maple-beech-birch), northern hardwoods/spruce, and northeastern spruce-fir forests. Recreation, tourism, and forestry are primary land uses. Farm-to-forest conversion began in the 19th century and continues today. In spite of this trend, alluvial valleys, glacial lake basins, and areas of limestone-derived soils are still farmed for dairy products, forage crops, apples, and potatoes. Many of the lakes and streams in this region have

been acidified by sulfur depositions originating in industrialized areas upwind from the ecoregion to the west.

The Adirondack region features a humid continental climate, marked by cold, snowy winters and mild to warm summers. Winters (Dec–Mar) are cold and snowy, with average highs around 25–35°F and lows often dipping below 0°F. January is typically the coldest month. Summers (Jun–Sep) are mild to warm, with average highs ranging from 66°F in June to 76°F in July. Nights remain cool, often in the 50s. Precipitation is fairly evenly distributed throughout the year, with slightly wetter conditions in summer. Rainfall supports lush forests and diverse ecosystems. Average sunshine peaks in July with 9–10 hours/day ; lowest in January with 3–4 hours/day. The growing Season is approximately 108 days, typically from May 27 to September 12.

Geology

The Adirondack Mountains date back to the Precambrian Era when the area was covered by a vast shallow sea (Clark & Stearn 1968). Sediments eroded from the Precambrian rock formed a sedimentary rock formation of great thickness. These sedimentary rocks, limestone and sandstone, are known as the Grenville Series.

Later, a great mass of magma intruded into the overlying rock. The Grenville rock was lifted and domed with some parts engulfed and others metamorphosed to marbles and gneisses by heat and pressure. The intruding magma cooled to a hard, erosion resistant, rock called anorthosite. With the land now elevated, it was subjected to millions of years of erosion, cutting the elevation down by several thousand feet.

The Adirondack area was reduced to a plain of moderate relief and again covered by the sea. Sedimentary limestone and sandstone again covered the area during the Cambrian period. Since the Ordovician period, or for 400 million years, the Adirondacks have remained in a state of emergence and acted upon by the forces of uplift (faulting) and erosion. Today the drainage patterns are represented by the softer, erodible rock, the remaining Grenvilles, while the mountains are represented by the hard anorthosite.

Glacial erosion wore down mountain peaks creating the rounded topography. The most recent Pleistocene glaciations, which retreated from the area about 10,000 years ago, eroded the bulk of the mineral soil from the mountain slopes. As the glaciers melted, the eroded material was deposited as a poorly sorted bouldery till or outwash in low-lying areas. Banks of eroded material deposited at the base of the glaciers created dams on drainage systems, which account for many of the Adirondack lakes.

Soils

The tills, classified as Podzolic, are predominantly gravel and sandy loams with moderate to low fertility. These soils, characterized by organic or leaf matter, produce an acidic leaching action that removes nutrients from the upper levels of the soil when mixed with sufficient amounts of water.

Two types of podzolization occur in the Adirondacks. True Podzols have an A2 horizon (the top layer of soil directly beneath the humus) which bleaches to a white or light gray color. This occurs when the humus develops from softwood litter that is high in acid. This is referred to as a "mor" humus type.

The gray-brown Podzols develop an A2 horizon that is gray to yellowish brown in color. This develops from a "mull" humus type, or the thick humus from the deciduous leaf litter. The soil tends to be less acidic than the "mor" humus type as fewer nutrients are leached out of the soil (Hughes, Russell 1985).

Due to the low clay content of the soils, they are relatively resistant to compaction. During normal rainfall conditions, the soils retain enough absorbency to prevent surface water movement that would create erosion problems.

Organic soils (Mucks, Ground Water Podzols) can be found in the lowland areas. Generally, they are quite wet and are resistant to the freezing temperatures of winter. Even small patches of this soil type can create very real barriers to timber harvesting operations.

Survey and Boundary Lines

There are approximately 1,121 miles of property lines of which 232 miles are classified as non-maintained (roads, water frontage, or utility lines). The condition of the property lines varies; however, most are very clearly marked with blazes and paint. A record of the boundary condition will be maintained in the GIS.

E. Indigenous People History and Communities

It is Lyme's policy to recognize and respect Indigenous Peoples' rights. This includes a review and acknowledgement of the following:

1. UN Declaration on the rights of Indigenous Peoples.
2. Federal, and state laws and regulations.
3. Treaties and agreements among governments and Indigenous Peoples.

Overall Process to Document Legal and Customary Rights.

As part of any property acquisition Lyme conducts a detailed title review to confirm the legal rights it will acquire as well as the legal rights held by others.

Lyme reviews federal and state laws that could impact the management of the forest to ensure that forest management goals are compatible with applicable laws and regulations. This review includes laws that may be in place covering indigenous people's rights and evolving legislation that might expand these rights.

Lyme conducts a review of Tribal Ceded Lands Map developed and maintained by the US Government to confirm the presence or absence of treaty lands within the footprint of Lyme's ownership.

https://www.arcgis.com/home/item.html?id=e4e788be8cfc4d1f8ff280a81ffaa69c

Finally Lyme documents the history of Indigenous People in the region where Lyme's land is located.

Summary of Legal Rights and Treaty Lands Research

With relation to Lyme's management of working forest, Lyme respects the historic role that Indigenous people played in shaping this continent's landscape for thousands of years. Given their status as sovereign nations, the rights of the Indigenous community are largely a function of specific treaty rights related to the potential reserved rights that communities may have retained in ceding lands to the United States Government.

Lyme is not aware of any specific rights under federal or New York law that would provide legal, customary, or traditional rights use over its working forestland nor did any specific right or claim become evident during its title work conducted as part of the purchase process. To the extent that specific rights are discovered (or the laws continue to evolve) to expand such tribal rights, Lyme is committed to working with Indigenous peoples to respect their historic concerns in connection with its

sustainable management of its forests (which, in New York, Lyme has already placed a working forest conservation easement on the property that prohibits forestland conversion and development.

A review of the Tribal Ceded Lands Maps determined that there are no treaty lands within the Adirondack Park region of New York.

History of Indigenous People in the Adirondacks

From: https://www.nps.gov/articles/adirondacks-native-americans.htm

Human presence in the Adirondack region of New York spans thousands of years to the Paleo-Indian period. The rugged mountains served as hunting grounds for several nearby Native American peoples, most notably the Mahicans and the Mohawks of the Iroquois Confederacy. These tribes did not live directly in the Adirondack Mountains but on lakes and in river valleys near the area. Today, the federally-recognized Native American tribe in the Adirondack region of New York is the St. Regis Band of Mohawk Indians of New York of the St. Regis Mohawk Reservation in Franklin County.

Paleo-Indian (15,000 to 7000 B.C.) sites have been found around the region dating to 9000 B.C. These peoples lived near the shore of the Champlain Sea, which covered the Adirondack Mountains. The first Archaic (8000 to 1000 B.C.) people in New York came from the St. Lawrence River Valley to the area around Lake Champlain and into the Hudson River Valley. Other related groups settled at Oneida Lake via the Oswego River system. These Archaic people, referred to as the Laurentian culture, were semi-nomadic hunters and gathers. They used spear-throwers and bone harpoons for hunting. Tools crafted from Lake Superior copper, obtained via trade, were also utilized. The Laurentian culture was gradually replaced by other traditions. Between 2200 and 1500 B.C., the Sylvan Lake and River cultures appeared in eastern New York. Succeeding them was the Frost Island culture in central New York, which transitioned from the Archaic period to the Early Woodland period. During the Frost Island culture, pottery first appeared.

Early Woodlands cultures in the Adirondack region included the Middlesex culture, which was related to the Adena culture in the Ohio Valley. This culture was followed by the Point Peninsula culture in the Middle Woodland period. Later, the Owasco culture of the Late Woodland period had protected settlements located along rivers and streams like the Point Peninsula peoples. They were hunters and gatherers who farmed with sticks and hoes.

Iroquoian peoples arrived between 1,200 and 4,000 years ago, and both the Mohawk and the Oneida consider the Adirondacks to be part of their territory. The Algonquian-speaking Mahicans also claimed the mountains as their lands, particularly the area east of Lake George to southern Lake Champlain. According to Tuscarora and Haunosaunee (Iroquois) historian Rick Hill, the Adirondack region was a "Dish with One Spoon" neutral territory shared by the Iroquois with their allies and friendly peoples during peaceful times. This later included Europeans, notably the French. A 1624 peace treaty

between the Mohawk and Mahicans, brokered by Samuel de Champlain, allowed for shared access to each other's hunting territories in the Adirondacks.

The Mahicans occupied the Hudson River Valley nearly up to Lake Champlain, west to Catskill Creek, and east into Massachusetts and the Housatonic River Valley. Their council fire was on Schodack Island at Albany. They were an Algonquian people and were culturally related to other New York tribes such as the Wappinger, Lenape, and Montauk. Algonquian peoples had no clans but extended biological families inhabiting a wigwam (a dome-shaped dwelling) or longhouse.

War with the Mohawk led to the removal of the Mahican council fire from Schodack to near modern Stockbridge, Massachusetts at Westenhuck. In 1626 the Iroquois defeated the Mahicans in the Mohawk Valley. However, instead of ceding territory to the Mohawk, the Mahicans sold the land to their Dutch allies. The tribe split in the eighteenth century, with two groups heading west. In the 1730s one group of Mahicans moved to Wyoming, Pennsylvania, then with the Lenape and Munsee continued to Ohio, and the three tribes merged. Another group of Mahicans settled in Indiana on the Kankakee River in the 1720s. Not all the tribe left Massachusetts, with a portion of the Mahicans remaining who became known as the Stockbridge Indians.

The Iroquois, which is actually an Algonquian derivative of the word for "real adders," referred to themselves as Ogwanonhsioni, or "longhouse builders." The Iroquois Confederacy was Haudenosaunee, or "people of the longhouse." Similarly, the names by which we know each tribe was not what they called themselves:

- *The Mohawk were Kanyengehaga, or "people of the place of the flint."*
- *The Oneida were Oneyotdehaga, or "people of the standing stone."*
- *The Onondaga were Onontaga, or "on the mountain."*
- *The Cayuga were Gayokwehonu, or "where they land the boats."*
- *The Seneca were Onondewagaono, or "great hills people."*

Traditionally, the founders of the Iroquois Confederacy are recognized as Deganawidah, a Huron prophet, and Hiawatha, a Mohawk or Onondaga Iroquois. Fifty-one sachems (chiefs) comprised the Great Council, of which nine Mohawks were members. Unanimous agreement by the Council was required to pass any resolutions.

The Iroquois were a village people with a strong communal sense. They inhabited semi-permanent settlements which were moved when either convenient supplies of firewood, wild vegetable foods, and local game gave out, or the unfertilized agricultural soil adjacent to the village became exhausted, a period ranging from eight to twenty years. The small settlements grew over time to towns of over 1,000 people in the period when Europeans arrived. Mohawk villages were in the Mohawk River Valley between Schenectady and Utica. They had seven villages in 1644 and five in 1677, with about 500

total warriors. Each Iroquois tribe was organized into clans, which numbered from three to ten and were named for animals. Clan society was matrilineal. The three primary clans of the Mohawk were the Bear, Wolf, and Turtle clans.

The staple crops grown by the Iroquois were corn, beans, and squashes, which were considered sacred gifts from the Creator. Other cultivars included tobacco and sunflowers. Village women gathered nuts, berries, roots, fruits, and mushrooms. Maple syrup was made to serve as a sweetener. In the late fall, villages were essentially abandoned as the Iroquois set up hunting camps to gather meat, returning in mid-winter. The forests around Lake George were a preferred hunting ground for the Iroquois. Again in the early spring, villagers left to harvest maple sap for sugar and gather eggs and birds. Fishing was conducted in spring and summer.

The Mohawk were an aggressive people who sought to expand their territory, which at times was disastrous for the tribe. In the late sixteenth and early seventeenth centuries, they attacked and nearly decimated the Abenaki to the east, the Huron to the north and west, and Algonquian tribes, who had nearly wiped out the Mohawk in the past, to the north. Between about 1604 and 1614, the Mohawk and Conestoga waged war, with the Mohawk nearly made extinct.

The arrival of Europeans negatively impacted the Mohawk people. Before contact in the seventeenth century, the population of the tribe was between 8,000 and 11,000, but disease reduced the Mohawk to only 2,000 to 4,500. Trade with the Europeans intensified the aggressive nature of the Mohawk. The Dutch and French desired beaver skins, and the former party offered firearms in exchange. This increased firepower allowed the Iroquois to expand their territory to over 1,500 miles in the 1600s, spanning as far west as the upper Great Lakes. In the eighteenth century, Albany became a center of trade between the American colonists and the French in Canada and their Algonquian allies. This rankled the Mohawk, who disliked the British selling ammunition to their enemies.

Despite an antagonistic relationship between Indians and colonists, some British and American officials gained the trust of the Iroquois and other natives. Sir William Johnson served as the Superintendent of Indian Affairs for the northern American colonies. He was a trusted negotiator with the Mohawk, who made him an honorary chief. Johnson had relationships with native women including Molly Brant (Konwatsi'tsiaienni), sister to Mohawk chief Joseph Brant (Thayendanegea). London Gentleman's Magazine described Johnson in 1755:

"Being surrounded by Indians, he speaks several of their languages well, and has always some of them with him. He takes care of their wives and old Indians, when they go out on parties, and even wears their dress. In short, by his honest dealings with them in trade, and his courage, which has often been successfully tried with them, and his courteous behavior, he has so endeared himself to them, that they chose him one of their chief Sachems, or Princes, and esteem him as their father."

