Hill and Hollow

UNIT MANAGEMENT PLAN

FINAL

Towns of Cuyler, Truxton, and Fabius

Counties of Cortland and Onondaga

July 2017

DIVISION OF LANDS AND FORESTS
Bureau of State Land Management, Region 7

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Cortland, NY 13045

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AUG 1 8 2017

MEMORANDUM

TO: The Record

FROM: Basil Seggos, Commissioner

SUBJECT: Final Hill and Hollow UMP

The Unit Management Plan for the Hill and Hollow Unit has been completed. The Plan is consistent with Department policy and procedure, involved public participation, and is consistent with the Environmental Conservation Law, Rules and Regulations. The plan includes management objectives for a ten year period and is hereby approved and adopted.

A Management Unit Consisting of two State Forests and one Unique Area, in Northeastern Cortland and Southeastern Onondaga Counties

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I. PREFACE

The Department of Environmental Conservation conducts management planning on state lands to maintain ecosystems and provide a wide array of benefits for current and future generations. The Hill and Hollow Unit Management Plan addresses future management of Kettlebail State Forest, Morgan Hill State Forest and Labrador Hollow Unique Area. This plan is the basis for supporting a multiple-use goal through the implementation of specific objectives and management strategies. Management will ensure the sustainability, biological diversity and protection of the Unit's ecosystems and optimize the many benefits that these State lands provide. The multiple-use goal will be accomplished through the applied integration of compatible and sound land management practices.

It is the policy of the Department to manage state lands for multiple benefits to serve the people of New York State. This Unit Management Plan is the first step in carrying out that policy. This plan has been developed to address management activities on the Hill and Hollow Unit for the next twenty years, with a review due in ten years. Some management recommendations may extend beyond the twenty-year period. Factors such as budget challenges, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

The Hill and Hollow Unit Management Plan is based on a long-range vision for the management of this area. Specific goals and objectives to support that vision are based on the rapidly evolving principles and technologies of ecosystem management, balanced with the increased demands for public use.

This Plan and the activities it recommends will be in compliance with State Environmental Quality Review (SEQR), 6NYCRR Part 617. The Division of Lands and Forests has initiated this process by preparing a full Environmental Assessment Form. This process will be complete after the public comment period when a final Plan will be issued.

Article 9, Titles 5 and 7, of the Environmental Conservation Law authorize the Department of Environmental Conservation to manage lands acquired outside the Adirondack and Catskill Parks. Management, as defined by these laws, includes watershed protection, the production of timber and other forest products, recreation and kindred purposes. For additional information on DEC's legal rights and responsibilities, please review the statewide Strategic Plan for State Forest Management (SPSFM) at http://www.dec.ny.gov/lands/64567.html. Refer specifically to pages 33 and 317.

Strategic Plan for State Forest Management

This unit management plan is designed to implement DEC's statewide Strategic Plan for State Forest Management (SPSFM). Management actions are designed to meet local needs while supporting statewide and eco-regional goals and objectives.

The SPSFM is the statewide master document and Generic Environmental Impact Statement (GEIS) that guides the careful management of natural and recreational resources on State Forests. The plan aligns future management with principles of landscape ecology, ecosystem management, multiple use management and the latest research and science available at this time. It provides a foundation for the development of Unit Management Plans. The SPSFM divides the State into 80 geographic

"units," composed of DEC administered State Forests that are adjacent and similar to one another. For more information on management planning, see SPSFM page 21 at http://www.dec.ny.gov/lands/64567.html.

Forest Certification of State Forests

In 2000, New York State DEC-Bureau of State Land Management received Forest Stewardship Council® (FSC®) certification under an independent audit conducted by the National Wildlife Federation - SmartWood Program. This certification included 720,000 acres of State Forests in DEC Regions 3 through 9 managed for water quality protection, recreation, wildlife habitat, timber and mineral resources (multiple-use). To become certified, the Department had to meet more than 75 rigorous criteria established by FSC. Meeting these criteria established a benchmark for forests managed for long-term ecological, social and economic health. The original certification and contract was for five years.

By 2005 the original audit contract with the SmartWood Program expired. Recognizing the importance and the value of dual certification, the Bureau sought bids from prospective auditing firms to reassess the Bureaus State Forest management system to the two most internationally accepted standards - FSC and the Sustainable Forestry Initiative® (SFI®) program. However, contract delays and funding shortfalls slowed the Departments ability to award a new agreement until early 2007.

Following the signed contract with NSF-International Strategic Registrations and Scientific Certification Systems, the Department was again audited for dual certification against FSC and additionally the SFI program standards on over 762,000 acres of State Forests in Regions 3 through 9. This independent audit of State Forests was conducted by these auditing firms from May until July 2007 with dual certification awarded in January 2008.

State Forests continue to maintain certification under the most current FSC and SFI standards. Forest products derived from wood harvested off State Forests from this point forward may now be labeled as "certified" through chain-of-custody certificates. Forest certified labeling on wood products may assure consumers that the raw material was harvested from well-managed forests.

The Department is part of a growing number of public, industrial and private forest land owners throughout the United States and the world whose forests are certified as sustainably managed. The Department's State Forests can also be counted as part a growing number of working forest land in New York that is *third-party certified* as well managed to protect habitat, cultural resources, water, recreation, and economic values now and for future generations.

The mark of responsible forestry

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SFI-00102

II. VISION STATEMENT

State Forests on the Hill and Hollow Unit will be managed in a sustainable manner by promoting ecosystem health, enhancing landscape **biodiversity**, protecting soil productivity and water quality. In addition, the State Forests on this unit will continue to provide the many recreational, social and economic benefits valued so highly by the people of New York State. DEC will continue the legacy which started more than 80 years ago, leaving these lands to the next generation in better condition than they are today.

This plan sets the stage for DEC to reach these ambitious goals by applying the latest research and science, with guidance from the public, whose land we have been entrusted to manage.
* highlighted (**bold**) terms are defined in the glossary.

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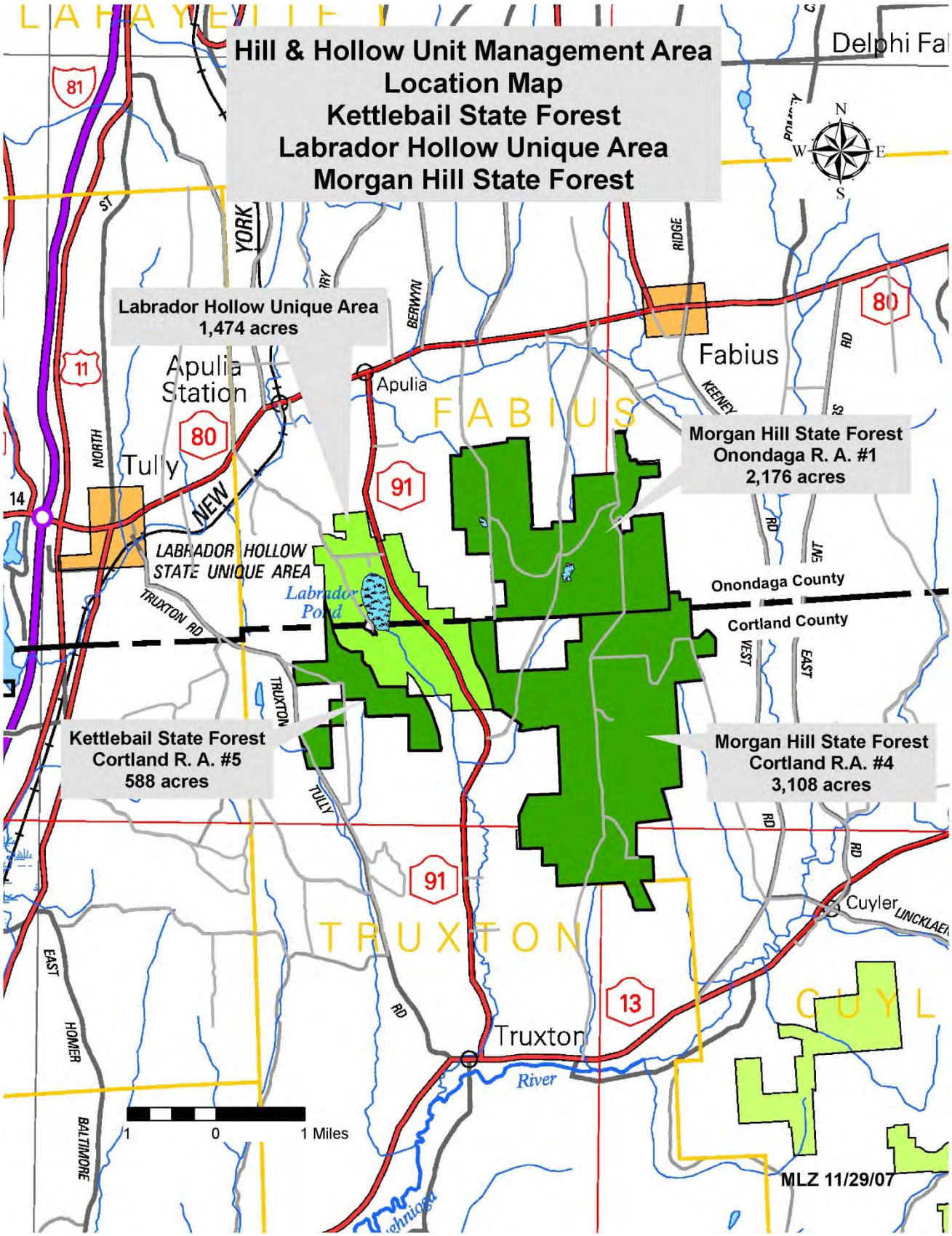

Hill & Hollow Unit Management Area
Location Map
Kettlebail State Forest
Labrador Hollow Unique Area
Morgan Hill State Forest
Labrador Hollow Unique Area
1,474 acres
Morgan Hill State Forest
Onondaga R. A. #1
2,176 acres
Kettlebail State Forest
Cortland R. A. #5
588 acres
Morgan Hill State Forest
Cortland R.A. #4
3,108 acres
Apulia Station
Apulia
Fabius
Tully
Truxton
Cuyler
Delphi Fal
FABIUS
TRUXTON
LABRADOR HOLLOW STATE UNIQUE AREA
Labrador Pond
Onondaga County
Cortland County
NEW YORK
TRUXTON RD
TULLY RD
NORTH HOMER
EAST HOMER
BALTIMORE
BERWYN
RIDGE
KEENEY
WEST
EAST
LINCKLAEN
River
1 0 1 Miles
MLZ 11/29/07

V. WHAT IS A UNIT MANAGEMENT PLAN?

A unit management plan (UMP) contains an assessment of the natural and physical resources on the unit and considers the **landscape** conditions in the surrounding geographic area. The UMP guides the Department's activities on the unit for a ten-year period, although a number of goals and objectives in the plan focus on a much longer time period. Each plan addresses specific objectives and actions for public use and **ecosystem management**.

VI. WHO WRITES THE UNIT MANAGEMENT PLAN?

State Forest UMP's are written by the Division of Lands and Forests with input from the Division of Fish, Wildlife and Marine Resources, the Division of Operations, the Division of Mineral Resources, the Division of Forest Protection and Fire Management and the NY Natural Heritage Program. A description of responsibilities is listed below. Additional information can be found on the Department's website.

***Division of Lands and Forests* -** is responsible for the stewardship, management, protection and recreational use of State Forest lands, the care of the people who use these lands and the acquisition of additional lands to conserve unique and significant resources. The Department also provides forestry leadership by providing technical assistance to private forest landowners and the forest products industry.

***Division of Fish, Wildlife, and Marine Resources* -** serves the public by using their collective skills to describe, understand, manage and perpetuate a healthy and diverse assemblage of fish, wildlife and ecosystems.

***Division of Operations* -** provides technical services, facilities management and maintenance of physical assets to insure effective and efficient operation of the Department and safe public use of Department lands and facilities.

***Division of Mineral Resources* -** is responsible for ensuring the environmentally sound, economic development of New York's non-renewable energy and mineral resources for the benefit of current and future generations.

***Division of Forest Protection and Fire Management* -** is responsible for the preservation, protection, enhancement of the state's forest resources and the safety and well-being of the public using these resources.

***The New York Natural Heritage Program* -** is a partnership between the NYSDEC and The Nature Conservancy. They facilitate conservation of rare animals, rare plants, and natural ecosystems, which are commonly referred to as "natural communities."

VII. HOW IS THE UNIT MANAGEMENT PLAN DEVELOPED?

There are a series of steps involved in developing a unit management plan:

Step 1: Conduct a resource inventory of the unit.
Step 2: Solicit written and verbal input from the public through press releases, mass mailings and a scoping meeting.
Step 3: Develop a draft UMP.
Step 4: Internal review and approval of draft UMP.
Step 5: Release draft UMP and conduct public meetings to gather comments.
Step 6: Address issues and develop a final UMP.
Step 7: Comply with State Environmental Quality Review (SEQR).
Step 8: DEC Commissioner approves final UMP and implementation begins.

VIII. LAND MANAGEMENT APPROACH

Our goal is to provide healthy, sustainable and biologically diverse forest ecosystems using the principles of ecosystem management. Ecosystem management is a process that considers the total environment - including all living and non-living components. It requires the skillful use of ecological, economic, social and managerial principles to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values and services over the long term. Ecosystem management recognizes that people and their social and economic needs are an integral part of ecological systems (Bureau of Land Management, 1994).

One of the simplest definitions of ecosystem management points out the almost unfathomable complexity of managing an ecosystem. That definition is in the form of a slogan on a United States Forest Service poster promoting ecosystem management. The slogan simply defines ecosystem management as “Considering All Things.” This approach asks that management decisions consider all living things from soil micro-organisms to large mammals, including their complex interrelationships and habitat requirements; all non-living components of the ecosystem, including physical, natural and geological components; and all social, cultural and economic factors as well. As we apply ecosystem management in this Plan, we will blend the needs of people with those of the ecosystem to ensure that State Forest management promotes biodiversity and healthy, productive, sustainable forests.

Biodiversity refers to the variety and abundance of living things, their habitats and their interdependence in a given area or “landscape.” Ecosystem integrity would not be enhanced if all factors of biodiversity were manipulated into every acre or every hundred acres. Some attributes of biodiversity need to be present in large blocks or acreages to be functional. Having a wide range of vegetative types, stages of growth and connectivity between and among habitats in a landscape increases the resiliency of ecosystems. Identifying vegetative types, **age classes** of habitat and habitat connectivity that are lacking in a landscape is called gap analysis. By identifying habitat **gaps**, land managers can look to improve biodiversity by creating, or enhancing more of the habitat that is lacking.

To practice ecosystem management we must examine the interrelationship between the natural resources and all of the various demands placed on them. Land managers must balance the demands, such as timber harvesting, recreation, **watershed** protection and oil and gas exploration and development, to ensure compatibility while maintaining biodiversity and ecosystem health.

All these demands and the management strategy to reach them must be considered in this management plan. The first step is to assess the natural resources, cultural resources and facilities in the surrounding area or "landscape". Once the assessments are complete, data analysis is done to determine the habitat gaps on the landscape. Using the assessment data and identified habitat gaps, management objectives and actions are developed to meet the management goals. Upon completion of the Draft UMP, a public meeting will be held to get input that will further help define the social demands on the Unit.

The management strategy implemented in this plan will follow an **adaptive management** approach. Adaptive management is the process of continually adjusting management in response to new information, knowledge or technologies.

IX. INFORMATION ABOUT THE LANDSCAPE SURROUNDING THE UNIT

A. General Observations

The landscape surrounding the Hill and Hollow Unit differs from the rest of Cortland and Onondaga Counties because of the higher percentage of forest land. The higher elevation uplands surrounding the Unit are typically heavily forested. The lower elevations and/or gently sloping lands surrounding the Unit are a matrix of agriculture, small woodlands, residences, **wetlands** and commercial uses.

Table 1: According to the United States Forest Service 1993 inventory statistics:

Catergory	Cortland Co.	Onondaga Co.
Forest land in the county	53%	48%
Forest land listed as reserved from management	.01%	.06%
Forest land held by private non-industrial owners	88.6%	95.5%
Forest land held by the State	9.7%	4.4%
Forest land held by forest-industry	1.6%	0%
Forest land held by the county or municipalities	.1%	.1%

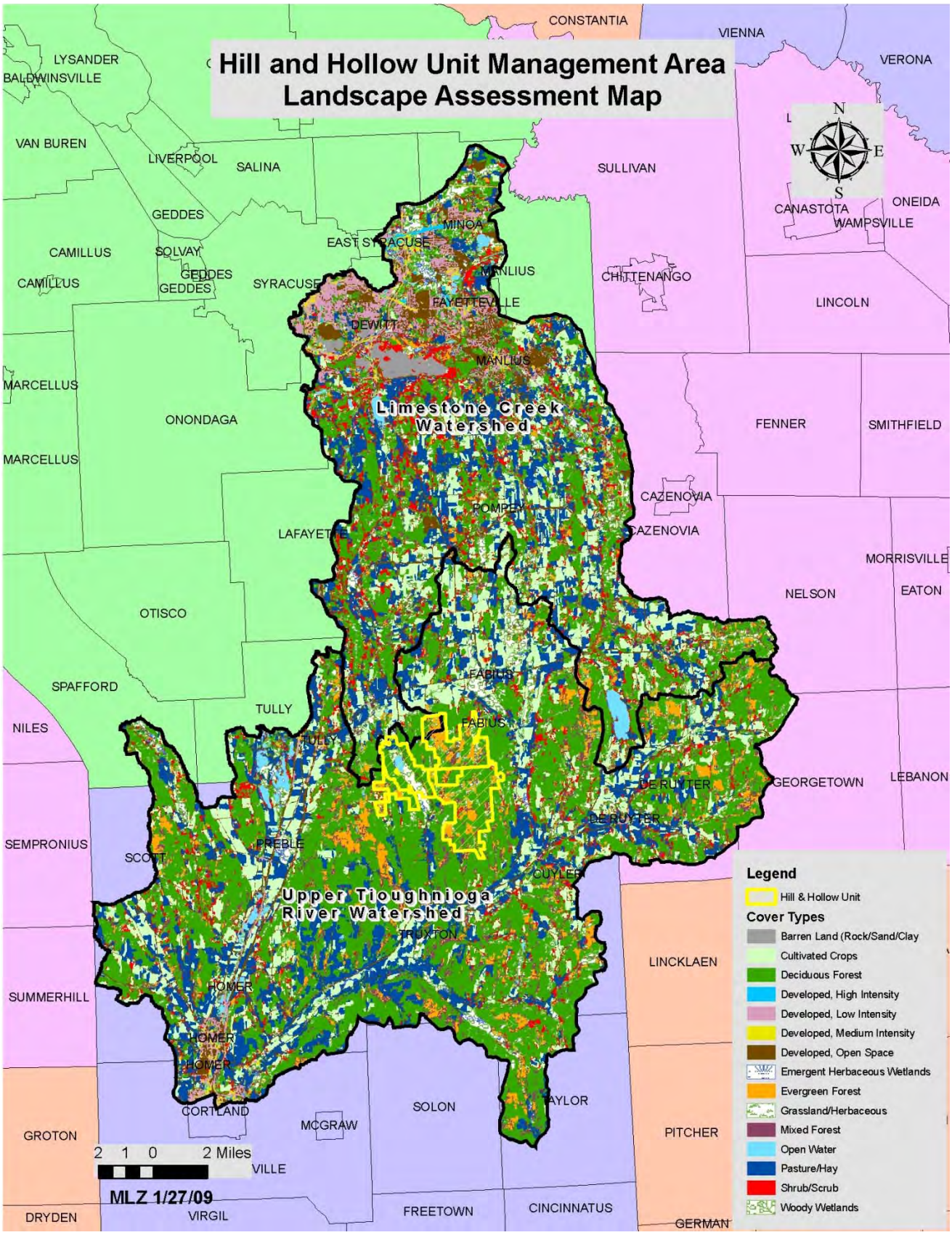
B. Landscape Assessment

The land management decision making process must consider the types, amount and condition of the natural resources on the landscape. In order to practice ecosystem management you must first assess the natural resources in and around the management unit.

To assess the surrounding landscape, the Multi-Resolution Land Characteristics (MRLC) Consortium National Land Cover Database was analyzed using ArcView version 9.2 **Geographic Information System (GIS)** software. The land **cover types** found within the Limestone Creek and Upper Tioughnioga River watersheds in which the Unit is located are listed below. This area equates to 283,140 acres or about 442 square miles. For the purpose of this UMP the term landscape will be used to represent this 442 square mile area.

Land Cover for the Landscape Surrounding the Unit (National Land Cover Database 2001):

- 104,701 acres or 37% of the landscape is in **Deciduous** Forest.
- 48,689 acres or 17% of the landscape is in Pasture/Hay.
- 39,120 acres or 14% of the landscape is in Cultivated Crops.
- 18,721 acres or 7% of the landscape is in Shrub/Scrub (**seedling/sapling**).
- 17,195 acres or 6% of the landscape is in Woody Wetlands.
- 15,552 acres or 5% of the landscape is in Developed, Open Space.
- 11,451 acres or 4% of the landscape is in Mixed Forest.
- 10,794 acres or 4% of the landscape is in Evergreen Forest.
- 7,510 acres or 3% of the landscape is in Developed, Low Intensity.
- 2,353 acres or less than 1% of the landscape is in Open Water.
- 2,018 acres or less than 1% of the landscape is in **Grassland**/Herbaceous.
- 1,896 acres or less than 1% of the landscape is in Barren Land (Rock/Sand/Clay).
- 1,822 acres or less than 1% of the landscape is in Developed, Medium Intensity.
- 700 acres or less than 1% of the landscape is in Emergent Herbaceous Wetlands.
- 618 acres or less than 1% of the landscape is in Developed, High Intensity.


Hill and Hollow Unit Management Area
Landscape Assessment Map
CONSTANTIA
VIENNA
VERONA
LYSANDER
BALDWINSVILLE
VAN BUREN
LIVERPOOL
SALINA
SULLIVAN
GEDDES
CAMILLUS
SOLVAY
CAMILLUS
GEDDES
GEDDES
SYRACUSE
EAST SYRACUSE
MINOA
MANLIUS
FAYETTEVILLE
DEWITT
MANLIUS
CHITTENANGO
CANASTOTA
WAMPSVILLE
ONEIDA
LINCOLN
MARCELLUS
ONONDAGA
MARCELLUS
Limestone Creek
Watershed
FENNER
SMITHFIELD
CAZENOVIA
POMPEY
CAZENOVIA
LAFAYETTE
MORRISVILLE
NELSON
EATON
OTISCO
FABIUS
SPAFFORD
TULLY
NILES
TULLY
FABIUS
DE RUYTER
GEORGETOWN
LEBANON
DE RUYTER
SEMPRONIUS
SCOTT
PREBLE
CUYLER
Upper Tioughnioga
River Watershed
TRUXTON
LINCKLAEN
SUMMERHILL
HOMER
HOMER
HOMER
CORTLAND
SOLON
TAYLOR
GROTON
MCGRAW
PITCHER
VILLE
DRYDEN
VIRGIL
FREETOWN
CINCINNATUS
GERMAN
2 1 0 2 Miles
MLZ 1/27/09
N
W
E
S
Legend
Hill & Hollow Unit
Cover Types
Barren Land (Rock/Sand/Clay
Cultivated Crops
Deciduous Forest
Developed, High Intensity
Developed, Low Intensity
Developed, Medium Intensity
Developed, Open Space
Emergent Herbaceous Wetlands
Evergreen Forest
Grassland/Herbaceous
Mixed Forest
Open Water
Pasture/Hay
Shrub/Scrub
Woody Wetlands

Landscape Analysis, based on data from a variety of sources including field observations, shows that:

- 10% of the landscape is in public ownership, which is higher than the Cortland county average of 9.8% and Onondaga county average of 4.5%.
- Less than 7% of the landscape is in seedling/sapling, shrub and brush stage of growth. Seedling/sapling and brush forests are often called early successional forests. According to USDA Forest Service's inventory data the amount of early successional forests has decreased by 32% between 1980 and 1993. This **forest type** is gradually disappearing from the landscape as farms that would naturally revert back into forest are instead developed into building lots. Even-aged management systems have become less favored among landowners, also contributing to the decrease in the amount of young forests. Early successional forests with thick shrubby areas are important habitat for a variety of birds and mammals.
- 58% of the landscape is forested, which is greater than the Cortland county 53% and Onondaga county 48%, but less than statewide average of 62%, (Aldrich & Drake, 1995).
- 32% of the landscape is in agriculture, grassland and pasture, which is greater than the statewide average of 18%, (Alerich & Drake, 1995). Grasslands are important to a variety of field nesting birds and mammals.
- 8% of the forests in the landscape are dominated by **conifers**. Conifer trees provide a variety of special functions for many **species** of wildlife. Conifer forests moderate temperature extremes, which can help provide winter thermal cover. Conifer forests also provide escape cover on a year-round basis for a variety of birds and mammals.
- Most of the private forested areas surrounding the Unit are harvested on a regular basis. As such, the landscape lacks **mature forests** and many of their attributes such as closed canopies, **snags**, **den trees** and **coarse woody material**. Additionally, frequent harvesting doesn't allow trees to grow to biological maturity and become biological legacies. **Biological legacy** trees are defined as trees that are of significant size and age strategically left after harvesting, or that survive natural **disturbances.** Biological legacies grow to full maturity and die naturally, thereby providing coarse woody material, seed, cavities for wildlife and aesthetic value. Leaving **legacy trees** adds to the structural diversity of the forest ecosystem.
- Frequent harvesting on private forests tends to target the commercially valuable tree species like black cherry, sugar maple and red oak. This method of harvesting is reducing the amount of these species on the landscape. The reduction of black cherry and red oak is decreasing the diversity of **mast** as a food source for wildlife.
- Insect and disease infestations are reducing the percentage of beech, butternut and ash on the surrounding landscape. The reduction of beech and butternut is decreasing the diversity of mast as a food source for wildlife.
- A few private properties in the surrounding landscape are being sold and or subdivided. This is resulting in some **fragmentation** of green space and some of the forests in the surrounding landscape. The subdivision or fragmentation of properties can degrade wildlife habitat and alter movement patterns of wildlife.
- A check of the New York Natural Heritage Program and USDA Forest Service data shows that no **old growth** forests are known to exist within the landscape (New York Natural Heritage Program Element Occurrence; 2004: Tyrrell, et al; 1998). Eastern old growth forests are conceptually described as being relatively old and relatively undisturbed by humans (Hunter,

1989). The DEC definition of old growth describes this forest type as: “A convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth, however, it is the presence of all of these factors that combine to differentiate "Old-Growth Forest" from other forested ecosystems. These factors include: An abundance of **late successional** tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring canopy gaps formed by natural disturbances creating an uneven canopy and a conspicuous absence of multiple stemmed trees and **coppices**. Old growth forest **sites** typically are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; show limited signs of human disturbance since European settlement; and have distinct soil horizons that include definite organic, mineral, alluvial accumulation and unconsolidated layers. The **understory** displays well developed and diverse surface herbaceous layers”.

- There are about 2,858 acres of protection and **natural areas** on State Forests, State Parks and County Parks and Forests in the surrounding landscape. Unless there is a dramatic change in management or a catastrophic event, these protection and natural areas over time will develop old growth characteristics.

X. INFORMATION ON THE UNIT

A. The Hill and Hollow Unit

Table 2: Forests of the Hill and Hollow Unit

Common Name	Reforestation Area	Acres
Kettlebail State Forest	Cortland #5	588
Labrador Hollow **Unique Area**	Onondaga #39	1474
Morgan Hill State Forest	Cortland #4	3108
Morgan Hill State Forest	Onondaga #1	2176
TOTAL		**7346**

B. State Forest History

Before the middle of the 19th century, forests had been primarily viewed as an obstacle to civilization; they were something to be cleared out of the way for agriculture, or to be unsustainably cut and exploited for profit. By the 1880s, less than 25% of New York State remained forested.

At the turn of the 20th century, New York State’s remaining forests were spread thin and losing stock. The New York Forest, Fish and Game Conservation Commission warned that the state would run out

of timber within 50 years. The commission had reason to be alarmed. Timber companies were cutting the remaining trees at an alarming rate, leaving bare hillsides to be stripped of soil by erosion.

Forests in all the northeastern states were disappearing fast, but New York was the first to reverse this seemingly inexorable process by beginning to plant **seedlings** to replace trees that had been cut. The commission believed in using the latest science: sustainable forestry, the concept of managing forests for long-term productivity rather than short term profitability. Gifford Pinchot, who later founded the U.S. Forest Service, introduced this new forest management concept to the United States in the early part of the 20th century. He had studied forestry in Europe where timber was grown as a renewable resource on carefully managed **plantation** forests. In 1901, the commission planted the first tree plantation on state land in the Catskills to replace trees that had been logged.

The commission founded New York State's tree nursery system in 1902, the first state tree nurseries in the nation. In their early years, the nurseries supplied seedlings for planting on state land in the Catskills and Adirondacks. Hundreds of millions of seedlings of Norway spruce, white pine, red pine and Scotch pine were planted on State Forests as windbreaks and forest plantations.