As European encroachment threatened Indian sovereignty, the natives retreated to places of geographic refuge such as the Adirondacks. Both Iroquoian and Algonquian tribes gravitated to the region. Among these peoples were the Mohawk and Abenaki, semi-nomadic Algonquian speakers whose

territory fell within Vermont, New Hampshire, northern Massachusetts, and southern Quebec. In the eighteenth century, many Abenaki fled to Odnak, a community in Quebec. The Mohawk also retreated north toward Akwesane (St. Regis) in Canada. Both tribes continued to send hunting parties into the Adirondacks.

Many colonists were distrustful of Native Americans, and their sentiments approached full hatred. Indian raids destroyed property and captured people, specifically women and children. To the Americans, the natives were simply and obstacle in their pursuit of life, liberty, and happiness, one to be removed at all costs. During the American Revolution the Mohawk sided with the British. Following American victory in the war, many of the Mohawk moved to Canada. In 1777 the Oneida, who sided with the American colonists, burned villages and expelled the Mohawk from eastern New York. While the Seneca offered land to the Mohawk in Genesee Valley, chief Joseph Brant refused the offer, instead negotiating a treaty in 1784 with the British for lands in Canada. All Mohawk land claims in the United States were ceded in 1797.

Footnote: *Melissa Otis, "At Home in the Adirondacks: A Regional History of Indigenous and Euroamerican Interactions, 1776-1920" (Ph.D. dissertation, University of Toronto, 2013), 52; William A. Ritchie, Indian History of New York State, Part 1: Pre-Iroquoian Cultures (Albany: New York State Museum, ca. 1969), 7-21; Frederick Webb Hodge, ed., Handbook of American Indians North of Mexico, Part 1: A-M, Smithsonian Institute Bureau of American Ethnology, Bulletin 30 (Washington: Government Printing Office, 1907), 786.(Ritchie, Part 1, 24-35. Otis, 53-55. William A. Ritchie, Indian History of New York State, Part 3: The Algonkian Tribes (Albany: New York State Museum, ca. 1969), 17; Hodge, Part 1, 786. Hodge, Part 1, 922. William A. Ritchie, Indian History of New York State, Part 2: The Iroquoian Tribes (Albany: New York State Museum, ca. 1969), 1-2. Ibid., 13. Ibid., 3, 10; Hodge, Part 1, 922-924. Ritchie, Part 2, 6. Hodge, Part 1, 922. Otis, 59; Hodge, Part 1, 922; B. C. Butler, Lake George and Lake Champlain: From Their First Discovery to 1759 (Albany, NY: Weed, Parsons and Co., 1868), 17. Orasmus Turner, History of the Pioneer Settlement of Phelps and Gorham's Purchase and of Morris' Reserve (Rochester, NY: William Alling, 1852), 70. Otis, 89 Hodge, Part 1, 924; Esther V. Hill, "The Iroquois Indians and Their Lands Since 1783," Quarterly Journal of the New York State Historical Association 11, no. 4 (October 1930), 336-337.*

F. Roads and Gravel

Like many former industrial company ownerships, the Lyme Timberlands property benefits from large capital investments in extensive road networks. A detailed road layer is included in the GIS. New road construction and maintenance is conducted in compliance with the LAFCo's Forest Management operational controls. A portion of the gravel/rock that is required for the purposes of logging road construction and maintenance is sourced off the property as necessary and native material that is found on site is used as much as possible.

G. Timber Harvesting and Logging Equipment

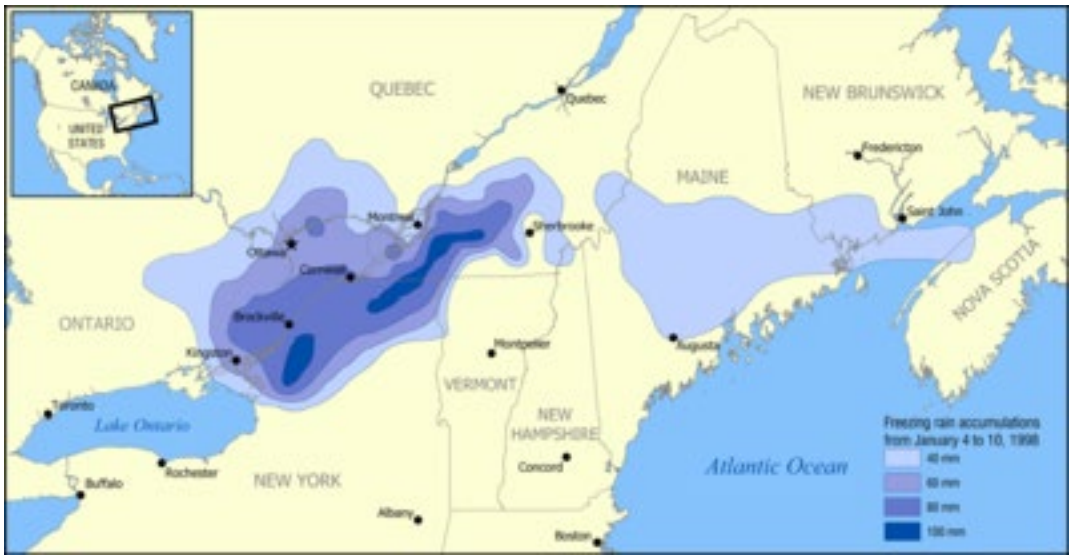
Timber harvesting on the Lyme Timberlands property will use a combination of conventional methods including manual felling, rubber-tire skidding, as well as mechanized techniques including cut-to-length systems, hybrid mechanical felling/hand bucking systems, and whole tree harvesting. Harvesting systems will be matched to the terrain and site conditions of each harvest area as much as possible to ensure ownership and silvicultural objectives are met.

Roads and landings for each logging job will be constructed, improved, maintained using bulldozers, excavators, and motor graders.

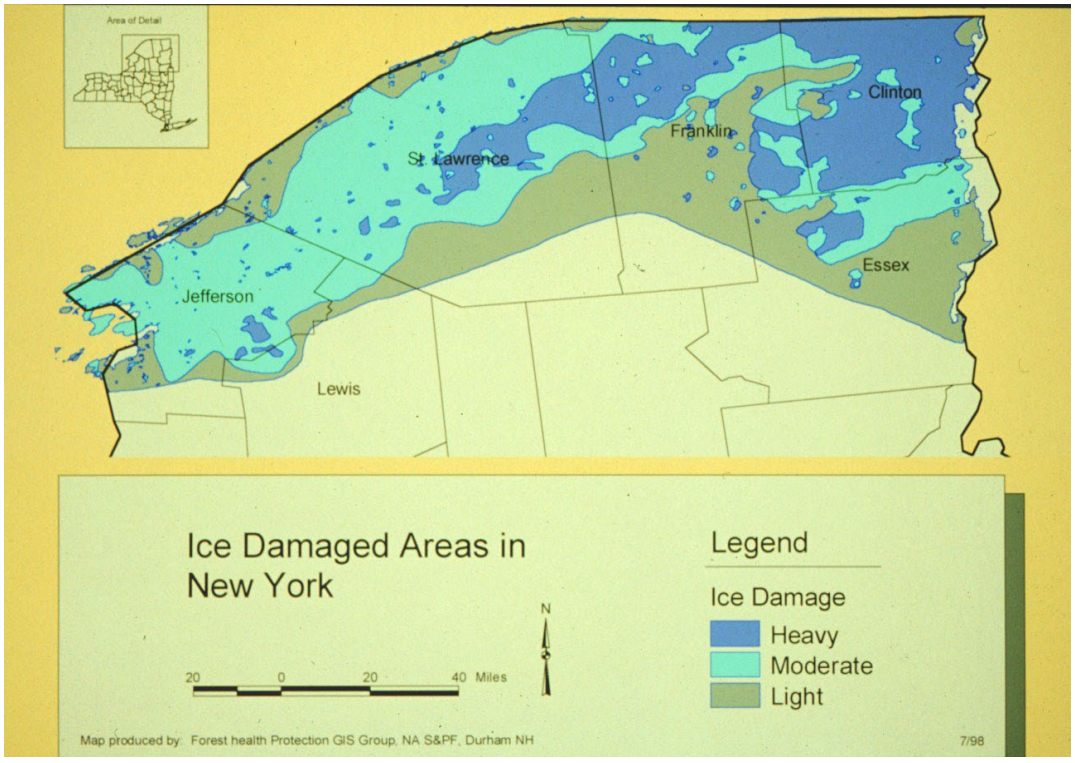
H. Fire, Ice, and Weather-Related Damage and Risks

Fire is an important disturbance regime in the ecoregion on spatial scales of up to 1,000 km^2, but is a minor disturbance regime in the Adirondacks. On sites likely to be representative of the Park region, Parshall and Foster (2002) found little evidence of pre-settlement fire in northern hardwood sites in northern Vermont, but fire occurrence increased in frequency following settlement.

Lafton (2004) believes ice storms are the primary agents of disturbance in eastern forests. A forest gap model developed with data from the Adirondacks predicts hemlock dominance in mesophytic old-growth forests not disturbed by ice storms, and sugar maple-dominated forests with higher species richness following ice storms. Millward and Kraft (2004) agree that damage from ice storms is common within northeastern North American forests while drawing attention to the magnitude and extent of the 1998 ice storm which far exceeded damage caused by typical ice storms in the recent past. In New York, the area impacted by ice damage in 1998 exceeded 4.5 million acres – 66% of trees experienced some level of damage, 15% severe (Miller-Week and Eagar 1999).



Extent of ice damage in 1998 (from Miller-Week and Eagar 1999).



Extent of ice damage New York in 1998 (from Miller-Week and Eagar 1999).

Wind throw caused by catastrophic thunderstorms or tornadoes is another important disturbance factor in the Northeast. Peterson (2000) provides a good synopsis of the various types and impacts of wind throw.

> *"Wind disturbance shows substantial regional variation, decreasing from the mid-west to the east and from the south-east to New England. In terms of the relative importance among these types of storms, more forest damage results from tornadoes in the south-east and mid-west, while downbursts are the most important type of wind disturbance in the Great Lakes area. Downbursts vary widely in size, but large ones can damage thousands of hectares, while tornadoes are much smaller, seldom affecting more than several hundred hectares. Tornadoes cause the most severe wind disturbances. Site characteristics such as physiography, soil moisture, and soil depth; stand characteristics like density and canopy roughness; and tree characteristics such as size, species, rooting depth, and wood strength, are the factors most recognized as influencing damage patterns. The consequences of wind damage to forests, such as change in environmental conditions, density, size structure, species composition, and successional status, occur on both immediate (hours-to-days) and long-term (months-to-decades) time scales. Most wind disturbances result in the post-disturbance vegetation being comprised of surviving canopy trees, and varying amounts of sprouts, released understory stems, and new seedlings. Stand size structure is usually reduced, and successional status of a forest is often advanced. Diversity can be either increased or decreased, depending on the measure of abundance used to calculate diversity."*

While direct measures of wind throw disturbance are not available for New York, in Wisconsin, Canham and Loucks (1984) calculated that there were 51.8 separate patches (>1.0 ha) of complete canopy wind throw covering a total of 4,828 ha annually within the region of the pre-settlement hemlock-northern hardwood forests, in the northeastern part of the state. The estimated return time for catastrophic wind throw at a site in this region is 1,210 yr. Multiple researchers (eg. Papaik et al. 2005) believe resistance to wind throw is severely reduced in Adirondack beech stands infected with beech bark disease.

Hurricanes are a major factor controlling ecosystem structure, function, and dynamics in many coastal forests, but their impact is rarely felt in the interior regions surrounding the Lyme property. Boose et al. (2001) documented strong regional gradients in hurricane frequency and intensity from southeast to northwest: mean return intervals for F0 damage on the Fujita scale (loss of leaves and branches) ranged from 5 to 85 yr, mean return intervals for F1 damage (scattered blowdowns, small gaps) ranged from 10 to >200 yr, and mean return intervals for F2 damage (extensive blowdowns, large gaps) ranged from 85 to >380 yr.

As a whole, the LAFCO region is characterized by relatively few disturbance events resulting in widespread tracts of early successional vegetation. Lorimer and White (2003) suggest that the proportion of the pre-settlement landscape in seedling–sapling forest habitat (1–15 years old) ranged from 1 to 3% in northern hardwood of the interior uplands. Ziegler (2002) studied disturbance

frequency in old growth eastern hemlock in the Adirondacks. Major growth releases indicated disturbance events that resulted in either gap origin (16% of events) or release from suppression (82% of events). The average decadal rate of disturbance for all plots and decades of the 130-year period from 1850 to 1979 is 4.8–5.4% of current exposed crown area. The average canopy-tree residence time is 184–211 years.

I. Wildfire management

LAFCo maintains a working relationship with State/Federal fire agencies to prevent or control any fires. Currently, there are no plans to use fire, or prescribed burning, to manage the forest.

J. Insect, Disease, and Other Damage

Most of the insect and disease damage on the Lyme Timberlands property is minimal. There is the occasional defoliation and mortality of trees due to emerald ash borer, Spongy moth (formerly known as gypsy moth), hemlock woolly adelgid, and forest tent caterpillar. Beech Bark Disease has been present in the area for many years and has a significant impact on beech vigor. On portions of the property, overabundant white-tailed deer populations have impacted the forest ability to regenerate, making it more difficult to procure desirable regeneration of northern hardwoods.