In 1911, the Conservation Department, predecessor of today's Department of Environmental Conservation, was created by legislation to consolidate the functions of the Forest, Fish and Game Commission, the Forest Preserve Board, the Water Supply Commission and the Water Power Commission. By combining these commissions into a single Department, the state greatly enhanced its ability to protect the environment and respond to new environmental challenges, such as the rapid abandonment of farmland that began in the 1920s. Many of the farms in New York were on marginal land, and as better land became available out west, agriculture began to decline in New York. When the Great Depression hit, many farmers could no longer make a living on their worn out, unproductive land.

The 1929 State **Reforestation** Act, and the 1931 Hewitt Amendment, authorized the Conservation Department to acquire land outside the Forest Preserve to be used for reforestation. These **State Reforestation Areas**, consisting of not less than 500 acres of contiguous land, were to be "forever devoted to reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber and for recreation and kindred purposes" (Article 9, Title 5, Environmental Conservation Law). The State Reforestation Areas were the beginning of today's State Forest system. Many of the early reforestation areas were established on some of the least productive land in the state. A majority were abandoned farm lands with depleted soils and significant erosion issues. The Conservation Department began a massive tree planting program to restore these lands for watershed protection, flood prevention and future timber production. Today, these areas are covered with healthy forests.

State funding for tree planting fell victim to the Depression, but the federal Civilian Conservation Corps (CCC), founded by President Franklin D. Roosevelt in 1933, rescued the tree planting program in New York. Millions of tree seedlings were planted on the barren soil of the new state reforestation areas, work that provided employment for thousands of young men. FDR was especially interested in

reforestation work, having begun planting his own estate with seedlings from the state Tree Nursery in 1912. During the war years of 1941-1945, very little was accomplished on the reforestation areas. Plans for further planting, construction, facility maintenance and similar tasks had to be curtailed. After World War II, there was a resurgence of tree planting as more farmland fell vacant. Through postwar funding, conservation projects once again received needed attention.

The Park and Recreation Land Acquisition Act of 1960, as well as the Environmental Quality Bond Acts of 1972 and 1986, provided funds for the acquisition of additional State Forest lands, including in-holdings and parcels adjacent to existing State Forests. All of these lands were acquired for the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and recreation.

Past land use practices have left a legacy of impacts on the land and soils, which have influenced later forest development. During the maximum expansion of agriculture, even very poor land was used for farming. When these marginal farms were abandoned, they were sometimes in such poor condition that almost nothing could grow on the ruined soil. After the state acquired these lands, the first step in restoration was to stabilize the eroding soil by planting trees. These seedlings were the beginning of the conifer plantations that were to be widely planted on reforestation areas.

Although these orderly plantations of red pine, Norway spruce or Scotch pine may look artificial to us today, they represent an era when establishment of conifer plantations was the best and most appropriate management practice. Conifer seedlings were able to grow on the damaged soil of abandoned farms, thriving in conditions too poor to support hardwood forest **regeneration**. The conifer plantations were literally the fastest way to get forest on the land. They stabilized erosion, improved watershed protection and slowly restored the depleted organic nutrients in the soil with their fallen needles and branches.

Today, the restoration effort continues. The plantations of red pine and Scotch pine are now reaching the end of their natural or biological life. While these were the correct species to use on the former depleted soils, over the years the soils have been replenished and can now support a more natural forest. The old plantations are now being removed in managed stages, to allow **natural regeneration** of native hardwood and **softwood** species. Forest management today is a complex process that involves **ecosystem** management, habitat enhancement, biodiversity management, **landscape ecology**, carbon sequestration, ecosystem services, and traditional uses.

C. Local History

European settlement in the region began in the late eighteenth century. In 1788, Asa Danforth and his family were one of the first to settle in the area. He established residence in what is now the Town of Onondaga. Onondaga County organized in 1794 and was formed from part of Herkimer County. Cayuga, Cortland and Oswego Counties were all formed from portions of Onondaga County. By 1816 what is now Onondaga County was established. The Town of Fabius was established in 1798. Until 1850, the Village of Fabius was known as Franklinville and was eventually incorporated in 1880.

The first settlement in Cortland County was established in 1791 by Joseph Beebe, his wife and brother Amos Todd. They cleared an area near the present Village of Homer. In 1808, Cortland County was formed from the southern part of Onondaga County. The name was derived from that of the first Lieutenant-Governor of the State, General Pierre Van Courtlandt. The Town of Truxton was settled in 1793 and Cuyler in 1794.

The Tioughnioga River has been an important natural resource in the area for many years. The Indian tribes in the area loved the Tioughnioga for its fish and cane waters. It was also instrumental in the settlement of the area by providing the entry way for early settlers and was the main highway over which needed supplies were brought in and products of the land were exported. The old state road of 1794 was built and passed through the towns of Willet, Virgil and Marathon. Eventually it reached the City of Cortland in 1806. Over the next decade roads were developed between the larger settlements and ultimately replaced the Tioughnioga River as the main travel route.

At the time of first settlement the area was covered by an almost continuous **stand** of northern **hardwoods** mixed with white pine of excellent quality. The settlers cut timber to clear the land for farming. During early settlement farmers obtained additional income by selling wood, maple sugar and other forest products during the winter months. The first sawmill in Cortland county was located in Virgil. Later other sawmills were established in Willet, Taylor and Marathon. By 1844, a total of 103 sawmills, 22 tanneries, 24 gristmills and 17 asheries were in operation. At one time, 1826, Baldwinsville had 15 sawmills in operation, now there are none. Once most of timber was cleared from the land, farming became the dominate land use in the area (The History of New York State).

In the 1880's, Apulia Station became known as the birthplace of cultivated ginseng. George Stanton, who harvested wild ginseng in the town of Fabius, decided to grow ginseng in his garden. He was the first man to successfully cultivate ginseng and was considered the "Father of the Cultivated Ginseng Industry." Numerous ginseng farms were developed in the area. One of the largest raisers in the area, Frank Timerman of Timerman Ginseng Gardens had an enormous ¾ acre ginseng bed. This was in a sheltered clearing on the **edge** of a piece of woodland on the west side of Labrador Pond. Mr. Timerman's house later became a summer home for George Wright and was eventually dismantled in the 1980's when the state took over the Labrador Hollow Unique Area (Fabius Historical Society).

The harsh economic times and the onset of the Great Depression in the 1930's drove many upland farms into bankruptcy. Existing evidence of the early settlers includes stone walls, foundations, scattered quarries, small family cemeteries and portions of original road systems. Vegetative remnants from homesteads include fruit trees, introduced ground cover and flowers.

The State Reforestation Law and the Hewitt Amendment of 1931 provided funding to acquire abandoned farmland and create State reforestation areas. As a result, New York State purchased Kettlebail State Forest (Cortland #5) between 1931 and 1947. These purchases totaled 2,337 acres. In 1948, 1,622 acres of Kettlebail State Forest was given to the State of New York College of Environmental Science and Forestry to create Heiberg Forest. An additional 120 acres were removed from the forest to add to Labrador Hollow Unique Area in 1984. Two additional purchases in 1984

and 1985 brought the forest to the current size of 588 acres.

Morgan Hill State Forest (Cortland #4) was purchased between 1931 and 1965. 307 acres were removed from the forest to add to Labrador Hollow Unique Area in 1984. Morgan Hill State Forest (Onondaga #1) was purchased between 1931 and 1937 with an additional purchase in 1974.

State Forest (Cortland #13) was purchased in 1938 and was 501 acres in size. In 1963 the College of Forestry at Syracuse requested transfer of Cortland 13 to their Jurisdiction for addition to the Tully Forest. Department records show that this transfer was never completed. Previous owners of the properties in the Unit are listed in Appendix I.

Soil erosion was a serious problem on the newly acquired lands. To solve this problem, a massive tree planting campaign began. The labor used to establish these plantations was provided by the Civilian Conservation Corps (CCC). This work program was established by the Roosevelt Administration to create jobs. CCC Camp S-118 was established in Truxton and planted trees on the State Forests in the area. CCC Camp S-118 planted nearly all of the trees in the Unit. This was a monumental task since each tree was planted by hand.

Table 3: Summary of Tree Planting in the Hill and Hollow Unit.

State Forest	Planting Years	Acres Planted	# Trees Planted	Man Days of Labor
Kettlebail	1931-1940	1409	1468631	7500
*Morgan Hill (Cort#4)	1931-1953	2233	2399846	8178
Morgan Hill (Onon #1)	1931-1941	1799	2465787	10390
Unit Total		**5441**	**6334264**	**26068**

*Conservation Department employees planted 25,300 tree seedlings on 42 acres in 1953.

D. Labrador Hollow Unique Area History

The topography of Labrador Hollow is responsible for its unique character. Glacial action carved out the pond and the valley, which runs north-south. The valley floor is only about one half mile wide and its walls rise abruptly for several hundred feet. Much of the area is shaded for most of the day, resulting in plant life that is usually characteristic of high mountain bogs found in the Adirondacks.

To preserve the unique character of Labrador Hollow, the DEC purchased land for and established the Labrador Hollow Unique Area in April of 1978. The area was purchased under the authority of Section 3-0305 of the Environmental Conservation Law and Chapter 673 of the laws of 1973, (the Environmental Quality Bond Act of 1972). Funding for the acquisition was provided by the “Unique Area” portion of the act.

The area was assigned to the State Nature and Historic Preserve Trust under the provisions of Article 45 of the Environmental Conservation Law. The assignment required Legislative Action, and before

such action, a management plan had to be written and approved by the Trust. A volunteer Labrador Hollow Advisory Council was formed and charged with preparation of a management plan.
Labrador Hollow Advisory Council Members:

Penny Holman, Chairperson	Dr. Maurice M. Alexander, Vice-chairperson	Sid Bell
James V. Denkenberger Jr.	Dr. John A. Gustafson	Leland Houck
Conrad J. Strozik	Ex-officio member & Recording Secretary David A. Files (DEC)	

The Council, along with input from local citizens developed short term and long range permitted uses of the area. The Labrador Hollow Unique Area management plan was completed and submitted to DEC Commissioner Robert F. Flacke on September 12, 1979. In March of 1992 the plan was updated by DEC staff and the Labrador Hollow Advisory Council.

In the early 1980's, the Forest Ranger cabin from the Morgan Hill Fire Tower site was moved to Labrador Hollow. The cabin was initially used as a base of operations for an Assistant Forest Ranger who patrolled the Unit. It has been more recently used by volunteers for group meetings and environmental education.

E. Geographical Information

60% of the Unit is in Cortland County and 40% in Onondaga County. Most of the Unit is in the Susquehanna River watershed. However, a very small portion is in the St. Lawrence River watershed.

Table 4: Breakdown of the Hill and Hollow Unit by County.

State Forest	Town(s)	Acres Cortland Co.	Acres Onondaga Co.	Total
Kettlebail	Truxton & Fabius	588	0	588
Labrador Hollow U.A.	Truxton & Fabius	714	760	1474
Morgan Hill (Cort #4)	Cuyler, Truxton & Fabius	3085	23	3108
Morgan Hill (Onon #1)	Fabius	0	2176	2176
TOTAL	**Town(s)**	**4387**	**2959**	**7346**

This area is part of the Central Allegheny Plateau section of south central New York State (Keyes, Jr. 1995). Elevations in Cortland and Onondaga Counties range from 350 to 2,100 feet. The lower extremes are found in the northern part of the Onondaga County and along the Tioughnioga River while the higher elevations are scattered across the many hilltops. The highest point on the Unit is Morgan Hill which has an elevation of 2,020 feet. The lowest point on the Unit is on the south end Labrador Hollow Unique Area along Labrador Creek, this point has an elevation of 1,190 feet. Topography on the Unit varies from flat to steep. Slopes on the Unit are classified as follows:

- 36% of the Unit has slopes between 0 and 9%.
- 33% of the Unit has slopes between 10 and 15%.
- 31% of the Unit has slopes greater than 15%.

Average annual rainfall for the area ranges from 39 to 41 inches. Average annual temperature is

about 46 degrees Fahrenheit. Annual growing season is about 142 days, (Soil Survey of Cortland County, NY 1961).

F. Geological Information

1. Geologic History

The topography of New York has been shaped by a complex and turbulent geologic history, including multiple **tectonic plate** collisions, uplift and erosion of several mountain ranges, volcanic activity, earthquakes, **igneous intrusions**, regional metamorphism, advancing and retreating sea levels, deposition and erosion of huge deltas, and even a huge meteor strike 350 million years ago. Against this changing backdrop, plants and animals evolved, first in the ocean and later on land. New York has one of the world's best fossil records of the Devonian Period (408 to 360 million years ago), with remarkably well preserved marine sequences, and also non-marine fossils that show the transition to land. Most of the bedrock in New York is more than 250 million years old, younger rocks having been almost completely removed by erosion.

New York's present landscape is dominated by the impacts of the last ice age. Only a small area of the southwestern part of the state escaped glaciations (the southwest corner of the High Allegany Plateau **Ecoregion**). Glaciers shaped the high peaks in the Catskills and Adirondacks, changed hydrology, formed huge lakes, and covered much of the state with a layer of glacial till. Where huge glacial lakes once held melt-water, there are now thick sand and clay deposits such as those in the Hudson Valley and parts of Central New York. Remnants of ice age features, such as sand dunes, river sand and gravel deposits, and muck-filled bogs can be found in many parts of the state. But the most ubiquitous material is glacial till, the rough mixture of rocks, sand and clay scraped up and bulldozed by the glacier's ice. This layer of raw debris was left behind as the ice retreated, sometimes in oriented hills called **drumlins**, more often as an uneven layer over the underlying bedrock. Glaciers erased the existing forests and landforms of New York so thoroughly that there is almost no trace of the pre-glacial ecology.

Glaciation resets the ecosystem clock. Everything has to start over again, beginning with **pioneer** plant species that colonize the raw rock and sterile mineral debris. New soils began to develop as organic matter accumulated with subsequent plant **successions**. Tree species, led by spruce about 11,000 years ago, migrated back north from their glacial refuges. As species migrated, they formed many forest types, some of which are no longer found today. Trees migrated as individual species, and moved at different rates depending on how successfully they dispersed their seeds. Some of the early trees arriving soon after white spruce included black spruce, elm and black ash. One of the last major species to arrive was chestnut, reaching New York about 2,000 years ago.

State Forests are often on some of the poorest farmland in the state, land that has been little softened by soil since the retreat of the glaciers. For example, some of the sandy soils in northern NY had only a thin organic layer which was quickly destroyed by farming. The result was sand drifts, which can be seen in early photographs of State Forest lands acquired in the 1930s. Hills with very thin rocky soils, sometimes only a few inches above bedrock, also proved to be difficult sites for farming. Today, these sites are forested and are slowly regaining **organic matter** lost to erosion.

Bedrock geology forms the framework for the landscape, influencing the drainage patterns, the elevation, shape and orientation of much of the topography, and also the local climate. For example, some of the topography of New York shows a strong northeast-southwest orientation that is derived from underlying bedrock structures. Bedrock also influences soil and water chemistry. Most of the bedrock in New York, including shale, sandstone and most **metamorphic rock**, produces acidic soils. Where the bedrock is limestone or marble, soils are high in calcium. The difference between forest types growing on acid and calcareous soils can be dramatic. Where sandstone bedrock is next to limestone bedrock, the change in vegetation is often abrupt. Pitch pines, chestnut oaks, blueberries and other acid-loving plants will not grow on limestone. Other species are more tolerant, notably red cedar which grows well on rocky sites of any type. For red cedar, lack of shade from competition is a more important factor than soil chemistry.

Location and topography is critical for a tree because, unlike an animal it cannot physically move to another site. Many elements of a site affect a tree, including aspect, elevation, moisture availability, soil thickness, rooting depth, wind exposure, frost effects and soil chemistry. Different species have different site requirements, and the health and vigor of a tree ultimately depends on where it grows. Encouraging the growth of tree species on sites with optimal conditions is one of the important benefits of forest management. For example, sugar maple growing on a south-facing dry slope is likely to be stressed by drought and heat, and more susceptible to insects and disease. However, many oak species would thrive on such a site, since they prefer warm well drained conditions.

Foresters must rely on their knowledge of the site requirements for each tree species and forest **community**, so their management efforts emulate natural systems as closely as possible, and result in resilient and healthy forests. In the example above, a harvest on a south-facing dry slope would focus on removing species which would be stressed, such as sugar maples, and perpetuating species which do best under dry conditions, such as oaks. This purposefully parallels the natural successional changes nature would follow and contributes to the overall ecological health of the area.

2. Surface Geology

Surficial deposits overlying bedrock in the Unit are predominantly glacial till with occasional bedrock outcrops located intermittently on the flanks and crests of ridges and hills and glacial outwash and recent alluvial deposits in the stream valleys. There are also a few intermittent **kame** deposits in the stream valleys in the UMP area.

3. Soils of the Hill and Hollow Unit

Several soil series are found on the Unit. The major soils types include Mardin, Lordstown, and Volusia which are also common throughout Cortland and Onondaga Counties.

- 41% of the soils in the Unit are Lordstown which are medium textured, strongly acid soils that occur on the highest ridges in the uplands and on the steep walls of the valleys. The soils are well drained. They have formed in thin glacial till derived from olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. Depth to bedrock ranges from 10 to 40 inches. In places, the bedrock outcrops. In some areas shallow soil fragments of flagstone, as

much as 8 to 10 inches in diameter, are in the soil material and scattered over the surface.

- 25% of the soils in the Unit are Mardin which are medium textured soils that are strongly acid and moderately well drained. They have a hard, compact **fragipan** that begins at depths between 15 and 20 inches. The soils are on sloping to rolling areas of the uplands. They have formed in glacial till of firm channery silt loam. The till was derived from slightly acid olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. The fragipan, which somewhat restricts internal drainage, makes the soil cold and wet in the spring and limits the depth to which roots can penetrate.
- 18% of the soils in the Unit are Volusia which consist of strongly acid, medium textured soils that are somewhat poorly drained. They have formed from firm, medium textured, glacial till that was moderately to slightly acid. The glacial till was derived from olive-gray to dark grayish brown siltstone, sandstone and coarse textured shale. The soils have a hard, dense, firm fragipan at depths of 8 to 14 inches. These soils occupy gently sloping to sloping areas in the uplands. The fragipan limits the depth to which roots can penetrate. It also causes the soils to be wet and cold in the spring and very dry most of the rest of the growing season.
- 16% of the soils in the Unit are classified as "other" and include: Alden & Birdsall, Alluvial, Arnot, Aurora-Farmington-rock outcrop, Bath-Chenango, Chippewa, Fredon, Halsey, Holly, Howard, Langford, Lansing, Manlius, Middlebury, Muck, Palmyra, Tioga, Tuller, Valois & Howard soils.

About 46% of the soils in the Unit are classified as well drained, 28% moderately well drained and 26% poorly drained. The depth to mean high water table varies from 0 to 5 feet.

4. Bedrock Geology

Bedrock underlying the Finger Lakes region and Allegheny Plateau of the Southern Tier of New York is inclusive of **sedimentary rock** units deposited in association with ancient seas and their marine-fluvial-deltaic environments of deposition during the Cambrian (550-500 million years ago (mya)), Ordovician (500-440 mya), Silurian (440-400 mya) and Devonian (400-350 mya) Periods of the Paleozoic Era.

Younger bedrock units deposited during the post-Devonian periods (such as Mississippian and Pennsylvanian periods) have been subsequently eroded away by erosional and glacial processes. Underlying the Paleozoic rocks are pre - Paleozoic Era rocks or Pre-Cambrian rocks generally considered to be composed of igneous and metamorphic rocks. These rocks are generally referred to as "basement" rocks. The bedrock outcropping or sub-cropping beneath surficial deposits on the hills in the UMP area consists of shales, with minor siltstones of the Upper Devonian age Genesee Group. The Tully Limestone and shales of the Middle Devonian age Hamilton Group are exposed in the stream valleys within the Unit.

5. Geologic Structure

Regional structure of the area is a **homocline** that dips (is becoming deeper) to the south-southwest at an average dip angle of about one (1) degree or deepens 100 feet per each mile traveled to the south-southwest. The *Geologic map of New York-Finger Lakes Sheet #15, 1970*, depicts progressively

older rock units outcropping farther to the north, confirming the southerly dip of strata in the region.

Lineaments, faulting and **anticlinal/synclinal** structures in the region generally trend in a northeast to southwest direction. North-south trending faults have also been identified in the region. These structures are thought to be due to compressional stress and resulting strain associated with plate tectonics and the opening of the Atlantic Ocean Basin that began at the end of the Paleozoic Era.

G. Forest Resources

1. Inventory and Assessment Procedure

To make sound management decisions, we must assess the present condition and composition of the natural resources on the Hill and Hollow Unit. State Forest inventory data was used to assess resources on the Unit. To ensure that the data was current, re-inventory was done on Kettlebail State Forest in 2002, Labrador Hollow Unique Area in 2003, Morgan Hill State Forest, (Onon #1) in 2007 and Morgan Hill State Forest, (Cort #4) in 2008. State Forest inventory data was collected on tree species, forest stand size, type, **stocking**, volume, and forest stand age structure.

The Cortland Forestry Office used a supplemental inventory datasheet to capture natural resource and land management features not typically collected during a forest inventory. Supplemental inventory attribution guidelines were developed and adopted to ensure that the data was organized in consistent manner. All inventory data was collected for each individual forest stand in the Unit. The following are attributes collected as part of the supplemental inventory process:

- Hydrologic resources - wetlands, ponds, streams, spring seeps, waterfalls, vernal pools, erosion issues & beaver dams.
- Herbaceous plants - sensitive ferns, blue cohosh, maiden-hair fern, trout lily & orchids.
- Forest health observed - decline, **blowdown**, **crown** damage or insect/disease issues.
- Recreational activity such as informal camping, formal campsites, trails for individuals with mobility impairments, formal trails, informal trail use and illegal use.
- Forest treatment recommendations - recommended treatment based on field observations.
- Public safety hazards such as open water wells.
- Forest treatment interval - treatment interval in years for a given forest stand.
- Forest treatment priority - prioritizes stand level treatment needs.
- Stand age structure - Specifies observed **stand structure** at the time of inventory; even-aged or uneven-aged. Also provides a field for future (desired) age structure.
- Wildlife observed during the inventory/field inspection.
- Evidence of past management - Identifies any past management activity as indicated by old stumps, tops, **skid trails** or tree marking paint.
- **Protection Areas** - forest land excluded from forest management, oil & gas exploration and some recreational activities to protect sensitive sites such as steep slopes, wet woodlands, unique land features, rare and endangered plant or animal habitats and **riparian zones**.
- Early successional habitats - Identifies areas that are or could be managed for species requiring early successional habitat.
- Oil & gas exploration conflicts such as hydrologic, steep slopes, recreation, natural areas, archeological or highly erodible soils.

- Archeological resources - old foundations, stone walls or artifacts over 75 years old.

As part of the supplemental inventory process, the natural heritage program data and archaeological data on the DEC's Master Habitat Data Base is referenced to determine the presence of rare and endangered plants and archaeologically significant sites. The Department would also welcome public input that could add to the supplemental inventory database. The supplemental inventory database will be appended each 10 year forest inventory cycle, or when a forest stand is actively managed. As a matter of policy DEC Forestry staff will collect and analyze updated stand data prior to marking an area for forest management treatment. The State Forest inventory data was entered into the Arc View Geographic Information System (GIS) software for performing **spatial analysis**. Spatial analysis is perhaps best defined as a process to integrate and analyze various sets of natural resource data in a geographical context to represent where the resources occur on the ground (Goodchild, 2001).

2. State Forest Inventory - Data Analysis

Table 5 illustrates the present land uses and cover types on the Unit.

Table 5: Present Land Uses and Cover Types on the Hill and Hollow Unit

	Average Stand Diameters					
Land Classification*	**Total Acres**	**0-5" acres**	**6-11" Acres**	**12"-17" Acres**	**18"+ Acres**	**% of Total**
Utility Lines	4	-	-	-	-	0.05
Shale Pits (5)	4	-	-	-	-	0.05
Roads	95	-	-	-	-	1.29
Fields	97	-	-	-	-	1.32
Ponds (3)	118	-	-	-	-	1.61
Shrub/Brush	43	43	-	-	-	0.59
Wetlands (forested)	291	-	-	-	-	3.96
Wetlands (open)	117	-	-	-	-	1.59
Conifer Plantations	2092	4	196	1892	-	28.48
Conifer Plantations w/ Hardwood	865	-	190	675	-	11.78
Hardwood/Natural Conifer Mixed	526	11	141	374	-	7.16
Hardwood	3094	181	800	2113	-	42.12
TOTAL	**7346**	**239**	**1327**	**5054**	**0**	**100**

* Key to Land Classifications:

Shrub/Brush - early successional communities containing vegetation smaller than 1" DBH.

Wetlands - areas that may be open wet meadows or lightly wooded swamps.

Natural Conifers - naturally established stands that consist of conifer trees.
Conifer Plantations - conifer trees that have been established by planting.
Conifer Plantations w/Hardwood - planted conifers growing mixed with **hardwoods**.
Natural Hardwood/Conifer - naturally established stands of conifers growing mixed with hardwoods.
Natural Hardwood - naturally established stands that consist of hardwood trees.

3. Stages of Forest Development
Forested areas were classified by the average diameter of the trees present:

- 4% - Seedling-sapling/brush, early successional (average stand diameter 0"-5")
- 20% - **Poletimber** (average stand diameter 6"-11")
- 76% - **Sawtimber** (average stand diameter 12"+)

(Analysis represents land in forest cover & excludes roads, shale pits, parking lots & non-forest land).
The majority of the forest stands have trees between 6 & 17 inches **diameter at breast height**.

4. Forest Age Structure
The data was then used to examine the existing age structure of each stand on the forests:

- 82% of the forest stands are **Even-aged stands**
- 18% of the forest stands are **Uneven-aged stands**

(Analysis represents land in forest cover & excludes roads, shale pits, parking lots & non-forest land).

H. Water Resources
1. Wetlands
There are 38 Federally-designated Palustrine wetlands on the Unit totaling about 380 acres.

In New York, wetlands are legally protected by the State if they meet the criteria found in section 24-0107 of the Freshwater Wetlands Act and occupy at least 12.4 acres. Labrador Hollow Unique Area contains parts of two Class II State-designated freshwater wetlands totaling 336 acres. The 336 acres that are on Labrador Hollow Unique Area are part of larger wetland complexes designated TUL-12 and TU-14. Morgan Hill State Forest contains a Class II State-designated freshwater wetland totaling 20 acres. The wetland complex is designated TUL-13.

The 356 acres of State-designated wetlands are also listed as Federally-designated wetland and are included in the 380 acres mentioned above. Additionally, there are 28 acres of unclassified wetlands on the Unit that were identified during the forest inventory process.

2. Streams
Sections of 19 streams totaling 14.4 linear miles lie within the Unit. Of this total, 9 streams totaling 8.5 miles are classified c(t) or higher and protected by Article 15 of the Environmental Conservation Law. Title 5 of Article 15 of the Environmental Conservation Law was enacted to preserve and protect New York State waters. All but one of the streams in the Unit are in the Upper Tioughnioga River watershed. One small stream on Morgan Hill State Forest, north of Spruce Pond is in the Limestone Creek watershed.

Individual stream classifications within the Susquehanna River Drainage may be found in 6NYSCRR Part 931 of the Environmental Conservation Law. A listing of stream sections located within each Forest in the Unit can be found in Appendix V.

3. Spring Seeps and Vernal Pools

Spring seeps are areas where groundwater emerges from underground to the surface. They are valuable to wildlife, particularly wild turkey because in severe winters they provide snow-free feeding sites and are among the first sites to provide green plants in spring. Spring seeps are used by amphibians such as the Jefferson salamander, spotted salamander and by **neotropical migratory birds** such as the veery and wood thrush.

Vernal pools are small areas that are wet in the spring of the year. The pools derive their name from vernalis, the Latin word for spring, because they result from various combinations of snowmelt, precipitation and high water tables associated with the spring season. The pools tend to occur in small depressions and while many dry up in late summer, a few have water year-round. By definition, vernal pools are free of fish and can support a rich community of amphibians and invertebrates that would be difficult to sustain if fish were present.

4. Ponds

Table 6: Ponds on Hill and Hollow Unit.

Forest	Name	Size (acres)
Labrador Hollow Unique Area	Labrador Pond	100
Morgan Hill State Forest	Shackham Pond	14
Morgan Hill State Forest	Spruce Pond	4
Total		**118**

All three ponds provide fishing opportunities as well as valuable habitat for waterfowl, various mammals, snakes, salamanders, frogs and aquatic invertebrate insects such as dragonflies.

I. Fishery Resources

No state listed endangered, threatened or special concern fish species are known to inhabit waters in the Unit. The three ponds provide some fishing opportunities.