K. Insect, Disease, and Other Risks

Spongy Gypsy moth, *Lymantria dispar,* is a potentially destructive forest pest threatening the Lyme Timberlands property. Since its inadvertent 1869 introduction into Massachusetts, it has spread naturally across the region and been causing significant damage in the region since 1970. The spongy moth population is highly cyclical and presently under control due to natural enemies including the nucleopolyhedrosis virus (NPV) and the entomophthoralean fungus, *Entomophaga maimaiga.* These natural enemies, in addition to suppression activities conducted by State agencies, are currently controlling the populations of spongy moth, and will help control the damage induced by spongy moth in the future. When populations exceed tolerable limits, more aggressive control options such as aerial spraying may be necessary.

Emerald ash borer is a very serious insect pest to the eastern hardwood forests and has been present on the property for over ten years. The larvae of this insect feed on the cambium layer between the bark and the wood, producing galleries that eventually girdle the tree. Mortality may occur within 3 to 4 years after infestation. Control is difficult since the insect is hidden inside the tree trunk. Monitoring for the presence of this insect will be performed by observing for the D-shaped exit holes on tree trunks and wilting of foliage. At the time of writing this plan many of the ash trees on the property showing early signs of infection and harvesting efforts have been focused toward reducing the declining ash component where possible.

Hemlock woolly adelgid is another forest health risk in scattered hemlock/mixedwood stands on the property. This insect is relatively easy to identify by its conspicuous white wooly masses that are

located along the fine branches at the base of the leaves. The insect sucks plant juices from the twigs and can cause branch death within a few years. Control is possible through the application of chemicals, but this approach is difficult and expensive to implement. The entire tree must be treated to be effective. Due to the location of hemlock trees along streams and inaccessible areas, chemical control can be impractical. Trials with soil injections of chemicals are being researched. From a timber economic perspective, the hemlock does not warrant expensive treatments. However, from an ecological perspective, hemlock plays an important role in stream aquatic and related wildlife habitat. General monitoring will observe for the white wooly masses on the tree branches. Insect biocontrol options are being investigated by several States, including the use of Laricobius nigrinius, Pseudoscymnus tsugae, and Scymnus sinuanodulus.

Vegetative risks that threaten the health and productivity of the property are the presence of the following invasive plants: honeysuckle, autumn olive, Japanese stilt grass, hayscented fern, and Japanese knotweed. Periodic monitoring, through the course of normal timber management, will be conducted by LAFCo staff in order to detect any new outbreaks of invasive plants.

LAFCo will utilize integrated pest management for the control of these and other pests. Local officials and experts will be contacted if serious outbreaks of any of these pests are discovered. Advice and recommendations will be sought to control problem pests. The first alternative for controlling pests will be through cultural means, such as harvesting, clearing, burning or manual removal of the pest or infected plant. Any biological or chemical control methods will be performed as necessary and with the recommendation and assistance of local officials and experts.

If pesticide application is necessary, a written prescription will be prepared prior to any chemical use. The plan will include chemical application objectives, rate and method of application, risks and benefits of the chemical used and alternatives considered.

L. Non-Timber Resources

Oil, Gas, and Mineral

The mineral rights were reserved under deed by former owners of the property. The property has no activity related to mineral extraction at this time.

Forest Management

The following section is focused on forest management and will describe management activities that will be undertaken by Lyme from 2025 to 2035.

A. Forest Management Goals, Objectives and Strategies

The mission of Lyme is to own and manage the property for the purpose of generating a satisfactory return on investment. While doing so it is the policy of Lyme to practice high-quality stewardship paying particular attention to conserving soil, water and wildlife resources and that production of forest products will occur while conserving the ecological health and biological diversity of the forest.

Lyme's primary forest management goal is to gradually improve overall forest conditions in a manner that will maintain or enhance both the financial and the ecological attributes of the forest over time.

Lyme has found the principles of sustainability developed by the Northern Forest Lands Council[1] to be useful guidelines and has adapted them as our forest management objectives. These nine objectives, and associated strategies needed to meet those objectives, are listed below.

1. Maintain soil productivity: Ensure timber harvesting is conducted in accordance with New York State Best Management Practices and guidelines found in LAFCo Operational Controls "Soil Disturbance Guidelines".

2. Conserve water quality, wetlands, and riparian zones: Ensure timber harvesting and road maintenance is conducted in accordance with New York BMP's and Stream Side Management Zones section of the FMP.

3. Maintain or create a healthy balance of forest age classes: Implement the goal of increasing and maintaining young forest at approximately 10% of ownership. Monitor the effectiveness of timber management activities and allow for adjustment to current practices, silvicultural prescriptions or treatments.

4. Provide a continuous flow of timber and other forest products: Ensure that the planned harvest does not exceed the allowable cut (AC) within the timeframe of the plan. Conduct new inventory and growth calculation at the end of the first ten-year period.

[1] Northern Forest Lands Council (1994) "Finding Common Ground: Conserving the Northern Forest".

5. Improve the overall quality of the timber resource as a foundation for more value-added opportunities: Replace poor quality and low vigor stands, and mature stands, with newly regenerated stands leading to a higher quality, more vigorous forest.

6. Maintain scenic quality by limiting adverse aesthetic impacts of forest harvesting, particularly in high-elevation areas and vistas: Apply guidelines found in "Operational Controls – Aesthetic Guidelines".

7. Conserve and enhance habitats that support a full range of native flora and fauna: Apply guidelines found in FMP "Maintenance and Protection of Biodiversity" section.

8. Protect unique or fragile areas: Apply guidelines found in FMP "Maintenance and Protection of Biodiversity" and "Special Sites Management".

9. Provide opportunities for traditional recreation: Continue with Recreational Leasing Program and continue to work with communities regarding access of recreational opportunities.

B. Species Composition

The species composition on the Lyme property by basal area is 70% hardwood and 30% softwood. For hardwoods, sugar maple is the dominant species with around 20% of total basal area followed by Red Maple at 13.7% and Beech at 12.7%. The most predominant softwood species are red spruce and balsam fir (spruce/fir) combined at 10.4% and hemlock at 11.3%. The following table shows the basal area since Lyme took ownership of the property at each inventory period.

Percentage of total basal area by species

Species	BA 2006	BA 2011	BA 2015	BA 2021
Sugar maple	23.7%	23.0%	21.0%	19.5%
Red Maple	12.7%	12.7%	11.8%	13.7%
Beech	12.7%	13.5%	12.4%	12.7%
Yellow Birch	8.0%	8.0%	8.4%	8.9%
Red Oak	4.5%	4.3%	4.8%	4.8%
Other Hardwoods	10.3%	10.0%	8.3%	9.5%
Red spruce / Balsam Fir	8.8%	10.7%	11.0%	10.4%
Hemlock	8.8%	9.8%	11.1%	11.3%
White Pine	5.0%	6.1%	6.1%	6.4%
Other Softwoods	5.5%	2.5%	5.1%	2.2%
Total	100.0%	100%	100%	100%

Age class composition

As part of the 2021 inventory Lyme did not collect data on tree age. However, we can use height and forest structure as an approximate for age class. The table below depicts the general forest structure on the ownership. Young forests are those areas that were treated with a clear cut or overstory removal in the past 10 years and represent the youngest forest community on the ownership. Semi Open Forest are stands that have been thinned or treated with a single tree or group selection harvest and have a basal area between 40-80 sq.ft. and a diverse and growing understory. These stands represent our middle-aged forest community. Closed Canopy Forest are typically mature forests that have not been treated and represent the oldest forest on the ownership.

Forest Community	Forested Acres	Percent of Forested acres by Forest Community
Young Forest	11,701	5%
Semi Open Forest	129,965	60%
Closed Canopy Forest	74,955	35%
Grand Total	**216,621**	**100%**

C. Description of Forest Types

In 2021 LAFCo collected new LiDAR data and aerial imagery on the entire property. Forest Type maps were updated based on the new imagery. The Type maps depict the important features of the forest including streams, lakes, wetlands, roads and four major forest types. In addition, operability constraints based on slope and wetness were incorporated into every stand. The acreage by operability class is shown in the following table.

Operability Class	Acres	Perc. Total
Fully Operable	103,737	44%
Mostly Operable	63,743	27%
Limited Operability	35,496	15%
Inoperable	15,132	6%
Non Forest	16,054	7%
Ownership Total	234,162	100%

Using the updated stand layer a new property-wide timber inventory was conducted by Lyme during the fall of 2021. All volume information referred to in this plan is from the 2021 timber cruise. A copy of the detailed timber cruise plan and information is on file at Lyme's office. The typing system used on LAFCo Forest Management Maps is shown below in table.

Forest Typing System

Species Codes						Mapping Codes	
FOREST Softwood		FOREST Hardwood		NON-FOREST STANDS		Volume Classes	
SPECIES	Desciption	SPECIES	Desciption	SPECIES	Desciption	Code	Desciption
BF	BALSAM FIR	AB	BLACK (brown) ASH	BL	BLUEBERRY LEASE	1	0-20 Tons
BS	BLACK SPRUCE	AE	AMERICAN ELM	BN	BARREN	2	20-40 Tons
CE	N. WHITE CEDAR	AG	GREEN ASH	BP	BEAVER POND	3	40-60 Tons
HE	HEMLOCK	AW	WHITE ASH	FL	FLOWAGE	4	60+ Tons
JP	JACK PINE	BB	BLACK BIRCH	PG	GREAT POND	Height Classes	
LA	LARCH	BC	BLACK CHERRY	LG	LEDGE	Code	Description
LC	LOWLAND CONIFER	BE	BEECH	AL	ALDERS	1	< 10'
NS	NORWAY SPRUCE	BU	BUTTERNUT	PL	PIPELINE	2	10' - 30'
PP	PITCH PINE	BA	AM. BASSWOOD	VG	VILLAGE LOT	3	30' - 50'
RP	RED PINE	CO	CHESTNUT OAK	FD	FIELD	4	> 50'
RS	RED SPRUCE	HH	HOP HORNBEAM	MI	MINES	Crown Closure	
S	SOFTWOOD	HI	HICKORY	WE	WELL	Code	Description
SP	SCOTCH PINE	HM	SUGAR MAPLE	PT	GRAVEL PIT	A	81 - 100%
SF	SPRUCE/FIR	IH	INTOLERANT HDWD	AL	ALDERS	B	61 - 80%
TA	TAMARACK	PO	POPLAR	BG	BOG	C	31 - 60%
WP	WHITE PINE	RM	RED MAPLE	CL	CLEARING	D	0 - 30%
WS	WHITE SPRUCE	RO	N. RED OAK	GP	GREAT POND		
OS	OTHER SOFTWOOD	TH	TOLERANT HDWD	OT	OUT	Sample - Map Label	
		WB	WHITE BIRCH	RL	RECREATIONAL LEASE	IHWBPO23B	
		WO	WHITE OAK	NL	NON-RECREATIONAL LEASE	IH = OVERSP1(Primary Type)	
		YB	YELLOW BIRCH	R1	CLASS I ROAD	WB = OVERSP2 (Secondary Type)	
		OH	OTHER HARDWOOD	R2	CLASS II ROAD	PO = OVERSP3 (Teritary Type)	

			R3	CLASS III ROAD	2 = Volume Class
			TL	TRANSMISSION LINE	3 = Height Class
			WA	WATER	B = Crown Closure
			YD	YARD	
			TD	TIMBER DEED	

D. Forest Inventory

As mentioned, Lyme invested in LIDAR-based data for the LAFCo property in the winter and spring of 2021. This data informed a new GIS stand layer for the property, where operability and height information was combined with existing data (such as species and cover classes) to create operability and volume classes by broad cover class (softwood, mixedwood, hardwood). Lyme built a stratification spreadsheet to use as a guide to create plot distributions on the property, which was to be subdivided into Champlain, North, and South regions using the GIS.

The timber cruise was designed as a stratified, systematic sample of the forest. The sample frame was decided to include stands having either volume classes 2-3-4 (>20 tons/acre) and operability classes of 1-2-3 (operability variable considered both slope and wetness). Volume class 1, estimated to have 0-20 tons/acre, was excluded from the sample.

The cruise points coordinates were provided to field personnel as waypoints for upload to their GPS units. Paper and digital maps showing the cruise point locations, important boundary information, and roads/trails from the most recent LAFCo GIS were also provided. The cruise was conducted from late July to mid-September 2021.

The plot design was 1,540, BAF 15 prism points, tallying live, commercial species trees from the 5" DBH class (4.6"-5.5") to a 4" DIB merchantable top. The 3 product classes were saw, pulp and cull. The results of the inventory are included below.