Labrador pond is a very shallow 100 acre pond that was carved out by glacial action. Some older deeds refer to Labrador Pond as Black Lake. The pond has maximum depths of 3 to 4½ feet with a deep layer of organic material covering the bottom. Anoxic conditions generally occur in shallow ponds with an abundance of organic material. Once permanent ice cover forms, pond water can no longer be re-oxygenated at the surface. Through the winter, aerobic decay of organic matter, along with respiration of plants and animals, depletes the limited oxygen supply under the ice. Depending on the amount of organic matter, duration of ice cover, and the depth of snow, complete exhaustion

of oxygen can occur. A heavy snow cover will exacerbate the situation by blocking light penetration and shutting down any photosynthesis which would otherwise add oxygen to the water. This condition can render a pond incapable of supporting any fish through the winter in some years. Some fish, like bullheads, are more tolerant of low oxygen levels than other fish and larger fish will usually succumb before smaller ones. Labrador pond fisheries surveys were done in 1935, 1954 and 1988. Species found in the surveys:

- yellow perch, (Perca flavescens)
- pumpkinseeds, (Lepomis gibbosus)
- brown bullheads, (Ictalurus nebulosis)
- bluegills, (Lepomis macrochirus)
- American eel, (Anguilla rostrata)
- chubsuckers, (Erimyson oblongus)
- carp, (Cyprinus carpio)

The 1935 and 1954 surveys used gill nets as sampling tools and found that chain pickerel and largemouth bass were also present. The 1988 survey used eletrofishing gear and no pickerel or bass were found indicating that if they were still present, their numbers were low. Fishing in Labrador pond is permitted only from a boat or from the fishing pier. To protect the shoreline vegetation, fishing from the shoreline is prohibited.

Shackham Pond is a 14 acre impoundment with a maximum depth of 8 feet and is located off Shackham Road. Limited fisheries data indicates that the pond supports a good population of brown bullhead but it is unclear if other species are present.

Spruce Pond is a 4 acre spring fed impoundment. Onondaga County stocks Spruce Pond annually with 600 brook trout near the end of March and 700 rainbow trout in the beginning of May. All of the trout come from Carpenter Brook Fish Hatchery.

All of the streams on the Unit are small headwater streams which likely support a minimal level of sport fishing. Although few formal fisheries assessments have been conducted since the 1930s on some of the streams, it is likely that the fish communities are composed of the typical species associated with headwater streams in the Susquehanna River drainage. Species typically found in these waters during surveys in the 1950s and 1970s include mottled sculpin, longnose dace, blacknose dace, and creek chub.

Several of the streams in the Unit, Kenney Brook, Labrador Creek, Shackham Brook and three of its tributaries, Morgan Hill Creek and two unnamed streams are designated trout streams which likely support modest numbers of native brook trout. Based on their size, several other streams in the Unit may also be capable of supporting trout. Although none of these streams likely support many large fish, it is probable that they are important spawning and nursery areas for trout. Fishing for wild brook trout on the small headwater streams of the Unit is limited but probably does occur. As such, stocking of hatchery raised trout will not be considered in any of the stream segments in the Unit.

J. Wildlife Resources

The Hill and Hollow Unit and surrounding landscape are home to a wide range of wildlife. The State Forest inventory procedure was enhanced to include collection of some data related to wildlife. We have also relied on several peer reviewed resources and surveys to predict which species can be potentially expected on the State Forests.

The New York GAP Analysis Project, U.S. EPA's Monitoring and Assessment Program, and NY Herp Atlas studies were combined with field observations to help obtain a "snap-shot" of the wildlife that potentially frequent the State Forests. The United States Geological Survey states that gap analysis is a scientific means for assessing to what extent native animal and plant species should be protected. It can be done at a local, regional, state, or national level.

The goal of gap analysis is to maintain the highest level of biodiversity possible. This can be accomplished by enhancing or creating habitats that support rare and **endangered species** and hot spots of **species richness** in a network of conservation areas. Also, gap analysis strives to keep common species common by identifying and incorporating those species and plant communities that are not adequately represented in existing conservation lands. Common species are those not currently threatened with extinction. By identifying their habitats, gap analysis gives land managers, planners, scientists, and policy makers the information they need to make better-informed decisions when identifying priority areas for conservation. Gap analysis came out of the realization that a species-by-species approach to conservation is not effective because it does not address the continual loss and fragmentation of natural landscapes. Only by protecting regions already rich in habitat, can we adequately protect the animal species that inhabit them.

To help assess biodiversity, the NY GAP Project uses the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP) hexagon mapping unit. EMAP is a national research program that is developing the tools necessary to monitor and assess the status and trends of national ecological resources. EMAP's goal is to develop the scientific understanding for translating environmental monitoring data from multiple spatial and temporal scales into assessments of current ecological condition and forecasts of future risks to our natural resources. EMAP aims to advance the science of ecological monitoring and ecological risk assessment, guide national monitoring with improved scientific understanding of ecosystem integrity and dynamics, and demonstrate multi-agency monitoring through large regional projects. EMAP develops indicators to monitor the condition of ecological resources and investigates designs that address the acquisition, aggregation, and analysis of multiscale and multilayer data (http://www.epa.gov/emap/, 7/23/04).

The New York GAP Analysis Project, which was developed as part of a nationwide initiative by the University of Idaho, uses predictive modeling to map species that breed or use habitats in a given landscape. To predict their distributions, species are associated with mapped habitat characteristics using computerized GIS tools. The resulting maps are checked for accuracy against verified checklists and public reports of species occurrences and peer reviewed by experts species by species (http://www.gap.uidaho.edu/about/gap_fs2004.pdf, 2004). The ability to successfully map natural communities and species in terrestrial as well as aquatic environments is the result of recent

advances in science, technology, and effective partnering of federal, state and private conservation agencies.

The Hill and Hollow Unit is within EPA EMAP hexagons 354 and 384. The hexagons are based on the EPA's global hexagonal grid system. Each hexagon is about 160,200 acres in size, or about 250 square miles. The information provided by this work will help guide the future management of the Unit.

1. Reptiles and Amphibians

The Hill and Hollow Unit is within NY Herp Atlas quadrangles Cuyler, DeRuyter, Truxton and Tully. The NY Herp Atlas found that 26 species of reptiles and amphibians are within the 139,000 acre quadrangles that comprise and surround the Unit (see Appendix II). Amphibians and reptiles, referred to as herps from the branch of science called herpetology, are vertebrates like birds and mammals, but they are fundamentally different in one important way. Herps are cold-blooded, whereas birds and mammals are warm-blooded. Herps derive body heat from external sources, they do not need to feed regularly and can be inactive for extended periods of time. Amphibians do not have scales, feathers or fur, so most must stay moist to survive. Reptiles are covered in scales and are less vulnerable as a result. Temperature and moisture conditions regulate when and where amphibians and reptiles are found and active. Many herps are dependent on different habitats seasonally. Herps as a group are relatively small species with a limited capacity to travel great distances or at a great pace. As such their existence and survival is strongly tied to local conditions. For example many frogs and salamanders in the Northeast breed in ponds or vernal pools but otherwise spend the rest of their lives in the terrestrial environment, usually in association with hardwood forests (Partners in Amphibians and Reptile Conservation, 2003).

While encounters with some herps, such as frogs or toads can heighten some people's trips a field, the herps as a group include many species which often go unnoticed other than to those specifically looking for them. Despite this, the herps are an important group, with their status providing a signal of the ecological health of a site. Naturalists, scientists and land managers agree that habitat alterations and degradation are the primary cause of reptile and amphibian declines in the northeast. Activities such as poorly planned or un-managed logging, poor agricultural practice and urbanization, along with wetland destruction and stream channelization all pose threats to many species. This plan will seek to ensure that the herp species present on the area will maintain viable populations. Actions to protect vernal pools, wetlands and water courses should help serve this purpose.

2. Mammals

The NY Gap Project (described above) predicts or confirms 51 species of mammals in the landscape in and around the Unit, (see Appendix III). The range of mammals present includes small obscure species rarely noticed by people, such as some small rodents, to larger mammals such as raccoons and deer which are fairly routinely seen and influence peoples' experiences on the area. There are no mammal species identified on the Unit which are recognized as having special management needs. This plan will seek to ensure all **native species** remain present and in a few instances seek to maintain or enhance the positive, or minimize the negative, values of some of the species present.

3. Birds

The 2nd Breeding Bird Atlas lists 126 species of birds as possible, probable or confirmed in the landscape in and around the Unit. The NY Gap Project predicts or confirms 167 species of birds in the landscape in and around the Unit. Appendix IV lists a comparison of the 2nd Breeding Bird Atlas, the NY Gap Project as well as listing the New York Legal Status.

The opportunity to hear and see birds enhances the field experiences of many people. There are several species of birds identified on the Unit which are known to be suffering range wide declines. The Unit and landscape surrounding the Unit have the potential to address the needs of two **suite**s of these birds, those needing **early successional habitat** and those needing expanses of woodlands.

4. Major Game Species

Several game or furbearer species exist on the Unit. A few species of high importance with regard to use demands, management needs or potential are discussed below.

White-tailed Deer

White-tailed deer are an important component of the Unit's fauna, both for their recreational value and their capacity to impact other resources and human activities and interests. Deer populations in the State are managed in Wildlife Management Units (WMUs). The entire Hill and Hollow Unit lies in Wildlife Management Unit 7M. The Department uses Citizen Task Forces (CTF) to set a WMU's deer population objective. The CTF process convenes representatives of various community interests, i.e. farming, forestry, hunting, highway safety, ecology, small business and asks them to share interests and concerns and ultimately make a recommendation on the desired deer population level for a WMU - more, less, or the same. This process seeks to obtain community view on appropriate deer numbers and requires compromise by many participants - not all interests can be fully satisfied.

The most recent Citizen Task Force (CTF) for WMU 7M was completed in early 2006. The CTF recommended the 7M Unit's deer population be reduced by 10%. Major issues influencing this recommendation were damage to agriculture and impacts on forest regeneration. The recommendation resulted in the Buck Take Objective (BTO) for the unit being reduced nearly 30% from that set by the previous CTF held in 1999. The unit's new BTO is 2.5 bucks per square mile. The BTO is the average number of bucks per square mile expected to be taken when the deer population is at the level recommended by the task force. The Department's Bureau of Wildlife monitors the deer population and annually adjusts the quota of deer management permits available to hunters striving to decrease or maintain, as appropriate, a unit's deer population to the level recommended by a task force.

Deer harvest figures for the period 2001-2009 for WMU 7M and for the towns in which the bulk of the Unit lies are provided in Appendix VII. The most recent trend evident in the data is the decline in numbers in the early 2000s which was in part induced by severe winters of 2002 and 2003 and a slight rebound evident in the last two years.

Wild Turkey

Wild turkey can be found throughout the Unit as the forests and fields found in the landscape provide excellent food and cover. In the spring and summer, adult wild turkeys feed on wild leeks, roots, fruits, grasshoppers, dragonflies and snails. During the winter, the animals feed on acorns, seeds and left over fruits. In agricultural areas, they also feed on manure, silage and any residual grains. The bird has made a remarkable recovery after disappearing from the State around the mid-1840's as the landscape was cleared for farmland.

As farming declined on the infertile hilltops, the land gradually reverted back into brush and forest. By the late 1940's, much of New York's southern tier was again capable of supporting turkeys. Around 1948, wild turkeys from a small remnant population in northern Pennsylvania crossed the border into western New York. These were the first birds in the State after an absence of 100 years. Beginning in 1959, these turkeys were the source of birds for a trap and transfer program begun by the New York State Conservation Department, which accelerated the reestablishment of turkeys across most of the state (DEC Bureau of Wildlife, NYS Chapter of the National Wild Turkey Federation, 2004).

Humans have been an important predator of wild turkeys for many thousands of years and are part of the region's natural heritage. This wonderful bird is now legally protected as a game species with provisions for spring and fall turkey hunting seasons, which are closely monitored by State biologists. This program has helped maintain healthy turkey populations throughout most of the State. Turkey will benefit from actions intended to benefit species needing early successional habitat.

Ruffed Grouse and Woodcock

In the early 20th century, farm abandonment and the recovery of forests from unregulated logging and fires produced habitats which probably resulted in the greatest abundance of grouse in recent times in most of the northeastern United States. But as forests mature, they lose the habitat qualities that ruffed grouse require. Continued loss of early successional forest habitats are likely on private forest lands as ownership **parcelization** increases resulting in average parcel size decreasing. Smaller parcels are more difficult to manage, often resulting in changes in landowner goals and objects. For example, very few landowners are willing to do heavy cutting, needed to create early successional forest habitats, within sight of their homes. Both ruffed grouse and American woodcock depend on shrub-dominated and young forest habitats (Dessecker, McAuley). The high tree and shrub stem densities characteristic of these habitats protect them from predators and enable local populations to attain levels substantially greater than on landscapes dominated by mature forest (Sepik and Dwyer, 1982). In many regions, ruffed grouse and woodcock numbers have declined as forests have become more extensive and older.

Ruffed grouse and woodcock are both listed as species of "greatest conservation need" in the state's Comprehensive Wildlife Conservation Strategy, (NYSDEC 2006). They are two of many birds species which would benefit from the creation and maintenance of early successional stage habitats. Their numbers can often be readily enhanced or restored by creating habitat through heavy forest regeneration cutting on a regular basis or through the use of prescribed fire. Forest stands with low to moderately low potential productivity that have aspen as an existing component are good candidates for grouse and woodcock habitat management. The overall goal is to provide a diversity of

age classes of aspen to meet the food and cover requirements in a manner consistent with their limited mobility (The Ruffed Grouse Society, 2005).

Black Bear
The Hill and Hollow Unit is within the historical range of the black bear and the reforestation of New York State over the last 100 years has seen the current range of bears steadily expand. Sighting of bears on or near the Unit are most often young, wandering males with the nearest well established bear population some distance off. Current trends and management, of both habitat and bears, would likely result in bears becoming more common in the area. Black bears thrive in areas with extensive woodland cover, particularly woodlands with abundant sources of hard and soft mast from plants such as oaks, beech, black cherry, wild blueberry, elderberries and blackberries. Black bears are an adaptable species and also use open and developed areas, particularly if some patches of heavy cover are nearby. If a healthy population of black bears becomes established on or near the Unit and conflicts with humans occur, management of this species may need to be considered.

Beaver
Beaver populations in New York are abundant and their populations are secure. Beaver require small to large slowly flowing brooks, streams or rivers that are usually, but not necessarily, bordered by woodland (DeGraff and Rudis, 1986). There are several small streams and their associated **flood plains** that provide good beaver habitat in the Unit. The Department regulates trapping seasons to ensure the continued security of New York's furbearer populations (DEC Division of Fish and Wildlife, 2005). Trapping provides important benefits to New Yorkers including: control of nuisance damage, economic benefits to trappers and people involved in the fur industry and recreation to trappers.

K. Significant Habitats - Rare, Threatened, Endangered and Special Concern Species
A significant habitat is an area that supports a community of rare, threatened or endangered plants or animals. In the spring of 2004, a formal survey was conducted on this Unit by the New York Natural Heritage Program. No rare, threatened, or endangered species of animals are known to exist on the Unit at this time. However, one threatened plant, one endangered plant and one unique plant community have been identified on or near the Unit:

- *Symphyotichum boreale,* Northern Bog Aster is Threatened, Global Rank: G5; State Rank: S2.
- *Aplectrum hyemale* Puttyroot is Endangered, Global Rank: G5; State Rank: S1.
- Maple-basswood rich **mesic** forest is not listed, Global Rank: G4; State Rank: S3.

The original Labrador Hollow Unique Area plan did not include a listing of rare, threatened or endangered species. However the plan did call for a formal survey to determine if rare, threatened or endangered species were present on the area. A formal plant survey was conducted in 1982 by Jane Offringa which found one Threatened plant, one Rare plant and forty seven species of plants listed as Exploitably Vulnerable. Some of the species found in the 1982 survey were not found in the 2004 survey and are shown below:

- *Myriophyllum alterniflorum*, Water milfoil was listed as Rare in 1982 was not found in the 2004 survey and presently is listed as Threatened, Global Rank: G5; State Rank: S2.
- *Cypripedium parviflorum var. parviflorum*, Small Yellow Ladyslipper was listed as Exploitably

Vulnerable in 1982 was not found in the 2004 survey and presently is listed as Endangered, Global Rank: G5; State Rank: SH.

- *Lycopodium sabinifolium*, Cypress clubmoss was listed as Threatened in 1982 and has been subject to some taxonomic changes since 1982 and is no longer listed.

There were forty six species of plants that were listed as Exploitably Vulnerable in 1982. These forty six species are either numerous enough now so that they are no longer listed as Exploitably Vulnerable or are no longer present on the Unit.

New York Natural Heritage Program historical records indicate that the following endangered plants were at one time found on or near the Unit, but were not been found in the 2004 survey:

- *Botrychium oneidense*, Blunt-lobed grape fern is Endangered, Global Rank: G4; State Rank: S2.
- *Desmodium nuttallii*, Nuttail's Tick-trefoil is Endangered, Global Rank: G5; State Rank: SH.

Global Rank: G4 = Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
G5 = Demonstrably secure globally, though it may be quite rare.

State Rank: S1 = Typically 5 or fewer occurrences, very few remaining individuals or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage in New York State.
SH = Historical. No existing sites known in New York State in the last 20-30 years but it may be rediscovered.

The Element Occurrence Records for the New York Natural Heritage Program's Biological and Conservation Data System were consulted for this information.

The Environmental Conservation Law of New York, Section 11-0535 and 6 NYCRR (New York Code of Rules and Regulations) Part 182 authorizes the Department to list and protect endangered, threatened and special concern wildlife species. No endangered, threatened, or special concern wildlife species are known to exist within the Unit at this time. However, at the larger landscape level, several threatened or special concern wildlife species have been recorded as confirmed or predicted by the New York GAP Analysis Model.

Table 7: Threatened, Endangered and Special Concern Species on the Landscape

Common Name	Scientific Name	Gap Analysis Model Status	Species Listing
American Bittern	Botaurus lentiginosus	Confirmed	Special Concern
Black Tern	Chlidonias niger	Predicted	Endangered

Table 7: Threatened, Endangered and Special Concern Species on the Landscape

Common Name	Scientific Name	Gap Analysis Model Status	Species Listing
Cerulean Warbler	Dendroica cerulea	Confirmed	Special Concern
Common Nighthawk	Chordeiles minor	Confirmed	Special Concern
Cooper's Hawk	Accipiter cooperii	Confirmed	Special Concern
Eastern Box Turtle	Terrapene c. carolina	Predicted	Special Concern
Golden-winged Warbler	Vermivora chrysoptera	Confirmed	Special Concern
Grasshopper Sparrow	Ammodramus savannarum	Confirmed	Special Concern
Henslow's Sparrow	Ammodramus henslowii	Confirmed	Threatened
Horned Lark	Eremophila alpestris	Confirmed	Special Concern
Indiana Myotis	Myotis sodalis	Predicted	Endangered*
Jefferson Salamander	Ambystoma jeffersonianum	Confirmed	Special Concern
King Rail	Rallus elegans	Predicted	Threatened
Least Bittern	Ixobrychus exilis	Predicted	Threatened
Loggerhead Shrike	Lanius ludovicianus	Predicted	Endangered
Longtail Salamander	Eurycea l. longicauda	Predicted	Special Concern
Northern Goshawk	Accipiter striatus	Confirmed	Special Concern
Northern Harrier	Circus cyaneus	Confirmed	Threatened
Osprey	Pandion haliaetus	Predicted	Special Concern
Pied-billed Grebe	Podilymbus podiceps	Confirmed	Threatened
Red-headed Woodpecker	Melanerpes erythrocephalus	Confirmed	Special Concern
Red-shouldered Hawk	Buteo lineatus	Confirmed	Special Concern
Sedge Wren	Cistothorus platensis	Predicted	Threatened
Sharp-shinned Hawk	Accipiter striatus	Confirmed	Special Concern
Short-eared Owl	Asio flammeus	Predicted	Endangered
Timber Rattlesnake	Crotalus horridus	Predicted	Threatened
Upland Sandpiper	Bartramia longicauda	Confirmed	Threatened
Vesper Sparrow	Pooecetes gramineus	Confirmed	Special Concern

Table 7: Threatened, Endangered and Special Concern Species on the Landscape

Common Name	Scientific Name	Gap Analysis Model Status	Species Listing
Whip-poor-will	Caprimulgus vociferus	Confirmed	Special Concern
Wood Turtle	Clemmys insculpta	Confirmed	Special Concern
Yellow-breasted Chat	Icteria virens	Confirmed	Special Concern

* Federally listed as Endangered by the Department of the Interior.

L. Mineral Resources

Oil and gas production from State Forest lands, where the mineral rights are owned by the state, are only undertaken under the terms and conditions of an oil and gas lease. As surface managers, the Division of Lands and Forests will evaluate any concerns as they pertain to new natural gas leases on State Forest lands. Consistent with past practice, prior to any new leases, DEC will hold public meetings to discuss all possible leasing options and environmental impacts. A comprehensive tract assessment will be completed as part of this process. For more information on natural gas and other mineral resource policies, please see SPSFM page 225 at http://www.dec.ny.gov/lands/64567.html.

1. Historical Drilling and Production

The drilling of the first commercial oil well in the United States occurred in Titusville, Pennsylvania in 1859. The results of this drilling activity carried over into neighboring New York State in 1863. Eventually this activity extended into western and central New York.

The closest well drilled to the UMP area is Chesapeake Appalachia, L.L.C.'s (Chesapeake) Van Patten #1 well drilled in the Town of Tully, Onondaga County more than five miles west of Labrador Hollow Unique Area. This well was drilled in 2005 targeting the Black River formation at a depth of 5,642 feet and has never been put into production (shut-in). This well offsets Pominex, Inc.'s Van Patten #1 well drilled in 1976 to a depth of 4,163 feet which targeted the Queenston Sandstone and was subsequently plugged as a dry hole. Chesapeake drilled the Frost #1 well approximately seven miles southwest of Kettlebail State Forest in the Town of Homer, Cortland County in 2005 targeting the Black River formation at an approximate depth of 6100 feet. Chesapeake has also drilled the Burroughs #1 well approximately eight miles west of Labrador Hollow Unique Area in the Town of Spafford, Onondaga County and Proctor #1 in the Town of Scott, Cortland County in 2006 targeting the Queenston Sandstone formation. None of Chesapeake's wells are currently producing.

2. Recent Drilling and Production

The closest natural gas production is approximately 17 miles east of Morgan State Forest in Madison and northern Chenango Counties where Norse Energy, Inc. has been drilling wells targeting the Oneida, Oswego, and Herkimer Sandstones in the Bradley Brook, Beaver Meadow, and Hawley Brook Fields. Production in the Bradley Brook Field began in 1998 in the Towns of Lebanon and Eaton, Madison County. The Beaver Meadow and Hawley Brook Fields were discovered in 2004 in the Towns of Plymouth and Smyrna, Chenango County. Production in all three fields was originally from the

Oneida and Oswego Sandstones; however, drilling from 2007 to present has extended the fields and has focused on horizontal wells drilled in the Herkimer Sandstone.

3. Recent Leasing Activity

An initial title review indicates New York State owns the mineral estate under all areas covered by this Unit. The above statement is made with the qualification that mineral reservations may exist and no expressed or implied warranty of title is being offered in this document. All of the state lands comprising the UMP area are not currently under oil/gas lease contracts.

4. Future Leasing Activity

Due to recent drilling and production activity in the western New York and the Finger Lakes Region, the State may again receive requests to nominate lands for leasing. For further information on lease procedures, well drilling permitting procedures, historical and statistical information go to the Department's website at http://www.dec.ny.gov/energy/205.html or contact the NYS DEC Mineral Resource staff at (585) 226-5376 or by mail at Region 8, 6274 East Avon-Lima Road, Avon, New York 14414-9591. Additional contacts include; New York State Department of Environmental Conservation-Division of Mineral Resources- Bureau of Oil and Gas Regulation, 3rd Floor, 625 Broadway, Albany, New York 12233 (518) 402-8056.

The Department, pursuant to ECL § 9-0507, may lease State lands for the construction and placement of oil and gas pipelines only if a portion of the mineral resources to be transported was extracted from State lands. Pipeline and road development must be in compliance with State Forest tract assessments, the Strategic Plan for State Forest Management, and the Generic Environmental Impact Statement and Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program.

Pipelines will be located immediately adjacent to Public Forest Access Roads. The location of the roads and pipelines will be in compliance with tract assessments. Pipelines may be located in stands managed for closed canopy conditions only along pre-existing roads that intersect such area. Additional surface disturbance associated with such construction will be considered only in areas other than stands which are managed for relatively unbroken canopy conditions. Areas managed for unbroken canopy conditions may be referred to using various terms such as "uneven-aged," "uneven-aged variable retention," "all aged," "high canopy," "closed canopy" or others.

Pipeline development on State land will not be permitted if the Department determines that it creates a significant long-term conflict with any management activities or public use of the State Forests, or with other management objectives in this plan. All pipelines will be gated to restrict motorized access, and if necessary hardened crossings or bridges will be installed, to allow heavy equipment access across pipelines. These requirements will be satisfied by the Lessee.

Exceptions to the above guidance must be approved by the Division of Lands and Forests, in consultation with the Division of Mineral Resources.

5. Gravel & Hard Rock Mining

Gravel and hard rock resources in the Unit are limited. Shale can be excavated near the surface where it is weathered and used as a source of aggregate. There is a reclaimed shale pit located approximately three miles west of Labrador Hollow Unique Area. Currently there are five shale pits on the Unit. There are no current mining contracts, permits or operations on any areas in this UMP. Under Article 7 of the New York Consolidated Laws / Public Lands, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, current Department policy is to decline any commercial mining application(s) pertaining to any lands covered by this plan. The Department may occasionally mine small quantities of shale rock or gravel for use on state facilities such as access roads, parking lots or recreational trails. Should those actions be anticipated there will be an evaluation regarding the need for a permit. Further information may be found at the Department's website or with the Division of Mineral Resources.

The kame and outwash sand and gravel deposits associated with glacial meltwater fluvial systems would provide the best sand and gravel resources for potential mining operations. There are three active sand and gravel mines in the area within three miles of the Unit. The closest active mine is one-half mile north of Labrador Hollow Unique Area which is an 81 acre sand and gravel pit in the Town of Fabius, Onondaga County. This mine is located in an area where the surficial deposits consist of till moraine which is generally more permeable and would be a better source of sand and gravel than glacial till. There are also several reclaimed sand and gravel mines within and near the Unit.

M. Cultural Resources

Inventory of Resources

The term cultural resources encompass a number of categories of human created resources including structures, archaeological sites and related resources. The Department is required by the New York State Historic Preservation Act (SHPA) (PRHPL Article 14) and SEQRA (ECL Article 8) as well as Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law to include such resources in the range of environmental values that are managed on public lands. For more information on protection of historic and cultural resources, please see SPSFM page 139 at http://www.dec.ny.gov/lands/64567.html.

As a part of the inventory effort associated with the development of this plan the Department arranged for the archaeological site inventories maintained by the New York State Museum and the Office of Parks, Recreation and Historic Preservation to be searched in order to identify known archaeological resources that might be located within or near the unit. The two inventories overlap to an extent but do not entirely duplicate one another. The purpose of this effort was to identify any known sites that might be affected by actions proposed within the unit and to assist in understanding and characterizing past human use and occupation of the unit.

Historic and Archaeological Site Protection

The historic and archaeological sites located within the unit as well as additional unrecorded sites that may exist on the property are protected by the provisions of the New York State Historic

Preservation Act (SHPA - Article 14 PRHPL), Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law. No actions that would impact known resources are proposed in this Unit Management Plan. Should any such actions be proposed in the future they will be reviewed in accordance with the requirements of SHPA. Unauthorized excavation and removal of materials from any of these sites is prohibited by Article 9 of Environmental Conservation Law and Section 233 of Education Law. In some cases additional protection may be afforded these resources by the federal Archaeological Resources Protection Act (ARPA).

Archaeological Research

The archaeological sites located on this land unit as well as additional unrecorded sites that may exist on the property may be made available for appropriate research. Any future archaeological research to be conducted on the property will be accomplished under the auspices of all appropriate permits. Research permits will be issued only after consultation with the New York State Museum and the Office of Parks, Recreation and Historic Preservation. Extensive excavations are not contemplated as part of any research program in order to assure that the sites are available to future researchers who are likely to have more advanced tools and techniques as well as more fully developed research questions.

On the Hill and Hollow Unit, three members of the Hodgson family are buried in an old family cemetery near Shackham Pond:

- Ira Hodgson died on July 29, 1819 at the age of 39.
- Lydia Hodgson died in 1828 age unknown.
- James Hodgson died in 1843 at the age of 42.

Additionally, numerous old foundations from the homes of early settlers are common throughout the Unit. There are also many stone walls which were created on the edges of areas that at one time were cultivated fields as the stones were removed from the fields during plowing.

N. Recreational Resources

Varied recreational opportunities exist and are occurring on the Unit. State Forests offer opportunities for recreational activities that are best enjoyed in remote, relatively undisturbed areas. Such activities typically require few or no facilities.

Currently, the following activities are occurring and will continue to be allowed on the Unit: big and small game hunting, boating, camping, cross-country skiing, downhill/back country skiing, fishing, **geocaching,** hang gliding, hiking, horseback riding, mountain biking, nature observation, orienteering, picnicking, snowmobiling, snowshoeing and trapping. By existing Environmental Conservation Laws and management policy, the following are not permitted on the Unit: riding all-terrain vehicles, motorized dirt bikes and off-road motor vehicles. Special regulations have been implemented to protect rare and endangered species, reduce illegal activities, manage high level recreation use and to provide for the safety of visitors to Labrador Hollow Unique Area. These special regulations are listed in Appendix IX.

The following recreation facilities exist on the Unit:

Kettlebail State Forest:

- Onondaga/Skyline hiking trail 1 mile, (part of the Finger Lakes Trail System).
- Snowmobile trail 1.1 miles.