INVENTORY RESULTS

The new 2021 timber inventory provided statistical results that fell within the expected range

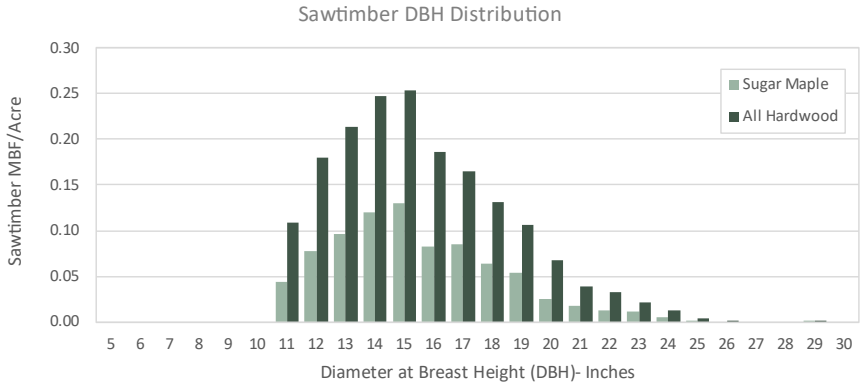
INVENTORY VOLUME

	MBF, International 1/4"
Sawtimber	
Hardwood	
Sugar Maple	146,668
Red Maple	39,468
Yellow Birch	33,261
Red Oak	51,260
White Ash	21,030
Black Cherry	8,925
Aspen	3,478
Other HW	8,847
Total HW Sawtimber	312,936
Softwood	
Eastern Hemlock	68,316
White Pine	87,179
Red Spruce	70,461
Balsam Fir	32,373
Other SW	23,621
Total SW Sawtimber	281,950
Total Sawtimber	594,886
Pulpwood	Tons
Hardwood Pulp	5,003,690
Softwood Pulp	1,115,035
Total Pulpwood	6,118,725
Total Tons	**8,788,005**
Total Tons per Acre	**49.8**

INVENTORY STATS

	Confidence Interval as % of Mean		
Metric	95%	90%	85%
Merch Tons	3.0%	2.5%	2.2%
Total Saw BF	5.0%	4.2%	3.7%
Pulp Tons	3.1%	2.6%	2.3%

INVENTORY INSIGHTS



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15

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E. Estimating Forest Growth and developing Annual Allowable Cut (AAC)

Estimating annual allowable cut (AAC) should be a thoughtful process that considers not only the current status of the forest but also what the forest is capable of growing under long-term management. There are a variety of ways to estimate AAC, and successful methods generally combine empirical information (field data and experience) with technically valid projections (computer models) of stand inventory and its future development (components of change or net growth rates). We used a combination of field data and computer models to develop an AAC estimate for the Lyme Timberlands. This estimate will serve as a guide for our harvest planning and tactical decision making, along with informing the ongoing investment in the property.

A detailed report on the forest inventory and growth and yield project is on file at the Lyme office but due to confidential financial information contained in this report we have elected to summarize the results in this plan. The following summarizes the major components of Lyme's work developing a sustainable harvest level for the property.

- Timber Inventory: The 2021 forest inventory was conducted for the purpose of evaluating the current standing inventory and assessing past model predictions. In addition this new inventory formed the basis of the new growth and yield model.

- Spatial Analysis: New LIDAR and aerial imagery were collected to update the stand boundaries and strata layers prior to conducting the forest inventory in 2021. Operational constraints of slope and wetness have been added to the stand layer and every stand has been grouped into an operational class. Further a management regime was assigned to each stand using three regimes.

    i. Timber Management Area – this portion of the ownership represents the least constrained area with good to excellent operability.

    ii. Ecological Management Area – this portion of the property had moderate to difficult operability constraints or small stand size, and includes SMZ and other sensitive sites. For modelling purposes these stands could only receive single and group selection.

    iii. Reserve Area – this portion of the property includes inoperable forest areas and regulatory no harvest zones. For modeling purposes no harvesting occurs.

Management Regime	**Acres**	**Perc. Total**
Timber Management Area	142,754	65%
Ecological Management Area	60,007	28%
Reserve Area	15,346	7%
Forested Land Total	218,108	100%

- Growth and Yield Modelling: Lyme developed yield curves and growth assumptions that were fed into Woodstock software to develop a long-term growth and yield model. Numerous constraints were developed and used in the model to account for the current condition of the forest along with regulatory constraints, our view on generally accepted practice in the region (social license), and Lyme's desired future condition of the forest.

  Our first step was to run the 2021 inventory through the USFS Forest Vegetation Simulator (FVS) to calculate individual tree growth for the purpose of developing yield tables by species and product. From there a series of inputs were developed for Woodstock. Those inputs were.

    i. Spatial Data – new stand typing and operational constraints
    ii. Timber Inventory Data – 2021 inventory
    iii. Yield Tables – FVS outputs
    iv. Pricing Assumptions – by species, product, and grade

v. Operating Costs
vi. Discount rate

The next step in the process was to define model constraints to ensure the model captured the realistic operating constraints that exist on the property. These were as follows:

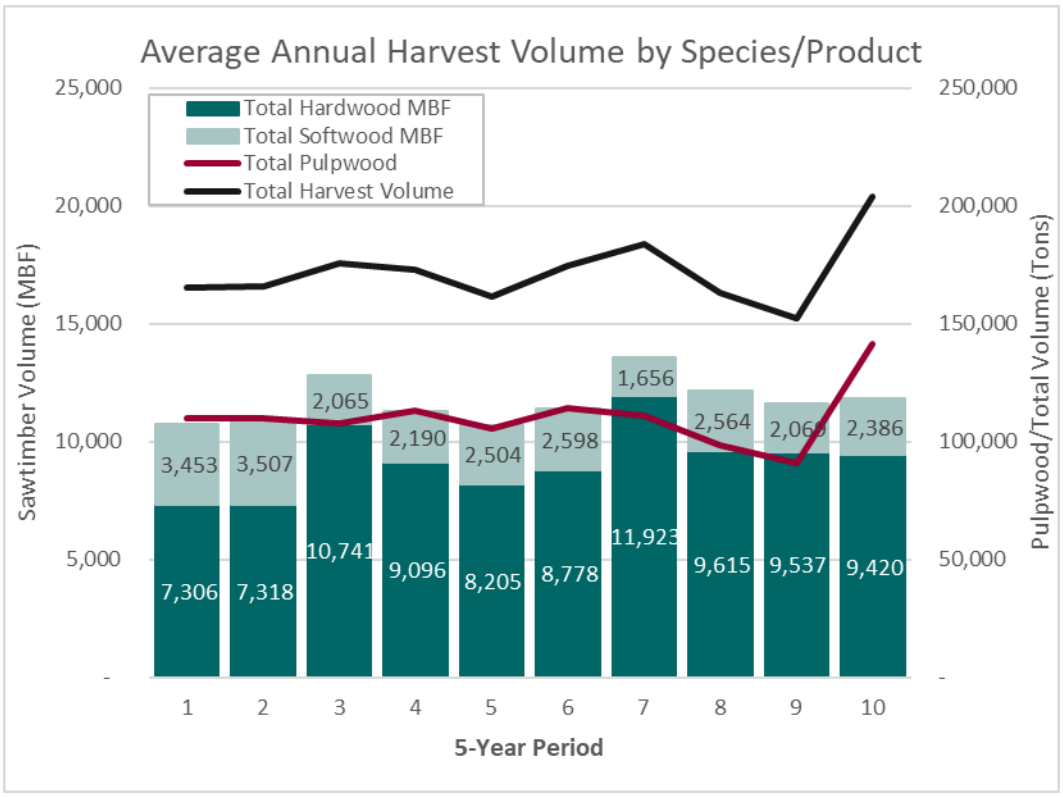
i. Min/Max harvest levels – considering the restrictions of the conservation easement and state regulations.
ii. Harvest Flow – with a desire to have a relatively even harvest volume over time.
iii. Min/Max harvest acres by treatment type
iv. Min/Max harvest acres by operability constraint
v. Residual Inventory goals

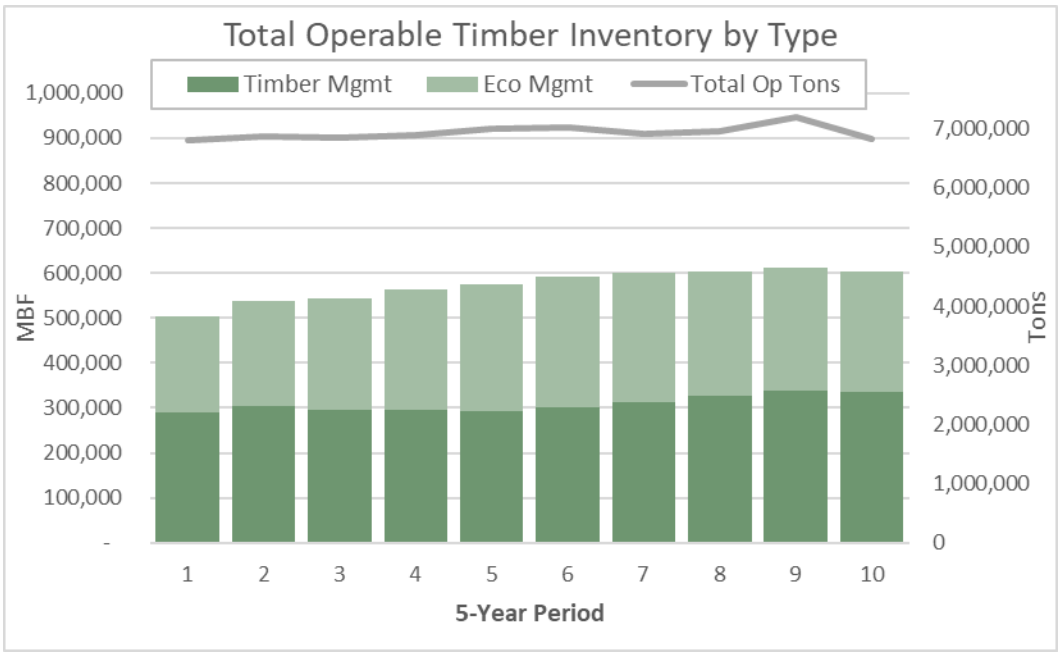
Multiple model runs were conducted, and the final result is a projected 10-year harvest plan of:

i. Total harvest of approximately 170,000 tons/year (0.77 tons/forested acre/year or 0.33 cords/forested acre/year))
    1. 7,500 mbf/year of hardwood sawtimber
    2. 3,400 mbf/year of softwood sawtimber
    3. 130,000 tons of pulpwood
ii. This harvest level is approximately 1.9% of the total standing inventory.

Results

Based on the above information we have set an AAC of 170,000 tons (sawtimber and pulpwood combined) for the first ten-year period. This harvest level is below annual biological growth for the period and at this harvest level the standing inventory increases on the ownership based on projected growth assumption. Below are a series of charts showing the 50 year outputs (by 5 year periods) that provide more detail on the outputs of the Woodstock modelling process and go forward harvest plan.





The next step in the process is to develop a desired future condition or vision of what Lyme Timberlands would like the forest to look like in the long term, 50 years or more in the future. This desired future condition will guide the implementation of the modeled harvest.

The Desired Future Condition of Lyme Timberlands is a forest that includes a wide variety of healthy, vigorous stands, dominated by high quality hardwood species in a variety of age classes to provide a sustainable volume of timber available for harvest.

Management activities on the forest will be planned to meet the primary and supporting goals while moving the forest on a trajectory toward the desired future condition. Additional ecological goals guiding the plan include:

- Appropriately manage and protect rare, threatened, and endangered plant and wildlife species and their habitat.
- Protect aquatic habitats and associated riparian zones.
- Provide and protect habitat for species of greatest conservation need as identified in the State Wildlife Action Plan.
- Promote native tree species that are well adapted to the site and resilient to future climate conditions.

More specific management objectives designed to achieve these goals are described in the sections that follow.

F. Silvicultural Prescriptions for Forest Management Areas

The decision to harvest an individual stand is not made in this plan; rather this decision is made after a field-based, pre-harvest evaluation of stands chosen by the model as potential candidates for treatment. An initial field reconnaissance of a potential treatment area is conducted to ground-truth information on which silvicultural decisions are made. During a pre-harvest evaluation procedure, professional judgment will be used to evaluate the overstory and its relative proportion of acceptable and unacceptable growing stock.

Acceptable growing stock (AGS) is defined as a high-vigor tree that contains at least one ten -foot sawlog (Grade 2 or better) or has reasonable potential (tree has vigorous crown, stem free of serious defects), to produce at least one ten -foot sawlog in the future. Consideration will be given to stocking levels, the condition of trees in the overstory, and whether trees generally have the potential to meet ownership objectives over time. An assessment of the understory will also be made, particularly in stands being considered as candidates for overstory removal or shelterwood treatments. The understory will be evaluated for the quality (size and species) and quantity (number) of established seedlings and saplings. In addition, the species composition represented by established regeneration will be evaluated. All the above factors will be evaluated using established regeneration guidelines such as those found in the Silvicultural guide for northern hardwoods by W.B. Leak et al and various other publications.

G. Silvicultural Overview and Prescriptions

To formulate a strategy for forest management, we must consider many diverse factors and characteristics of this working forest and choose the most appropriate silvicultural tools. Economic, ecologic, and social factors, as well as the concepts of time and space, all play into the decision-making process when selecting a silvicultural regime. As Smith notes: "A good silvicultural system is not chosen but formulated as a solution to a particular set of circumstances. Moreover, it is subject to evolutionary development as situations change and knowledge of them improves." (Smith pg. 359. The Practice of Silviculture, VII edition, 1962). Smith also notes, "It is not uncommon in the East to find whole forest regions in which practically all the forests consist of middle-aged stands left from heavy cutting of decades past. The forest manager may find that he has neither timber of mature size nor stands of seedling or saplings… almost any sort of adjustment of age class distribution is likely to involve holding some stand beyond rotation age and, at other times, cutting some before they become mature". (Smith, pg. 375. The Practice of Silviculture, VII Edition. 1962).

Forest management will focus on silvicultural to continue to remove both financially mature and decadent stands. Immature and overstocked stands should be thinned to improve spacing and shift growth to high quality, high value trees. Stands that are well stocked and financially mature should be regenerated through shelterwood, seed tree, overstory removal, or clearcut as dictated by stand level conditions. Decadent stands or those with a high stocking of unacceptable growing stock and poor quality overstory should be regenerated using shelterwood, seed tree, overstory removal, or clearcut treatments as dictated by stand level conditions.

NORTHERN HARDWOOD SILVICULTURAL TREATMENTS

Tending: A tending harvest is designed to concentrate growth on high quality stems using the following treatment types.