Labrador Hollow Unique Area:

- Boardwalk trail .4 miles that provides access for people with mobility impairments.
- Fishing pier Labrador Pond that provides fishing for people with mobility impairments.
- Tinker Falls trail .2 miles that provides access for people with mobility impairments.
- Boat Launch Labrador Pond.
- Hang Glider Launch Site/Scenic Overlook.
- Labrador Pond which provides non-motorized boating & fishing opportunities.
- North Country National Scenic hiking trail 1.2 miles, (part of the Finger Lakes Trail System).
- Onondaga/Skyline hiking trail 3.6 miles, (part of the Finger Lakes Trail System).

Morgan Hill State Forest:

- A lean-to campsite.
- ATV trails for people with mobility impairments holding a valid CP-3 permit 1.5 miles.
- Designated campsites on Spruce pond, 12 sites, (camping allowed by permit only).
- North Country National Scenic hiking trail 9.2 miles, (part of the Finger Lakes Trail System).
- Fellows Hill Loop hiking trail 2.9 miles, (part of the Finger Lakes Trail System).
- Shackham & Spruce ponds provide non-motorized boating & fishing opportunities.
- Snowmobile trails 17.7 miles.
    - 7.8 miles are part of **corridor** trail 5D that provide snowmobiling between Cuyler, Lafayette, Truxton & Tully.
    - 9.9 miles are secondary loop trails on the forest.

Historically, State Forests have provided open space for outdoor recreational activities that require minimal facilities. In the past, the intensity of recreational use was low. This resulted in low environmental impacts and few user conflicts. However, during the 1990s demand for recreational trails increased substantially (DEC Region 7 Recreation Plan, 2001). In addition, more private land has been posted to restrict hunting, fishing and trapping. As a result hunting pressure on State Forests could increase in the future.

Recreational use of the Unit also includes group events. State Forests provide opportunities for group events. Any group organizing a competitive or group event must apply for a **Temporary Revocable Permit** *(TRP)* from the Department. The permit process offers the Department an opportunity to address health, safety and resource protection issues related to the event. There may or may not be an application fee for this permit. A group event is defined as any gathering that has been advertised to the public by the sponsoring organization in flyers, newsletters, newspapers, websites, or through other media. To hold any event, the sponsoring organization must request permission in writing at least 30 days in advance of the date of the proposed activity. The sponsoring organization must provide proof of liability insurance.

The Hill and Hollow Unit is a valued recreational asset for the residents of the surrounding areas. Recreational opportunities on the Unit significantly add to the quality of life and to the overall value of the property to the People of the State of New York. With increasing pressures from the subdivision of private lands it is expected that State Forests will continue to provide significant opportunities for a wide range of recreational stakeholders. Recreational activities will increasingly benefit local economies as well.

There are no designated off-road motor vehicle trails on this Unit. Off-road vehicle travel is prohibited. The use of all- terrain vehicles (ATVs) on all State Forests in the Unit, including all roads, is prohibited. Except for trails marked and designated for use by people with mobility impairments who hold a valid CP-3 permit. Existing management actions, poor soils and the relatively small size of the properties in this Unit have precluded the development of an ATV trail system on this Unit.

O. Roads

The DEC Public Forest Access Road System provides both public and administrative access to the Unit. The roads are built by the Department to standards that will provide reasonably safe travel and keep maintenance costs at a minimum. Access roads are not normally plowed or sanded. There are two types of roads: Public Forest Access Roads (formerly called Truck Trails) and **Haul Roads**. They provide different levels of access depending on the level of standards to which they were built.

Public Forest Access Roads (PFAR) are permanent, unpaved roads. These roads are open for public use unless the road is gated and/or signed to prohibit use. PFARS may be designed for all-weather use depending on their location and surfacing. These roads provide primary access to the Unit. The standards for these roads are those of the Class A and Class B access roads as described in the Department's Unpaved Forest Road Handbook. The speed limit on the PFARS is 25 miles per hour. There are 6 PFARs totaling 10.9 miles in the Unit. These PFARs are listed in Appendix VI.

Haul roads are permanent, unpaved roads, but are not designed for all-weather use. They are built primarily for the removal of forest products and provide only limited access on the Unit. As such, most of these roads are not open for motor vehicle use by the public. The standards for these roads are those of a Class C road as described in the Department's Unpaved Forest Road Handbook. There are 7 haul roads totaling 2.4 miles in the Unit. These haul roads are listed in Appendix VI.

Access trails may be permanent, are unpaved, and do not provide all-weather access on the Unit. These trails are originally designed for removal of forest products and may be used to meet other management objectives such as recreational trails. These trails are built according to **Best Management Practices**. There are 5 miles of access trails in the Unit which are listed in Appendix VI.

Public highways and town roads also serve as access to, from and through the State Forests on the Unit. The roads are maintained by state, county or town highway departments. These public highways and town roads are listed in Appendix VI.

P. Other Facilities that Require Maintenance

Boundary Lines:	Forest	Miles
	Kettlebail S.F.	9.0
	Labrador Hollow U.A.	12.1
	Morgan Hill S.F.,(Cort #4)	17.6
	Morgan Hill S.F.,(Onon #1)	12.7
	TOTAL	**51.4**

Gates:	Forest	Location
	Labrador Hollow U.A.	Access trail to hang glider launch site, NYS Rte. 91
	Labrador Hollow U.A.	Boardwalk parking area.
	Morgan Hill S.F.,(Cort #4)	Coan Haul Road near Coan property
	Morgan Hill S.F.,(Onon #1)	Herlihy Haul Road near Hendrix property
	Morgan Hill S.F.,(Onon #1)	Intersection of Morgan Hill & Cross Road PFARs

Impoundments (Dams):	Forest	Number	Location
	Morgan Hill S.F., (Onon #1)	1	Shackham pond
	Morgan Hill S.F., (Onon #1)	1	Spruce pond

Parking Areas:	Forest	Location	Size (approximate)
	Labrador Hollow U.A.	Boardwalk	ADA Large (30 to 40 cars)
	Labrador Hollow U.A.	Boat Launch	ADA Medium (5 to 10 cars)
	Labrador Hollow U.A.	Labrador Road	Small (1-5 cars)
	Labrador Hollow U.A.	Tinker Falls trail	ADA only Small (1-3 cars)
	Labrador Hollow U.A.	Tinker Falls trail	Medium (10 to 15 cars)
	Morgan Hill S.F.,(Cort #4)	Fire tower site ADA	Small (1-5 cars)
	Morgan Hill S.F.,(Onon #1)	Spruce Pond	Medium (5 to 10 cars)

Signs and Registers:	Forest	Type	Number
	Kettlebail S.F.	Identification Sign	1
	Labrador Hollow U.A.	Identification Sign	8
	Morgan Hill S.F.,(Cort #4)	Identification Sign	1
	Morgan Hill S.F.,(Onon #1)	Identification Sign	3

Shale/Gravel Pits:	Forest	Number	Size
	Labrador Hollow U.A.	1	1.5 acres
	Morgan Hill S.F.,(Cort #4)	2	1.4 acres
	Morgan Hill S.F.,(Onon #1)	3	.7 acres

Miscellaneous:	Forest	Type/Location
	Labrador Hollow U.A.	Bench/Tinker Falls trail.
	Labrador Hollow U.A.	Building portable bathrooms/Boardwalk parking area.
	Labrador Hollow U.A.	Cabin/south of Boardwalk parking area.

Labrador Hollow U.A.	Kiosk/boardwalk parking area.
Labrador Hollow U.A.	Kiosk/Tinker Falls trail parking area.
Labrador Hollow U.A.	Osprey nesting platform.
Morgan Hill S.F.,(Cort #4)	Bridge/NCNST over Shackham Brook.
Morgan Hill S.F.,(Onon #1)	Bridge/ NCNST over ditch near Shackham Pond.
Morgan Hill S.F.,(Onon #1)	Kiosk/ NCNST near Spruce Pond.

Q. Taxes Paid on State Forests

Many State Forests are subject to fire district, school and town taxes, but are exempt for county taxes. State Forest land is taxed at the same rate as private forest land. In 2014, $532,477 in property taxes were paid by New York State for State Forests in the towns of Cuyler, Fabius and Truxton.. Labrador Hollow Unique Area is exempt from taxation. A summary of town, school and fire district property taxes paid by township can be found in Appendix X.

R. Property Use Agreements

The following information was compiled from the files and other information in the Region 7 Real Property office. Abstracts of title were not examined except to obtain additional information on easements or other items referred to in deeds or other records. The properties on this Unit are subject to the following deed restrictions and easements:

Kettlebail State Forest (Cortland RA#5)-587.64 acres, perimeter boundary = 9.00 miles, (47,545 feet)

Easements, Property Use Agreements, etc.

An electric transmission line crosses the southwest corner of Proposal I and the common corner between Proposal F and Proposal H. The line is present by a Temporary Revocable Permit issued to Niagara Mohawk on 1/18/1968. The TRP allows a 225 foot wide ROW, but no poles or structures are to be located on the State Forest. No trees are to be cut without the permission of the District Director. DEC no longer issues TRP's for the construction of power lines unless the utility company has a deeded easement across State land.

Other easements, agreements and special issues:

Proposal F – The State's deed is subject to the terms on the contract executed on 9/18/1931, between Homer Gallinger, et al and the New York Gas Development and Distributing Corporation of Syracuse. This contract has probably expired.

Proposal P – At the time of acquisition the parcel may have been subject to the terms of an oil and gas lease granted to Eastern Gas & Oil on 2/19/1974 and recorded in 341/647. This lease has probably expired.

Land Transfers – 1648.49 acres of Cortland Ref. Area 5 were transferred to the New York State College of Forestry at Syracuse by resolution of the Board of Commissioners of the Land Office dated 6/14/1948. The transfer included Proposals A, B, C, D, E, F (west of the county highway), G, K, K-1, L, M (part), and N. In ~1986, all of Proposal O and portions of Proposal M and Proposal I were annexed

to and became a portion of the lands dedicated as the Labrador Hollow Unique Area. The annexation involved all of Proposal O, measured as 30.03 acres, 48.78 acres of Proposal M and 48.85 acres of Proposal I. At the same time 7.91 acres of land originally acquired with Labrador Hollow was assigned to the State Forest. No proposal letter was assigned to that parcel.

Road Status – Our files and maps note that West Labrador Road was abandoned by town board resolution on 10/3/1961. The abandoned section starts at the end of Labrador Road at the Onondaga County line and runs along the west side of the valley until it reaches NYS Route 91. A portion of the south end of this road is the east boundary of Proposal P. The State appropriated an access easement over the southern portion of the abandoned road in 1974 with the intent of establishing access as far as Cortland 5, Proposal O, but a later survey found the appropriation actually ended about 400 feet short of that boundary.

The Truxton-Tully Road was relocated eastward onto the remaining portion of Proposal F sometime after the transfer to the College of Forestry, but our files have no records regarding the relocation. Some atlas maps show a dead end spur road running east from Kettlebail Road along the division line between Proposal I and Proposal J.

Acreage – Survey Map 10162 prepared for the dedication of lands to Labrador Hollow UA showed acreages for Proposal M and Proposal O that were different from the original surveys of these proposals. The acreage of the lands dedicated to Labrador Hollow UA followed Map 10162, but the land records for Cortland 5 were not revised for the difference between the original surveys and the survey for Map 10162. Our land records for Cortland 5 have now been revised to delete an additional 2.48 acres for Proposal O and an additional 8 acres for Proposal M.

Labrador Hollow Unique Area - 1467.55 acres plus 6.45 acres subject to conservation easement, Perimeter boundary = 12.12 miles, (63,977 feet)

Easements, Property Use Agreements, etc.
Utility easements – Our files contain copies of electric and telephone easements granted to Niagara Mohawk along Labrador Road prior to State ownership of the area. The lines along the road now serve only the Troutman and Gittelson properties located at the county line.

Conservation Easements – Conservation and scenic easements were acquired over the Troutman/Fitzgerald property (Onondaga Fabius 129-2-8, Cortland Truxton 9-1-3) and Gittelson property (Truxton 9-1-4) as part of the Labrador Hollow appropriation filed on 4/7/1978. The terms of the easement are stated in the appropriation description recorded in Cortland County in 356/33 and in Onondaga County in 2631/612. The terms are restrictive, but were intended to permit continued residential use of the premises. Public access is not included, but an existing access ROW running from the end of Labrador Road to the south line of Gittleson's reserve was acquired as part of the appropriation. The two property owners have reportedly been able to mow and maintain the cleared land east of Labrador Road by TRP allowing them to work on the UA lands.

Road Status – West Labrador Road in the Town of Truxton was abandoned by town board resolution dated 10/3/1961. See the entry for Cortland 5. No other abandoned roads are known to be located on the area.

Other – Most of the Labrador Hollow UA was acquired by appropriation on 4/7/1978, but one landowner who was opposed to the acquisition didn't accept payment until 2002. The area was dedicated to the State Nature and Historical Preserve Trust by Chapter 336 of the Laws of 1986. Some older deeds refer to Labrador Pond as "Black Lake."

Morgan Hill State Forest (Cortland RA#4) - 3107.77 acres, perimeter boundary = 17.56 miles, (92,735 feet), (1.2 miles; 6,335 feet of line adjoins Onondaga RA #1)

Easements, Property Use Agreements, etc.
An electric transmission line crosses Proposals A, E, F and M. The line is on a 150 foot wide strip of land owned in fee title by Niagara Mohawk Power Corporation (National Grid), but has associated rights affecting the State Forests lands.

1) Proposal A – Fee ROW conveyed to the Adirondack Realty Holding Corp. by deed 67/349 dated 6/13/1931. A 150 foot wide ROW with clearing rights over an additional 50 feet each side of the fee strip. The rights acquired also included the right to cut trees and brush on any adjacent lands of the grantor if necessary and entry rights to reach the ROW by crossing other lands of the grantor. Grantor excepts 5 crossings, each 25 feet wide, at points to be designated by the New York Power and Light Corporation (NYPLC). The fee ROW strip across Proposal A is 4.33 acres in size.

2) Proposal E – Fee ROW of 7.82 acres conveyed to NYPLC by deed 158/307 dated 10/1/1928. The same rights as for Proposal A except the grantor excepts 8 crossings, each 25 feet wide.

3) Proposal F – Fee ROW of 6.54 acres conveyed to NYPLC by deed 158/309 dated 10/3/1928. The same rights as for Proposal A except trees outside the ROW are to be cut in 16 foot lengths and the grantor excepts 10 crossings, each 25 feet wide.

4) Proposal M - Fee ROW of 14.45 acres (14.37 acres on Map 4887) conveyed to NYPLC by deed 158/339 dated 10/10/1928. The same rights as for Proposal A, but the grantor reserves 15 crossings, each 25 feet wide. The number of reserved crossing was intended to benefit both the lands that are now Proposal M and other lands that remain in private ownership.