- **Intermediate Thinning:** reduce stocking to B-line (~50-70 BA), favoring sugar and red maple, yellow birch, red oak and black cherry in residual stand. Will be applied in stands that are not ready for regeneration (high-potential stands that are not yet mature), and adequate acceptable growing stock (40 Ft.2/acre or above) is present. Variations include low, crown, selection, geometric, and free thinning

- **Delayed Shelterwood:** may be applied in generally high-quality stands that are two-aged, with a C to B-density overstory, with a well-established understory of seedlings, saplings and/or poles. Overstory will be thinned to residual basal area of 30-50 Ft.2/acre, removing low quality and high-risk stems, leaving adequate combined stocking of the overstory and understory to focus growth on the high-value overstory stems and residual poles and saplings

Regeneration Establishment: Harvesting designed to establish regeneration using the following treatment types.

- **Shelterwood Establishment:** treatments will be used in stands that are ready for regeneration treatment and where adequate advance regeneration is not present. The target residual basal area will be 40 to 60 sq ft per acre, depending on the species being favored to be regenerated. The shelterwood treatment may include small patch removals as well as uniform thinning. Variations of the shelterwood system will be used. These include two-and-three-stage shelterwood, and strip shelterwood (also known as progressive strip cutting). Strip shelterwood will remove between one-third and one-half of the overstory, in strips 30-100 feet wide, with cutting intervals between three and ten years. Shelterwood treatments in the summer and fall are preferred when birch is the target species to regenerate. Herbicide control of undesirable regeneration may be used in conjunction with timber harvesting to control unwanted or invasives species when present in the stand.

- **Patch Removal:** This treatment will be used in mature stands with the objective of creating openings in the canopy to establish regeneration. Canopy openings will be up to eight acres in size and occupy 20-30% of the harvest area. During the first entry, the choice may be made to thin between the patches. Re-entry will be at ten-year intervals (to comply with APA clearcut regulations), with three to four entries to complete the regeneration harvest. Herbicide control of undesirable regeneration may be used in conjunction with the timber harvesting.

Final Harvest: Harvesting intended to release advance regeneration or establish a new cohort using the following treatment types.

- **Overstory Removal:** This treatment will be used in two aged stands where adequate advance regeneration is present, generally with an overstory with less than 40 sq. ft per acre of AGS, or when the stand is mature. Overstory removal is particularly useful in two aged stands with low stocking levels or poor overstory tree quality and where advanced regeneration is present. Sometimes overstory removals occur in patches or strip patterns.

- **Clearcut:** Clearcutting will be used in mature stands with inadequate or undesirable advance regeneration or in stands that are considered high risk in terms of decline or maturity. Clearcutting is particularly useful in stands with low stocking or poor overstory tree quality and where advance regeneration is unacceptable. Clearcutting will be used to favor shade intolerant and intermediate species such as yellow birch, oak, cherry, and maple.

Un-Even Aged System – intended to perpetuate the growth and yield of shade tolerant, sawtimber producing species (sugar maple in the northeast). An un-even aged stand must contain at least 3 well-defined age classes.

- **Single Tree selection** – A treatment to remove individual mature trees in a uniform fashion throughout the stand. Regeneration will be established in the voids created by removing individual trees.

- **Group Selection**- A treatment to remove groups of mature trees (3-10 trees) throughout the stand. Regeneration will be established in the voids created by removing the groups of trees.

- **Single Tree and Group Selection**: A hybrid of the two selection methods, typically a harvest establishing a number of groups, with a single tree selection harvested being conducted between the groups.

- **Conditioning Cut** - A treatment designed to shift a stand towards an uneven aged structure by removing UGS within all age classes. This treatment is applied to a multi-aged stand and will not produce a balanced all aged stand structure in the first implementation.

Mixedwood Silvicultural Treatments

Tending – A tending is designed to concentrate growth on high quality stems by:

- Intermediate thinning favoring high value hardwoods, and spruce/fir or white pine, will be applied in stands that are not mature, and where adequate acceptable growing stock is present (40 Ft.2/acre or above of AGS).

- Delayed Shelterwood may be applied in generally high-quality stands that are two-aged, with a C to B-density overstory, with a well-established understory of seedlings, saplings and/or poles. Overstory will be thinned to residual basal area of 30-50 Ft.2/acre, removing low quality and high-risk stems, leaving adequate combined stocking of the overstory and understory to focus growth on the high-value overstory stems, residual poles and saplings.

Regeneration Establishment – are intended to establish regeneration by:

- Patch removals (up to eight acres in size) and shelterwood establishment treatments will 1) concentrate on removing unacceptable growing stock, 2) allocate 20% to 50% of the stand area to patch cuts in each entry, at 5-15 -year intervals and 3) reach into adjacent areas to remove up to 25% of the BA through thinning in areas falling outside of the patches removals. These treatments will be applied to begin regeneration where adequate advanced regeneration is not present.

- Progressive strip cutting will remove between one-third and one-half of the overstory, in strips 30-100 feet wide, with cutting intervals between three and ten years.

- Small patch removals (1-3 acres in size) will be employed particularly in mixedwood stands in combination with thinning. The result will have the effect of a shelterwood treatment. It will allow sufficient sunlight in to start the regeneration process and when adequate regeneration is in place, an overstory removal leaving reserve trees can take place.

Final Harvest - intended to release regeneration and new cohort:

1. Overstory removals will be used in stands where tree quality is low, and/or the stand is mature, and adequate advance regeneration is present. Overstory removal is particularly useful in stands with low stocking levels or poor overstory tree quality and where advance regeneration or pole timber is present. Overstory removals may occur in small patches and in strips. Residual basal and acreage limits, as required by the APA, will be followed.

Spruce Fir Silvicultural Treatments

Tending – A tending is designed to concentrate growth on high quality stems by:

- Early commercial thinning will reduce BA to approximately 80-90, by thinning from below, and favoring spruce in the residual stand. This is appropriate in good stands with high stocking levels. The ability to perform these thinning operations is very dependent on having adequate markets for small diameter trees.

Regeneration Establishment – are intended to establish regeneration by:

- Shelterwood establishment treatments: A shelterwood effect will be created by removing 50% of the total volume as follows: 1) 30% of the stand area will be treated with small group selections 0.25-1.0 acres in size, 2) thinning to remove 20% to 30% of the BA in the remaining 70% of the stand area outside of the small group selections. This treatment is suited to stands that do not have adequate spruce-fir advance regeneration and where spruce fir regeneration that does exist tends to be patchy.

- Small patch removal: will be employed particularly in softwood stands in combination with thinning. The result will have the effect of a shelterwood treatment. It will allow sufficient sunlight in to start the regeneration process and when adequate regeneration is in place, an overstory removal leaving reserve trees can take place.

- Progressive strip cutting: remove between one-third and one-half of the overstory, in strips 30-100 feet wide, with cutting intervals between six and fifteen years.

Final Harvest - intended to release regeneration and new cohort by:

- Overstory removals are appropriate where adequate advance regeneration already exists under an economically mature overstory.

White Pine Silviculture

When managing white pine stands it must first be determined, using site index, if regenerating white pine is economically feasible for a particular site. The following rule of thumb should be used.

- Site index 70 or better – stands should be allowed to revert to hardwoods and mature pine should be harvested when working in these stands.

- Site index 60-69 – these sites are best suited for growing a mixture of pine and hardwoods. These sites should be treated using a shelterwood method described in the mixedwood section above and will most likely result in groups of pine regeneration being established.

- Site index 59 or less – These poorer sites are best suited for growing white pine rather than hardwoods due to the hardwoods inability to out compete pine on these sites. The following treatments will be used on these sites.

1. Intermediate Thinning (from below) to reduce stocking to B-line, favoring trees that have straight boles and at least 30% live crown ratios. Crowns should be free to grow on at least three sides following the treatment. Will be applied in stands that are not ready for regeneration (high-potential stands that are not yet mature), and adequate acceptable growing stock (60 Ft.2/acre or above) is present.

2. Regeneration Harvest / Two-Staged Shelterwood – The first cut should be made during or immediately after an abundant seed year whenever possible and should consist of removing 40-60% of the overstory. The second cut, to remove the shelterwood trees, should be completed 5-10 years later or once the understory trees have entered the period of rapid growth.

Maintenance and Protection of Biodiversity

A. Historical Ecosystem Conditions and Influences

Forest composition and trends in the Adirondacks have been described within the New York Comprehensive Wildlife Conservation Plan (NYCWCP) (NYDEC 2007). Commercial timber harvest initially focused on dominant white pine, hemlock, and old-growth spruce. Forest composition gradually shifted to a greater proportion of the forest comprised of northern hardwoods as softwoods continued to be preferentially harvested.

McIntosh (1962) used surveyor's records antedating the General Land Survey to assess the 18th-century forest composition of the Catskill Mountain region of New York. The principal tree components in the lower and mid-altitudes (below 3,000 feet) were beech 49%, hemlock 20%, sugar maple 13%, and various birches 7%. Cogbill et al (2002) documented that pre-settlement northern hardwood forests were dominated by beech – they suggest the roles of pine, hemlock and chestnut have been overstated in other assessments. Wang (2007) analyzed 8792 bearing trees to document the dominance of American beech and sugar maple in western New York pre-settlement forests.

Manion and Griffon (2001) observed that relative mortality per dbh class from a random sample of the Adirondack Park forest was slightly, but significantly, less than the baseline relative mortality per dbh class required for maintaining size-distribution stability of the forest. The authors believe this result suggests a changing structure involving increased forest density, or future mortality increase to maintain the current structure. Differences in structure-mortality relationships among the more abundant species indicate changing composition of the forest, reflecting unhealthy conditions in some species (American beech, yellow birch, balsam fir, and red spruce) that are compensated by enhanced development of others (red maple, sugar maple, and eastern hemlock).

Forest health and vitality in the region has been challenged by numerous agents. Red Spruce forests on the western-facing slopes of the Park's High Peaks region have declined from the effects of acid rain. Acidity leaches aluminum out of rock and soil and depletes soil of vital minerals like calcium and magnesium. Aluminum destroys the root hairs of trees, preventing them from absorbing the water and nutrients needed for survival. The Adirondacks are particularly vulnerable due to its anorthosite bedrock - a tough granite with few Alkaline minerals.

Beech bark disease (BBD) is a complex that includes both insect and fungal components. BBD has moved east to west through the Adirondack region in three waves (USDA Forest Service 2007). During the initial phase, the exotic scale insect dispersed through the forest, causing scale-induced alterations to patches of bark. The killing front phase began 1 to 19 years after the arrival of the scale. Throughout this phase, the scale-modified bark is killed and colonized by species of Neonectria, rendering the dead tissues vulnerable to additional decaying fungi. The resulting beech snap and mortality levels may reach 50 percent in 5 years. The final aftermath forest phase resulted in an ecological accommodation to the disease, resulting in either a change in species composition or the death of re-emergent beech. In the nearby Catskills, Griffin et al. (2003) found BBD present on almost all

beech >10 cm diameter at breast height but was most severe in larger diameter classes. Mortality due to BBD also increased with diameter class. In the Adirondacks, Forrester et al. (2003) conclude that the presence of BBD is hastening the onset of uneven-aged conditions in second-growth stands but may not lead to large changes in forest nutrient cycling processes based on the lack of change in total lignin content of the leaf litter layer. Currently it appears the canopy will continue to be dominated by shade tolerant species, although the importance of *F. grandifolia* and *A. saccharum* are changing especially with respect to the relative importance of different size classes. BBD has been shown by McGee (2000) to increase coarse woody debris and snag density by +/- 20% in maturing and old growth northern hardwood stands.

Scleroderris Canker (*Gremeniella abietina*) is a disease that ranges from the central and northern United States to eastern Canada. There are two strains: Lake States and European. The European strain affects New York State. The disease attacks pole size Red and Scots Pine, and to a lesser degree, white pine. The disease has also been found on White, Black and Norway Spruce. Short growing seasons and heavy snowfall seem to favor its development. Thus, trees residing in low lying areas, susceptible to frost pockets, little wind circulation and high humidity are most likely to contract the disease. Ascospores are spread during the moist weather of April to October. The major discharge of spore occurs in June and July. The spores infect through buds or needles killing the branch tips within a year. The fungus then spreads to the main stem where a canker forms. Within months of the infected branch dying, pycnidia begin to appear at the base of the dead needles. During damp weather, asexual spores or conidia seep from the pycnidia. Splashing rain transports the spore to other branches and trees. On branches that have been dead for 2 or more years apothecial fruiting bodies begin to appear in early summer. The European strain is extremely dangerous in that it will produce a second crop of pycnidia in late fall and continue to release conidia during the winter months when temperatures rise above the freezing mark. Symptoms of the European strain can be seen 2 to 3 months after infection. Symptoms of the infection are the dieback of buds and needle discoloration of the previous year's growth. By midsummer the needles are brown or have fallen off. The European strain can cause a second dieback in late July on needles infected in the spring. The infection can girdle younger trees and kill them. On larger trees cankers can form on the branches and stems. This can lead to broken branches, crown loss or deformed stems. Since its first major outbreak in the mid 1970's, the spread of the disease has been slowed due to abnormally low rainfall. It can be expected, however, that two to three successive years of heavy rainfall will provide the right conditions for this disease to reach epidemic proportions again. Although no specific control methods are presently known, it appears that maintaining stands in open conditions with good air circulation is the most effective method of slowing the spread of this disease. Infections on the property are controlled by accelerating the thinning programs, thereby decreasing the relative humidity in the stands, and also by increasing the wind flow through the plantations. In cases where Scleroderris infections cannot be slowed down to a reasonable level, applications for clearcuts will have to be made to the A.P.A. Burning of infected material should be carried out in winter.

B. Habitat and Rare, Threatened, and Endangered Species Assessment

Predominant vegetation types in this region are beech-maple forest, hemlock-northern hardwood forest, and spruce-fir forests. These habitats support wide-ranging mammals, such as marten and fisher; early successional birds, such as Canada warbler, ruffed grouse, and American woodcock; raptors, such as northern goshawk, and forest interior birds, such as wood warblers and various thrushes (NYDEC 2007). Abandoned mines and natural caves provide bat habitat and support listed species such as the Indiana bat, Northern Long Eared Bat, and Tri Colored Bat. Alpine tundra ecosystems exist on several of the region's highest mountain peaks. These areas are characterized by shrubs, herbs, mosses, and lichens. Plant communities of the alpine zone have survived in these isolated and exposed habitats since the end of the last glacial period.

NYDEC (2007) provides a good overview of the region's important habitats.

"Critical habitat types of the Adirondacks include, mature forests, early successional forests, high elevation regenerating conifer stands, and the lowland boreal system. The lowland boreal system is an area of moderately low diversity in which the plants and animals are adapted to short summers and deep snow and in which songbirds, insects, and evergreens are common (Jenkins, in review). The Adirondacks are technically south of the true Boreal Zone but still have extensive tracts of habitat characteristic of the southern edge of the true boreal, where northern animals and plants are subject to boreal processes (Jenkins, in review). Common forest vegetation types of the lowland boreal include conifer swamps and low bog forests. The largest corridors of boreal habitat are found in the northwest Adirondacks, a large portion of which is within this Basin and contain significant populations of northern plants, such as black spruce, white spruce, dwarf cranberry, bog aster, and various sedges, and northern animals, such as spruce grouse and bay-breasted warbler (Jenkins, in review). High elevation forests provide critical habitat for Bicknell's thrush. It is found primarily above 2800 feet in dense fir or spruce thickets, in particular regenerating fir waves. This species has a very limited global population and breeding range, and NYS has a substantial portion of the global population. Early successional habitats are critical for a host of early successional birds. The vast majority of these species are in widespread and often steep declines. Habitat for these species in the forest preserve is dependent on natural disturbances since the state constitution prohibits management practices that would create and/or maintain them. Therefore, private lands are essential to maintain these habitats and NYS easements on working forests will allow them to remain as working forests and benefit this habitat. Mature hardwood and mixed forests are also important, as they provide habitat for a wide variety of forest-nesting species, including Neotropical forest birds and amphibians. Most of the bird species that rely on this habitat are doing well, and the large amount of Forest Preserve lands will help to ensure this for the future".

The majority of LAFCO is occupied by deciduous and mixed forest habitats. The second most predominant type is boreal-conifers and temperate-conifers. Open habitats are scattered and minimal and include powerlines, railroad grades, open fields and log landings. Wetlands and wetland associated habitats, including alder, are widespread. Unlike adjacent Park lands, LAFCO lacks significant high

elevation habitats. A general description of LAFCO is predominately tall open canopy, mature forest with extensive habitat potential for forest interior species, with 5-10% of the forest being young forest and 35% being closed canopy mature forest. Given the number of wildlife species reliant upon early successional habitat, the most important habitat focus for LAFCO is young forest stands, both deciduous and coniferous.

Wetland Habitats

The NYCWCP (NYDEC 2007) provides current status of water resources in the Adirondacks region. "Water resources within the Adirondacks are protected from loss but not protected from environmental degradation caused by acid deposition. There are about 150,000 acres of wetlands inside the Adirondack Park (DEC 2007). Wetland types include bogs (characterized by peat and sphagnum mosses), wooded swamp/bottomland forest (mature trees including cedar, red maple, silver maple, and black ash), shrub swamp (woody shrubs such as speckled alder and various species of willow and dogwoods), and vernal pools (seasonal/temporary ponds or wetlands often associated with wooded habitats). These habitats support wetland birds such as American bittern, least bittern, and pied-billed grebe. Marsh and vernal pool habitats also support herpetofauna such as blue-spotted and Jefferson salamanders. Wetlands of the lowland boreal system found in the Adirondacks are a significant habitat feature and contain significant populations of wetland-dependent northern plants and animals. Common vegetation types of the lowland boreal include conifer swamps, low-bog forests, open sphagnum bogs, tall-shrub swamps, and shrub-sedge meadows. Some wooded wetland types and plant communities in the Basin are uncommon. Bogs, fens, alpine peatlands, cedar swamps, and black gum swamps are all examples of rare wetland plant communities."

Pollution from coal fired power plants in the Midwestern states has been carried Northeast via wind patterns for decades. As the winds rise over the Adirondack Mountains, the moisture they contain cools and condenses into clouds. Acidic deposition is comprised of sulfuric and nitric acids and ammonium derived from atmospheric emissions of sulfur dioxide, nitrogen oxides, and ammonia, respectively. Acidic deposition has impaired surface water quality in the Adirondack and Catskill regions of New York by lowering pH levels, decreasing acid-neutralizing capacity, and increasing aluminum concentrations. Acidification has reduced the diversity and abundance of aquatic species in lakes and streams. There are also linkages between acidic deposition and fish mercury contamination and eutrophication of estuaries (Driskoll et al. 2003). Precipitation can be more than 200 times more acidic than natural rain, with a pH of 3.3 or less. By the 1980s, more than 500 lakes and ponds (out of 2,800) in the Adirondack Park were too acidic to support aquatic life http://www.adkmuseum.org/acidrain/success.shtml. In 1990 the U.S. Congress passed amendments to the Clean Air Act designed to decrease emissions of the two gasses that are the primary causes of acid deposition. Sulfur dioxide (SO^2) emissions were to be decreased by 10 million tons. Nitrogen oxides were to be decreased by 2 million tons. With decreasing SO^2 emissions, the pH of rainfall has increased over much of the United States, including the Adirondacks. Rainfall pH is still more acidic than natural rainfall, but not as acidic as during the early 1980s. Driscoll et al (2003) report that virtually all Adirondack Lakes have shown marked decreases in concentrations of SO^4-, which coincides with decreases in atmospheric S deposition. Concentrations of NO^3 - have also decreased in several Adirondack lakes. The author's

extrapolation of rates of ANC increase suggests that the time frame of chemical recovery of Adirondack Lakes will be several decades if current decreases in acidic deposition are maintained.

Late Successional Forest

The 6-million acre matrix of public and private lands of the Adirondack Park is comprised of some of the largest, intact stretches of forest (including some first growth) in the state including alpine/boreal forest communities. State-owned lands within the Adirondack Forest Preserve are constitutionally set aside as forever wild. Timber harvest and prescribed fires are not permitted. Within the Adirondacks, close to 3 million acres of Forest Preserve lands are designated forever wild.

Keddy and Drummond (1996) identify characteristic properties of high priority forests to include: (1) tree size; (2) canopy composition; (3) quantity and quality of coarse woody debris; (4) number of spring ephemeral species in the herbaceous layer; (5) number of typical corticulous bryophyte species; (6) density of wildlife trees; (7) fungi; (8) avian community; (9) number of large carnivores; and (10) forest area. Defining high conservation forests within the region be best achieved by evaluation of the aforementioned characteristic properties.

McGee and Kiimmerer (2002) compared bryophyte abundance among partially cut; maturing, 90- to 100-year-old, even-aged forest and old-growth northern hardwood stands in the Adirondack Park. Total bryophyte cover from 0 to 1.5 m above ground level on trees ≥10 cm diameter at breast height (DBH) did not differ among the three stand types. However, bryophyte community composition differed among host tree species and among stand types. Communities in partially cut and maturing stands were dominated by xerophytic bryophytes (Platygyrium repens, Frullania eboracensis, Hypnum pallescens, Brachythecium reflexum, Ulota crispa), while old-growth stands contained a greater representation of calcicoles and mesophytic species (Brachythecium oxycladon, Anomodon rugelii, Porella platyphylloidea, Anomodon attenuatus, Leucodon brachypus, Neckera pennata). This mesophyte-calcicole assemblage occurred in all stand types but was limited by the abundance of large-diameter (>50 cm DBH), thick-barked, hardwood host trees (Acer saccharum Marsh., Tilia americana L., Fraxinus americana L.). This study suggested that epiphytic bryophyte diversity can be sustained and enhanced in managed northern hardwood forests by maintaining host tree species diversity and retaining large or old, thick-barked residual hardwood stems when applying even-aged and uneven-aged silviculture systems.

Leopold et al (1988) surveyed old-growth forests of the Adirondack Park in 1987 and identified ten old-growth forest stands (nine of which are entirely state-owned). Of the nine stands sampled, community types included hemlock-northern hardwood, beech-maple mesic, spruce-northern hardwood, and mountain spruce-fir forests.

Woods and Cogbill (1994) studied vegetation patterns in upland old-growth forests of the Adirondack Mountains. Gradient analysis showed both canopy and understory communities to be strongly influenced by elevation, but compositional patterns were otherwise independent. High-elevation stands showed little variation in composition. Low-elevation stands were more variable, but causes of variation were not clear. Basal areas ranged from 24 to 63 m2/ha; highest values were in hemlock stands, but no other trends were evident. Canopy density ranged from 420 to 1880 stems/ha

and strongly increased with elevation. Understory diversity showed no trends but understory cover was low in hemlock- and sugar maple-dominated stands.

Ziegler (2000) compared second-growth stands to old growth stands and found that older stands were characterized as having larger average diameters, greater basal area, lower density of canopy trees, more eastern hemlock, larger canopy gaps and more coarse woody debris. Ziegler (2000) did observe that second growth forests were developing structural characteristics of old growth.

Nicholson et al (1979) believe that present high levels of beech and sugar maple are thought to have been promoted by logging in the late 1800's. Results of both ordination and size class analysis suggested that in many cases, sugar maple stands would change into beech-hemlock stands, which would then change to hemlock. In contrast to reports from the Catskils and elsewhere, there was no evidence at Lake George that hemlock would be replaced by any other species in the absence of human disturbance. Since disturbance has been eliminated over large areas, long term increases in hemlock are predicted.

McGee et al (1999) studied old growth, partially-cut, uneven-aged and maturing, even-aged stands and found differences between stands caused by different cutting histories. The authors believed that if the management goal is to replicate old growth conditions, then managers should consider increasing diameter limits in selection systems, extending even-aged rotations beyond 100 yr, and implementing "reserve shelterwood" cuts that retain large trees in regenerated, even-aged stands.

Martin and Bailey (1999) similarly stated that within 100 years following heavy forest cutting, the northern hardwood forest can be expected to regrow to the point where numbers of stems, basal-area, and biomass will be comparable with old-growth forests.

However, increases in the white-tailed deer population and associated browse pressure over the past 20-30 years will likely influence and is likely to negatively impact this natural successional process.

Rare and Imperiled Species

The NYCWCP (NYDEC 2007) focuses strategic conservation efforts onto Species of Greatest Conservation Need (SGCN). SGCN represent the most current and comprehensive list of rare and imperiled species in New York, and more specifically, in the major watersheds within which LAFCO is located. SGCN lists were developed by DEC staff members and independent experts. Critical habitat for each SGCN was also identified. For this Plan, SGCN lists were assessed for species likely to be found within LAFCO by compiling SGCN occurrence in forested habitats within three watersheds: Northeast Lake Ontario – St Lawrence Basin, Upper Hudson Basin and the Lake Champlain Basin.

More than half of all bird species of greatest conservation need are found within the LAFCO region occupying the diverse range of habitat types, including boreal forests, deciduous forests, early successional forest/shrublands, and wooded and emergent marshes (NYDEC 2007).

According to the NYCWCP (NYDEC 2007), while this region tends to be high in species richness, trends and changes in land use, as well as many other environmental and social changes that are

incompatible with some wildlife have taken their toll on populations of SGCN. Of the 111 SGCN in the Northeast Lake Ontario/St. Lawrence Basin, 35% are declining. The majority (80%) of these are birds, with early successional forest/shrubland birds (29%) and grassland birds (23%) making up the largest shares of declining avifauna. The LAFCO forest provides an excellent opportunity to focus management strategies towards reversing the decline in forest/shrubland birds.

As part of the conservation easement acquisition by the State of New York the NYDEC conducted a baseline assessment and documentation of every tract on the Lyme property. This baseline documentation included biological surveys and an ecological assessment at a tract level and includes the following information.

- Endangered and Threatened Species of New York
- Natural Heritage Program Elements of Occurrence
- Statewide Breeding Bird Atlas Survey (2000-2005)
- Breeding Bird Atlas Blocks and Tract Boundaries Map
- Breeding Bird Atlas – Species List
- Species of Greatest Conservation Need (Birds)
- Statewide Amphibian and Reptile Survey (1990-1999)
- Amphibian and Reptile Atlas Blocks
- Amphibian and Reptile Species List
- Lake & Fisheries Surveys

A copy of the baseline documentation is on file at Lyme's office.

C. Forest Types and Natural Communities

Representation of critical habitats on the LAFCO regional landscape will be implemented as follows.

1. Reserve-size blocks (>20,000 acres) of late successional and old growth habitats and their inherent functional values. This will be provided on the adjacent Adirondack Park forever-wild lands.

2. Forest stands mimicking the functional attributes of later successional habitats will be provided on LAFCO forest lands through harvest inclusions, within the no-cut riparian management zones, as part of ecological reserve areas, and by following the late successional management guidelines when older forest communities are discovered (FMS – "Late Successional Reference Document").

3. Early successional young forest and shrubland habitats will be regulated on LAFCO through attainment of habitat composition goals. These habitats will mitigate the absence of early successional habitats on Adirondack Park lands. Forest management to meet early successional habitat goals will feature even-aged forest management practices.

4. Wetland and riparian habitat functions will be maintained and/or enhanced through avoidance and/or best management practices.

5. Critical habitats and natural communities identified through Natural Heritage inventories will be functionally protected through special management practices, in some instances implemented in special management zones.

Spatial and temporal distribution of the full spectrum of habitats, from early- to late-successional, will be regulated through attainment of composition goals applied to the landscape on a system of forest tracts (landscape units).

Endangered species are defined in the Endangered Species Act (ESA) as "any species which is in danger of extinction throughout all or a significant portion of its range other than species of the Class Insecta as determined by the Secretary to constitute a pest whose protection under the provisions of the Act would present an overwhelming and overriding risk to man." A threatened species is "any species which is likely to become an endangered species in the foreseeable future throughout all or a significant portion of it range." The term species, as defined in the ESA includes "subspecies of fish or wildlife or plants, and any distinct population of vertebrate fish or wildlife which interbreeds when mature."

Lyme's assessment of RT&E species on the property began with a review of the State Wildlife Action Plans (SWAP) and the New York Natural Heritage Program (NYNHP). The SWAP describes the assessment process on a state and regional level to determine species rankings and listings.

The NYNHP maintains a robust data set of RT&E occurrences in the state and provides spatial location.

Property Wide Assessment – Lyme, with the help of the Wildlife Management Institute (WMI) conducted a property wide assessment in 2007 using the SWAP to develop Long-term Forest and Habitat Management goals.

Stand level assessment – LAFCo has a cooperative agreement in place with NYNHP that allows LAFCo to host the natural heritage data directly within our GIS. As part of the harvest plan development foresters run a lookup for any RTE within the vicinity of the harvest. If there is a known occurrence LAFCo contacts NYNHP to receive guidance on the management protections that may be required.

D. Conservation and Protection Areas

Integration of biodiversity goals into forest management plans can be described as occurring on three scales: landscape level ecological reserves, special management areas (stand level), and protection of within-stand level biodiversity legacies.

At the landscape scale level, LAFCO benefits from the adjacency of the forever-wild (3 million acres of no harvest wildness areas) portions of the Adirondack Park, those areas providing an abundance of late successional ecological reserve function and benefits.

At the special management area level, management is targeted to protect specific communities or protect ecological processes on specific areas, such as high elevation and riparian zones. Examples of special management areas include:

A. Natural heritage sites and exemplary communities

B. High elevation zones

C. Riparian zones

D. Bat hibernacula

E. Spruce grouse special management zones

F. American marten special management zones

G. Cultural resource sites

For each special management area, locations are clearly identified through consultation with NYDEC and other experts.

Natural Heritage Site Conservation Zones

The New York Natural Heritage Program provided known locations of Rare and Endangered Plant and Animal species. This data is included in LAFCo's GIS. Foresters review these data during pre-harvest planning and take appropriate protection measures.

E. Areas Identified as High Conservation Value Forests (HCVF)

High Conservation Value Forests as defined by FSC are as follows:

HCV 1: Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).

HCV 2: Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

HCV 3: Forest areas that are in or contain rare, threatened or endangered ecosystems.

HCV 4: Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).

HCV 5: Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health, well-being).

HCV 6: Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

Lyme assessed HCV attributes and has documented the findings using the FSC-US HCVF Assessment Framework. A summary of the results and management implications is presented below.

Summary of HCV forest findings

HCV 1 – There are three regionally important Bat Hibernacula located on the property.

1. Bennett Hill Mines: abandoned mine located in Crown Point.
2. Barton Hill Mine: abandoned mine located in Moriah.
3. Graphite Mine: abandoned mine located in Hague

These mines are a major winter hibernaculum, used by the Indiana bat, northern long-eared bat, tri-colored bat, and the small-footed bat. The Indiana bat and northern Long eared bat are listed as endangered by the US Fish and Wildlife Service. These areas are critical to the recovery of these endangered bat species and will be managed as an HCV1.

HCV 2 – The Lyme property is located within the six-million-acre Adirondack Park. Within this region approximately three million acres are owned by the state and have been set aside as forever wild wilderness areas where no forest management occurs. The Lyme property has been managed as a working forest for more than 125 years. Due to the working forest history, the property does not meet the criteria in guidance #1. While the Lyme property is large it is not unique or rare for the region and is one of many large working forests within a vast forested landscape where approximately 50% of the landscape is managed as a wilderness area. The property does not contain HCV2.

HCV 3 – Assessment of NYNHP data, Lidar based stand maps, and interviews with local property managers determined that there is no known old growth on the property. However, should stands with late-successional characteristics be encountered they will be managed to retain those characteristics.

HCV 4 – Assessment of various data and information sources determined that the Lyme property does not provide "critical protections" as defined in the FSC Standard.

HCV 5 - Given the guidance provided, the property is not fundamental to the basic needs of local communities, however, it is important to the local economy, and therefore indirectly to local well-being.

HCV 6 - Given the guidance provided, the property is not considered critical to regional tribes and local community's cultural identity, however, it is an important part of the broader region's natural landscape.

Management Implications and Monitoring of HCVF

HCV 1 –

1. Bennett Hill Mines: abandoned mine located in Crown Point. This mine is a major winter hibernaculum, used by the Indiana bat (*Myotis sodalis*), northern long-eared bat (Perimyotis subflavus), Tri colored bat (*Perimyotis subflavus*), and the small-footed bat (*Myotis leibii*). The Indiana bat, is listed as endangered by the US Fish and Wildlife Service; the northern long-eared bat is listed as endangered by the US Fish and Wildlife Service; the tricolored bat has been proposed to be listed as endangered by the US Fish and Wildlife Service; and the small-footed bat is listed as a species of "special concern" by the New York Department of Environmental Conservation. Lyme currently supports efforts by NYS DEC to monitor and protect the site including following best management practices and guidance for endangered bats developed by the US Fish and Wildlife Service. The area within ¼ mile of the mine opening is managed as an ecological reserve where no harvesting will occur.

2. Barton Hill Mine: abandoned mine located in Moriah. This mine is a major winter hibernaculum, used by the Indiana bat (Myotis sodalis), northern long-eared bat (Perimyotis subflavus), Tri colored bat (Perimyotis subflavus), and the small-footed bat (Myotis leibii). The Indiana bat, is listed as endangered by the US Fish and Wildlife Service; the northern long-eared bat is listed as endangered by the US Fish and Wildlife Service; the tricolored bat has been proposed to be listed as endangered by the US Fish and Wildlife Service; and the small-footed bat is listed as a species of "special concern" by the New York Department of Environmental Conservation. Lyme currently supports efforts by NYS DEC to monitor and protect the site including following best management practices and guidance for endangered bats developed by the US Fish and Wildlife Service. The area within ¼ mile of the mine opening is managed as an ecological reserve where no harvesting will occur.

3. Graphite Mine Bat Hibernacula: abandoned mine located in Hague. This mine is a major winter hibernaculum, used by the Indiana bat (Myotis sodalis), northern long-eared bat (Perimyotis subflavus), Tri colored bat (Perimyotis subflavus), and the small-footed bat (Myotis leibii). The Indiana bat, is listed as endangered by the US Fish and Wildlife Service; the northern long-eared bat is listed as endangered by the US Fish and Wildlife Service; the tricolored bat has been proposed to be listed as endangered by the US Fish and Wildlife Service; and the small-footed bat is listed as a species of "special concern" by the New York Department of Environmental Conservation. The previous landowner (IP) entered into a Cooperative Land Use License Agreement with the Nature Conservancy to ensure long-term protection of this site which Lyme has continued. Lyme currently supports efforts by NYS DEC to monitor and protect the site including following best management practices and guidance for

endangered bats developed by the US Fish and Wildlife Service. The area within ¼ mile of the mine opening is managed as an ecological reserve where no harvesting will occur.In addition a conservation easement is held by the Nature Conservancy on the tract surrounding this mine that contains restrictions on harvesting and monitoring rights retained by the Nature Conservancy.

HCV 2 – Lyme has a conservation easement on the property. The CE extinguished development and subdivision rights and ensures the property is conserved as a large landscape working forest.

HCV 3 – forest managers will conduct pre-harvest assessments and if any previously unmapped old growth or high quality late successional forest are located, they will be mapped and protected accordingly.

HCV 4 – property will continue to be managed as a working forest and will provide associated ecosystem services. No further action is necessary

HCV 5 – Lyme will continue to engage with stakeholders to ensure property management does not have adverse impacts on the local community and will continue to provide opportunities for traditional uses such as hunting and fishing.

HCV 6 – Lyme will continue to be on the lookout for potential cultural sites and will continue to engage with tribal leaders and community members.

F. Riparian Management Zones (RMZ) and Watercourse Protection Measures

Approximately 34,138 acres of land are classed as RMZ's on LAFCO and mapped within the companies GIS. Guidelines for management within riparian areas include:

- Outer RMZ - Manage using single tree and small group selection with a residual stand target of at least 60% crown closure.
- Inner RMZ – Manage using single tree selection while maintaining 80-90% crown closure within 25 feet of all 3rd Order Streams and all ponds and wetland complexes greater than 10 acres.
- Per APA law there shall be no harvesting within 100 feet of all Wild, Scenic, Study and Recreational Rivers.
- At no time can more than 30% of the trees over 6"dbh be harvested within 35 feet of a watercourse. (APA/DEC Rules and Regulation).
- Small group selection openings may be used within the riparian zone to promote reproduction; however these openings may be no larger than ½ acre and no closer than 35 feet from the stream.
- Minimize operation of machinery within the riparian zones, try to limit the number of repetitive trips on the same trail and try to minimize ground disturbance.
- Identify important hydrologic features during harvest planning and layout. Locate features such as streams, ponds, vernal pools, wetlands and seeps.

- Retain trees with cavities, standing dead trees and large potential cavity trees.

LAFCO maintains a GIS that includes the location of rivers, streams, wetlands, and ponds. An RMZ was developed in the GIS for the purpose of calculating the area the forest contained within the RMZ based on the digital information or regulatory information available. However, for streams mapped as intermittent or 1st order, the final RMZ width will be based on the actual conditions of the stream as assessed in the fields. During the pre-harvest planning period maps are examined to determine if any RMZ's will be encountered during the proposed harvest. The table below shows the acres with each of the RMZ classifications.

Riparian Management Zone Acreage Chart

RMZ description	Acres
1/4 mile wild and scenic buffer	6,303
First and second order streams 100 foot buffer	11,508
Inner 25 foot buffer on wetlands and ponds > 10 acre	2,272
Third order stream 300 foot buffer	1,192
Third order stream inner 25 foot buffer	43
Wetland and pond 100 foot buffer	11,659
Wild, Scenic inner NO CUT	1,161
Total acres managed as RMZ	34,138

Riparian Management Zone Guidelines (RMZ's)

FEATURE	DEFINTION	**APA/DEC RULES AND REGULATIONS**	**LAFCo**
Wetlands, Ponds & Vernal Pools Less than 10 acres	**Wetlands:** any land which is annually subject to periodic or continual inundation by water and commonly referred to as a bog, swamp or marsh which are either (a) one acre or more in size or (b) located adjacent to a body of water, including a permanent stream, with which there is free interchange of water at the surface, in which case there is no size limitation. APA wetland types include: Deep Water Marsh Deciduous Swamp Bog Coniferous Swamp Emergent Marsh Shrub Swamp Wet Meadows **Vernal pools** are depressions that fill with spring melt-water but may be dry during some part of the growing season. They generally have no well-defined inlet or outlet. During dry periods, they appear as a depression with matted leaves and water lines on trees. Vernal pools are critical breeding sites for many forest frogs and salamanders. Larger vernal pools are more valuable as they last longer and subsequently tend to support a greater richness and abundance of breeding amphibians. Research suggests that pools with a surface area of about 2000 ft2 (1 chain long by 0.5 chains wide) or more generally persist for at least 2 months.	A clearcut of more than 3 acres in a forested wetland requires a permit, except for strip cutting in coniferous swamps. **Wetlands:** Strip cutting in forested coniferous wetlands is allowed without a permit if the alternating linear strips to be clearcut are more than 50 feet from the mean high water mark of any lake, pond, river, or stream and are 100 feet in width and uncut for 10 years. In Wetlands an APA permit is required for: • some wetland crossings • some woods roads • log landings • sand and gravel removal • permanent/portable sawmills • permanent bridges • herbicides/pesticides • draining/dredging/excavating • dumping or filling • any construction • any pollution • any activity which substantially impairs values and functions of a wetland	**APA permit is required for some wetland crossings.** A 100 Foot RMZ extending from the high water mark should be identified. The feature should be appropriately marked. • Maintain 60% crown closure or B-line stocking. • Small group selection openings may be used within the riparian zone to promote reproduction (no larger than ½ acre and no closer than 35 feet from the watercourse). • Minimize operation of machinery within the riparian zones, try to limit the number of repetitive trips on the same trail and try to minimize ground disturbance. • A no cut zone should be considered in areas with shallow or poorly drained soils and on steep slopes. • Retain trees with cavities, standing dead trees and large potential cavity trees. • Apply New York State Forestry Best Management Practices for Water Quality. • Contractor will be made aware of RMZ.
Intermittent Streams	Identified by a well-defined channel that retains water during spring snowmelt and immediately following a rain event. Intermittent streams do not meet DEC standards and thus, are not classified.	none	**Intermittent Streams:** Foresters will use their professional judgment to implement appropriate measures to protect water quality and to not interrupt stream flow based on season and intensity of the harvest. All crossings will be designated and Contractor will be made aware of stream location and designated crossings. Apply New York State Forestry Best Management Practices for Water Quality for water crossings.

RMZ's continued

FEATURE	Definition	APA/DEC Rules and Regulations	LAFCO
1st and 2nd Order Streams	First Order Stream: all unbranched streams which are identified at a map scale of 1:24,000 (e.g. 7.5' USGS Quadrangle) whether perennial or intermittent, and which can be recognized on the ground. Second Order Stream: begins at the point where two perennial 1st Order Streams join.	DEC permits are required for crossing classified streams (i.e. no person or public corporation shall change, modify or disturb the course, channel or bed of any classified stream). APA regulations prohibit cutting within 6 feet of shorelines and permit no more than 30% of trees more than 6 inches dbh to be cut within 35 feet of water.	A 100 Foot RMZ extending from the high water mark should be identified. The feature should be appropriately marked. • Maintain 60% crown closure or b-line stocking with relatively continuous forest cover. • Small group selection openings may be used within the riparian zone to promote reproduction (no larger than ½ acre and no closer than 35 feet from the watercourse). • Minimize operation of machinery within the riparian zones, try to limit the number of repetitive trips on the same trail and try to minimize ground disturbance. • A no cut zone should be considered in areas with shallow or poorly drained soils and on steep slopes. • Retain trees with cavities, standing dead trees and large potential cavity trees. • Apply New York State Forestry Best Management Practices for Water Quality. • Contractor will be made aware of RMZ.

FEATURE	Definition	APA/DEC Rules and Regulations	**LAFCO**
3rd Order Streams	3rd Order Stream: begins at the point where two 2nd Order Streams join.	DEC permits are required for crossing classified streams (i.e. no person or public corporation shall change, modify or disturb the course, channel or bed of any classified stream). APA regulations prohibit cutting within 6 feet of shorelines and permit no more than 30% of trees more than 6 inches dbh to be cut within 35 feet of water.	A 300 Foot RMZ extending from the high water mark should be identified. The feature should be appropriately marked. • Maintain 80-90% crown closure within 25 feet of high water mark • From 26 feet to 300 feet, maintain 60% crown closure or b-line stocking with relatively continuous forest cover. • Small group selection openings may be used within the riparian zone to promote reproduction (no larger than ½ acre and no closer than 35 feet from the watercourse). • Minimize operation of machinery within the riparian zones, try to limit the number of repetitive trips on the same trail and try to minimize ground disturbance. • Retain trees with cavities , standing dead trees and large potential cavity trees. • Apply New York State Forestry Best Management Practices for Water Quality. • Contractor will be made aware of RMZ.

RMZ's continued.

FEATURE	DEFINTION	APA/DEC RULES AND REGULATIONS	LAFCo
Wetlands, Ponds &Vernal Pools Greater than 10 acres	**Wetlands:** any land which is annually subject to periodic or continual inundation by water and commonly referred to as a bog, swamp or marsh which are either (a) one acre or more in size or (b) located adjacent to a body of water, including a permanent stream, with which there is free interchange of water at the surface, in which case there is no size limitation. APA wetland types include: Deep Water Marsh Deciduous Swamp Bog Coniferous Swamp Emergent Marsh Shrub Swamp Wet Meadows .	A clearcut of more than 3 acres in a forested wetland requires a permit, except for strip cutting in coniferous swamps. **Wetlands:** strip cutting in forested coniferous wetlands is allowed without a permit if the alternating linear strips to be clearcut are more than 50 feet from the mean high water mark of any lake, pond, river, or stream and are 100 feet in width and uncut for 10 years. In Wetlands an APA permit is required for: • some wetland crossings • some woods roads • log landings • sand and gravel removal • permanent/portable sawmills • permanent bridges • herbicides/pesticides • draining/dredging/excavating • dumping or filling • any construction • any pollution • any activity which substantially impairs values and functions of a wetland	**APA permit is required for some wetland crossings.** A 100 Foot RMZ extending from the high water mark should be identified. The feature should be appropriately marked. • Maintain 80-90% crown closure within 25 feet of high water mark • From 26 feet to 100 feet, maintain 60% crown closure or B-line stocking. • Small group selection openings may be used within the riparian zone to promote reproduction (no larger than ½ acre and no closer than 35 feet from the watercourse). • Minimize operation of machinery within the riparian zones, try to limit the number of repetitive trips on the same trail and try to minimize ground disturbance. • Retain trees with cavities , standing dead trees and large potential cavity trees. Apply New York State Forestry Best Management Practices for Water Quality. Contractor will be made aware of RMZ.

RMZ's continued.

FEATURE	Definition	APA/DEC Rules and Regulations	LAFCO
Wild, Scenic Study, and Recreational River Areas	Below is a listing of Designated Rivers located on the Property: Independence River (Scenic) Big Moose Raquette (Rec./Wild) Colton-Piercefield Boquet River (Rec.) Iron Ore Hudson River (Rec.) Johnsburg N. Br. Boquet River (Study) Lewis W. Br. Sacandaga River (Rec./Wild) Oxbow Kunjamuk River (Scenic/Wild) Speculator Tree Farm Sacandaga River (Rec.) Speculator Tree Farm	**Mean High Water to 100 Feet** • No cutting of trees unless permitted in accordance of an agency rivers project. • No wood roads within 100 feet of the mean high water mark of the river. • No storage of logging equipment. **100 Feet to ¼ Mile** • No more than 15 contiguous acres may be clearcut. • No more than 50% of the basal area of any tract of 30 acres or more may be cut over a 10 year period. • Regeneration cuts of even-aged stands may remove no more than 1/3 of the main crown canopy during any 10-year period.	Apply APA/DEC Rules and Regulations. Apply New York State Forestry Best Management Practices for Water Quality.

G. Monitoring Plan

A comprehensive approach to sustainable forestry involves monitoring of the forest. The elements to be monitored and the frequency of monitoring have been selected to track progress toward meeting goals, evaluate the success of past treatments and need for follow up, and monitor for potential adverse impacts of management (e.g., soil erosion on trails), and to ensure conformance with FSC certification requirements. LAFCo will adapt management plans and guidelines as necessary to ensure that economic and ecological objectives are met over time. Monitoring information will be used to develop future management plans.

The following table describes LAFCo monitoring plan.

General Monitoring		
Element	Frequency	Monitoring Items
Forest Inventory	Every 10 years.	• Tree species, size, grade and density • Snags • Other wildlife trees • Focus Species Development Stage or similar • Aerial photography and cover type maps
Invasive species	Ongoing observation between inventories	• If detected or controlled, check harvested sites and trails (every 5 yrs.) • Entire forest, include as part of regular 10-year inventory.
Regeneration	Within 5 years of a regeneration harvest	• Quantitative or qualitative monitoring is designed to see if regeneration objectives are being met.
Erosion and sedimentation, BMPs	Post-harvest: during and at the conclusion of operations, within 12 months of harvest (or sooner if very heavy rains), and within 3 years.	• Check skid trails, water crossings, and landings.
Wildlife inventory	Ongoing as part of wildlife habitat management	• Continue woodcock study and breeding bird study
Unauthorized Use	Annually/Ongoing	• Check for unauthorized trails and other activities.

H. Climate Change

Understanding and addressing the risk to climate change in the Adirondacks

The Lyme Timber Company was a founding member of the Climate Smart Land Network which was created to help facilitate the transfer of information from the science community to landowners and managers. Lyme intends to stay current in climate change science via this network and has provided access to reports and regular communication to its managers at LAFCo.

In addition, the following report is on file as one of our key resources on the topic of climate change in this region and outlines the risks and management strategies we will consider in future management planning.

New England and Northern New York Forest Ecosystem Vulnerability Assessment and Synthesis: A Report from the New England Climate Change Response Framework Project

This assessment evaluates key ecosystem vulnerabilities for forest ecosystems in New England and northern New York (Fig. 1) across a range of future climate scenarios. This assessment was completed as part of the New England Climate Change Response Framework project, a collaborative approach among researchers, managers, and landowners to incorporate climate change considerations into forest management. The assessment summarizes current conditions and key stressors and identifies past and projected trends in climate. This information is then incorporated into model projections of future forest change. These projections, along with published research and local knowledge and expertise, are used to identify the factors that contribute to the vulnerability of major forest systems within the assessment area through this century. A final chapter summarizes the implications of these impacts and vulnerabilities for forest management across the region.

In 2021 LAFCo underwent a process to inventory the entire property and collected LIDAR which was used to develop new forest stand maps for the ownership. An operability class that accounts for both slope and wetness was incorporated into the stand layer for each stand and the new inventory and stands will be used to develop a revised long term harvest model for the ownership.

We are actively engaged in numerous studies and research projects to assess the effectiveness of various strategies to address climate change in the region and expect to incorporate results of these studies as they become available.

I. Carbon

Lyme recognizes and understands the benefits that forests provide in terms of mitigating the long-term impacts of climate change and intends to manage the property as a sustainable working forest ensuring carbon sequestration continues. There are no carbon credit projects currently developed on the Lyme Timberlands property.

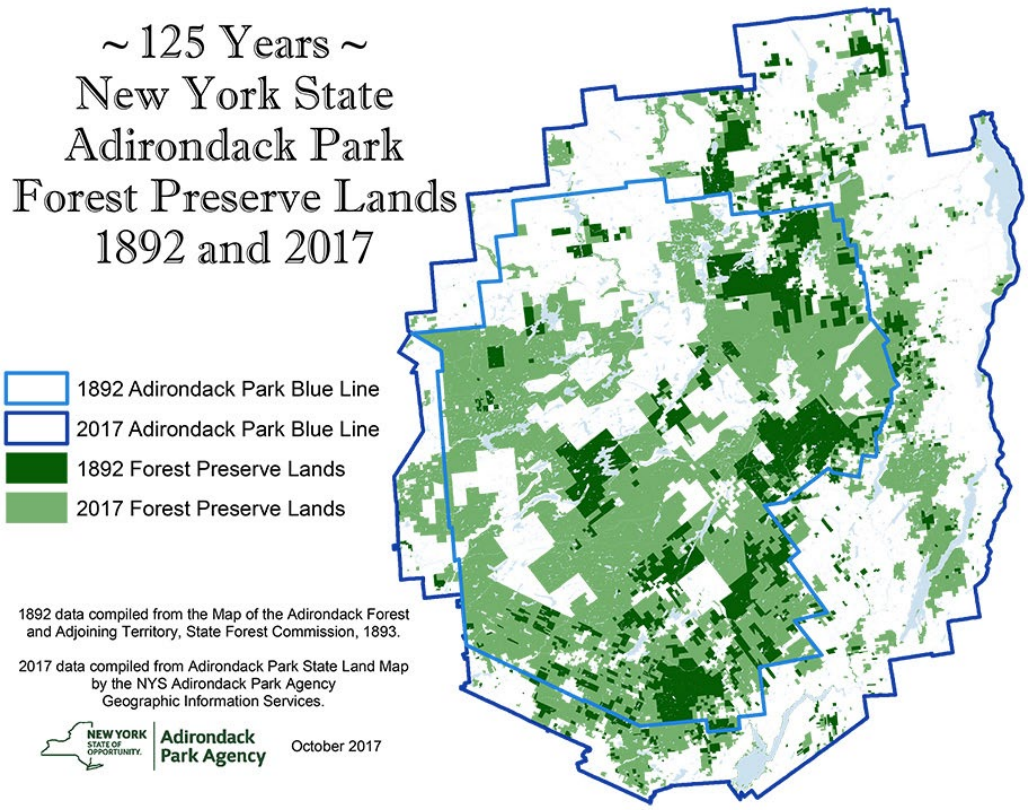
J. Representative Sample Area (RSAs)

LAFCo and Lyme have conducted an analysis of the property and surrounding region to identify Representative Sample Areas (RSAs) which serve as ecological benchmarks.

Discussion of naturally occurring ecosystems: The Lyme Timberlands property lies primarily in the Northeastern Highlands Ecoregion. The region is characterized by warm humid summers, and cold snowy winters, and the nutrient-poor podzols and other cryic (perennially frozen) soil types of the region which support boreal (north) and broadleaf (south) forests that cover the majority of the region. Tourism, forestry, and agriculture are the predominant land uses of the sparsely populated region. Though much of the region was once cleared to make farmland, much of it has reverted into natural forested areas.

The property has a long history of timber management, starting with extensive stand replacing clearcut harvests around 1900 and large wildfires following the clearing on the timber. Inventory data and current stand typing show the property is dominated by hardwood stands less than 125 years old. As we broaden the scope and look to surrounding woods for examples of naturally occurring ecosystems, a significant example is easy to find. As mentioned throughout this plan nearly three million acres of forestland have been set aside as wilderness areas in a forever wild condition. About half of this acreage was acquired by the state of New York in the late 1800's and has not been harvested since that time.

The following map shows the lands that have not been harvested since the late 1800's in dark green along with the vast amount of land that has been added to public ownership over the last 100 years. All lands held by the state within the Adirondack park are permanently protected from timber harvesting via the state constitution that mandates the forever wild condition.


~ 125 Years ~
New York State
Adirondack Park
Forest Preserve Lands
1892 and 2017
1892 Adirondack Park Blue Line
2017 Adirondack Park Blue Line
1892 Forest Preserve Lands
2017 Forest Preserve Lands
1892 data compiled from the Map of the Adirondack Forest and Adjoining Territory, State Forest Commission, 1893.
2017 data compiled from Adirondack Park State Land Map by the NYS Adirondack Park Agency Geographic Information Services.
NEW YORK STATE OF OPPORTUNITY.
Adirondack Park Agency
October 2017