Other easements and special issues:
Proposal A - Atlas maps show "Schoolhouse No. 3" located northeast of the forest access road intersection in the northern portion of Proposal A. Our files have no information about a possible schoolhouse lot or other surviving rights that might affect Proposal A. A private land surveyor reported a possible discrepancy with the west line of Proposal A in 2007, but no further information was received. The lines involved were those near the county line.

Proposal H - The State's deed is subject to an oil and gas lease acquired by D. S. Webber by lease dated 11/29/1930 and recorded in 166/479. The lease has a 10 year term, to be extended if production occurs, but is probably no longer in effect. The State's deed is also subject to flooding rights reserved by the grantor, who also owned adjoining lands to the south. Map 4668 shows the proposed location of a dam on Shackham Brook. The NYSDOT quadrangle covering this area shows a USGS gauging station located on Shackham Brook near the south line of Proposal H, but there is no information in our files on it.

Proposals I, J, O - Portions of Proposal I and Proposal J and all of Proposal O were annexed and dedicated to the Labrador Hollow Unique Area. The transfer involved 39.60 acres of Proposal I, 95.22 acres of Proposal J and all 172.30 acres of Proposal O.

Proposal J - The State's deed is subject to an oil and gas lease held by the Lycoming Natural Gas Corporation. The lease predates the deed date of 12/1931 and is probably no longer in effect.

Proposal K - In 1985 a landowner to the east of Proposal K, near the county line, claimed a ROW by prescription and tracking of title to owners prior to the establishment of the State Forest. The landowner had been accessing his property over a woods road leading north from the forest access road crossing Proposal K. A letter to the owner dated 12/3/1985, stated that the State refused to acknowledge any private rights over Proposal K. There is no further correspondence in the file.

In 1996, the landowner to the south of Proposal K and east of the forest access road complained that a State road leading east was located on his land. A field inspection found boundary evidence that agreed with Map 4669 and indicated that the road was on Proposal K.

Proposal M - Atlas maps show "Schoolhouse No. 10" located on the east side of the Morgan Hill PFAR near the south line of Proposal M. David Matthews conveyed that schoolhouse lot to the Trustees of School District No 30 by deed 30/229 dated 8/25/1857, but the grant contained a reversionary clause saying that it was to remain in effect for only so long as it was used for a school house.

Fire Tower - Records show that the Morgan Hill Fire Tower was sold as surplus to the Town of Clay, Onondaga County in 1978.

Road Status – Reference to "New Century Atlas of Counties of the State of New York" by Everts Publishing Co. dated 1912. The official status of these roads is not available from our files, but they are all assumed to be abandoned. The NYSDOT quads show several roads passing through the State Forest, but only Shackham Road is indicated to be a public highway by a 1989 Cortland County highway map. Morgan Hill Road and Eaton Road are shown to end at the State Forest boundary and the portions of those roads continuing through the State Forest are indicated to be 'truck trails". There is no information in our files regarding abandonment of Morgan Hill Road or Eaton Hill Road.

Acreage – Map 4887 for Proposal M lists the parcel's area as 396.42 acres, but notes that the total includes the right of way for the power transmission line crossing the proposal. The 14.37 acre ROW

is owned in fee by Niagara Mohawk. Land records for the proposal have mistakenly included those 14.37 acres as state owned land. Our records for Proposal M have been revised to show it as 382.05 acres and the total acreage for Cortland 4 has been revised to 3093.40 acres.

Morgan Hill State Forest (Onondaga RA#1) - 2176.25 acres, perimeter boundary = 12.66 miles; (66,840 feet), (1.2 miles; 6,335 feet of line adjoins Cortland RA #4)

Easements, Property Use Agreements, etc.
Proposal A – The atlas shows "Schoolhouse No. 12" located on the east side of Herlihy Road near the center of Proposal A. Our files have no information on the schoolhouse lot or other surviving rights that might affect Proposal A.

Proposal B – A 0.10 acre schoolhouse lot and a 0.15 acre cemetery, both on the east side of Shackham Road, are excepted from State ownership. The atlas shows "Schoolhouse No. 13" at the same location as the schoolhouse lot shown on Map 4143. The State's deed references a lease from James Hodgson to the Trustees of the School District dated March 12, 1838, for the schoolhouse lot and deed 282/397 dated May 28, 1894, for the cemetery. The State's deed also is subject to an oil and gas lease dated May 1, 1931, and recorded in 615/458. The oil and gas lease is probably no longer in effect. A private land surveyor reported a possible discrepancy with the south line of Proposal B, but no further information was received.

Proposal C – The State's deed excepts .."the family burial grounds, the locations of which are shown on the survey…". Map 4193 shows a 0.08 acre cemetery and a 0.05 acre cemetery both on the east side of Morgan Hill Road (forest access road).

Proposal D – The State's deed excepts 0.13 acres for a cemetery. Map 4651 shows a cemetery reserve on the east side of Morgan Hill Road (forest access road) near the north end of the parcel.

Road Status – Reference to "New County Atlas of Counties of the State of New York" by Everts Publishing Co. dated 1912. The official status of these roads is not available from our files, but they are all assumed to be abandoned. The NYSDOT quads show several roads passing through the State Forest, but only Shackham Road is indicated to be a public highway by a 1976 Onondaga County highway map. Herlihy Road and Rowley Hill Road are shown to end at or short of the State Forest boundary. Rowley Hill Road has also been reported to be blocked by a pile of dirt near its intersection with Bailey Road.

The records in the Real Property Office are not complete or comprehensive and research of other sources and field inspection would most likely find additional information.

XI. RESOURCE DEMANDS ON THE UNIT AND THE LANDSCAPE

A. Forest Resources

The demand for traditional and non-traditional forest products can vary over time. Following is a list of forest products and trends that State foresters have observed in the demand for these products in the Cortland and Onondaga County areas.

PRODUCT	TREND
Firewood	Increased
Softwood Sawtimber	Increased
Hardwood Sawtimber	Increased
Hardwood **Pulpwood**	Increased
Softwood Pulpwood	Increased
Mushrooms	Stable
Maple Syrup	Increased
Medicinal Plants	Stable
Honey	Stable
Ginseng	Increased
Fence Posts	Decreased

The use trends for these products are expected to continue in the future.

The following comments regarding forest products have been expressed at a public scoping session held at Tully High School on April 30, 2009 and through written correspondence.

- Continue to look at the sale of timber as a necessary and appropriate use of the State's natural resources.
- Continue to sell homeowner firewood on the Unit.
- Create more young growth.
- Increase amount of timber sold from the Unit.
- Logging makes hunting considerably better.
- Put up signs to educate the public on forest management.
- Revenue from sales should be reinvested back into the land in the form of more manpower needed to devise and implement forest management.
- Substantially increase the amount of forest management.

B. Mineral Resources

The demand for oil and gas exploration and leasing has increased dramatically in the area. The following comments with regard to oil and gas exploration and leasing have been received at a public scoping session held at Tully High School on April 30, 2009 and through written correspondence.

- prevent all oil and gas exploration and leasing
- allow oil and gas exploration and leasing

C. Diverse Plant, Animal and Water Resources

Diverse ecosystems and water quality are general societal demands that are also specific to this Unit. The following comments with regard to diversity, plant, wildlife, and water quality have been received at a public scoping session held at Tully High School on April 30, 2009 and through written and verbal correspondence.

- Address problems with garbage on the Unit particularly at the camp sites.
- Address threat to Labrador Hollow from the adjacent gravel mine.
- Concerned that gas drilling will harm the local water supply.
- DEC should have a program like DOT's Adopt-A-Highway to encourage stewardship.
- Develop/utilize, new/existing environmental education and interpretation resources.
- Develop long term strategy to deal with milfoil in Labrador pond.
- Document and monitor illegal dumping of solid waste and develop a plan for cleanup, mitigation and prevention measures.
- Encourage native species.
- Impose antler restrictions.
- Include the "2nd Atlas of Breeding Birds in New York State" in the planning process.
- Increase biodiversity whenever possible.
- Manage for small game by creating more young growth.
- Manage to prevent the spread of **invasive species**.
- Minimize disturbance to wildlife and specialized habitats such as wetlands.
- No more development on Labrador Hollow Unique Area.
- Practice Ecosystem Management on the Unit.
- Protect the Unit from development.
- Restoration of old apple trees.
- Want to see better enforcement of laws and regulations.

D. "Gaps" in the Landscape Surrounding the Unit

To promote biodiversity, the vegetative cover types in the existing landscape (the geographical area) around the State Forests were assessed to determine its current diversity. This process identified "gaps" where individual components of biodiversity may be lacking. Having identified these gaps we can consider management options on State Forests which might fill the gaps and at the same time add to the biodiversity of the landscape. State Forests represent about ten percent of the land base in Cortland County. As such, the long term public ownership of State Forests can contribute some components to biodiversity that cannot be expected from private forest ownership patterns.

Identified Gaps and Landscape Issues Applicable to the Unit

- Early successional forest types
- Mature forest types and many of their attributes such as closed canopies, snags, den trees biological legacy trees and coarse woody material.
- Mast producing species of trees.
- Old growth forest types and many of their attributes such as biological legacy trees, snags, den trees and coarse woody material.

XII. PUBLIC USE AND FACILITY DEMANDS ON THE UNIT

A. Recreational Uses

The following lists a variety of recreational pursuits on the Unit and their estimated trends based on observations by Department foresters during the past ten years:

USE	TREND
Camping	Increased
Cross Country Skiing	Stable
Fishing	Increased
Hiking	Increased
Horseback Riding	Stable
Hunting	Stable
Illegal ATV Use	Increased
Mountain Biking	Increased
Nature Observation	Increased
Snowmobiling	Increased
Trapping	Decreased

B. Facilities

Comments for the following facilities have been expressed through a public scoping session held at Tully High School on April 30, 2009, written correspondence and verbal correspondence.

- Address back country skiing in the UMP.
- Address ice climbing in the UMP.
- Allow ADK to continue use of the Labrador Hollow cabin and all foot trails on the Unit.
- Allow all-terrain vehicle (ATV) use/trails.
- Allow all trails to be used by hunters and dogs.
- Allow geo-caching on the Unit.
- Allow hunting on all of Labrador Hollow Unique Area.
- Allow mountain bikes on all DEC trails.
- Allow mountain bikes on foot trails.
- Allow off-road vehicle (ORV) use/trails.
- Allow very limited expansion of trails.
- Better trail marking.
- Construct a hunting platform for people in wheel chairs strategically located on the Unit.
- Continue to allow cross country skiing on the Unit.
- Continue to allow hang gliding and paragliding on the Unit.
- Continue to allow hunting on the Unit.
- Continue to allow snowshoeing on the Unit.
- Continue to allow trapping on the Unit.
- Continue to provide fishing on the Unit.
- Convert logging trails to **multiple use** trails on Labrador Hollow Unique Area.
- Create new multiple use trails on the Unit.

- Create single track multiple use trails on the Unit.
- Develop and maintain existing and new hiking trails.
- Do not allow ADK to continue use of the Labrador Hollow cabin.
- Do not allow all-terrain vehicle (ATV) use/trails.
- Do not allow mountain bikes on foot trails.
- Do not allow mountain bikes on the Onondaga or North Country National Scenic hiking trails.
- Do not allow new uses onto already existing trails.
- Do not allow off-road vehicle (ORV) use/trails.
- Do not ban mountain biking.
- Do not set hard dates for when mountain biking use is allowed.
- Do not significantly change the current level of recreation.
- Implement multiple use mountain bike trail plan submitted by CNY DIRT.
- Keep the Unit open to snowmobiling.
- Limit development for public use.
- Maintain areas for camping and picnicking.
- Maintain horse access on Morgan Hill State Forest.
- Make clear the uses allowed on each trail.
- No additional trails on the Unit.
- No additional trails on Labrador Hollow Unique Area.
- No mountain bike trails.
- No trails on Labrador Hollow Unique Area.
- Provide equal amounts of mountain biking and foot trails.
- Provide for all levels of wilderness.
- Provide loop trails.
- Provide trails for varying skill levels.
- Trail closures should be on a case by case basis.
- Trail closures should not be done without the affected user group input.

XIII. MANAGEMENT CHALLENGES ON THE UNIT

A. Physical Challenges

The following factors pose physical limitations on the management of the Unit's lands and waters: steep slopes; geologic properties; soil characteristics; density and placement of recreational trails; potential insect and disease infestations; limited access; presence of rare or endangered species, cultural resources and invasive **exotic** species; proximity of the Unit's forests; presence of county, town, state roads, electrical transmission lines, telephone lines, pipelines, buried telecommunication lines, deeded right-of-ways, easements and non-native conifer species planted on incompatible soils.

B. Administrative Challenges

The following factors are administrative limitations on the management of the Unit: limited budgets, decreased staffing, availability of Operations work crews, fluctuations in wood markets and reduced availability of inmate work crews.

C. Societal Challenges
Public opinion on the following subjects pose societal limitations on the management of the Unit: trapping, hunting, clearcutting, public ownership, pesticides, old forest reserves and recreation. All opinions are considered, but the degree to which they can be satisfied will vary.

D. Departmental Rules, Regulations, Laws, and Policies
Appendix IX lists Department Rules, Regulations, Environmental Conservation Laws and Policies governing the management activities on the Unit. Also included are the special regulations for management of Labrador Hollow Unique Area.

XIV. HILL AND HOLLOW UNIT MANAGEMENT AREA GOALS, OBJECTIVES AND ACTIONS

GOAL 1: Provide Healthy, Sustainable and Biologically Diverse Forest Ecosystems.

Our goal is to provide healthy, sustainable and biologically diverse forest ecosystems using the principles of ecosystem management. This management will be considered on a local and landscape level, not only to ensure the **biological diversity** and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide.

Objective 1.1: Apply a Landscape Perspective to Decision-Making.
Management decisions in this Plan will consider opportunities to increase biodiversity in the landscape. These decisions will be integrated with other management goals including economic, recreational and environmental management goals. State Forests represent about ten percent of the land base in Cortland County. The long term public ownership of State Forests provides opportunities to contribute some components of biodiversity that cannot be expected from private lands due to the frequent changes in ownership and small parcel size. Research conducted by the USDA Forest Service found that the average nonindustrial forest land parcel changes ownership every 10 years (Birch, et.al., 1994). Specifically, State Forests can look to provide early successional, old growth and minimally fragmented high canopy forest types.

Ecosystems are very complex systems where almost all life forms are interrelated in some manner. The task of managing an ecosystem is impractical on a species-by-species basis. Enhancements made to the ecosystem to help one species will invariably affect numerous other species as well, in both positive and negative manners. It is impossible to rank the value of all the common species present on the forest to choose which populations should be helped at the expense of others. For these reasons, the management strategy in this plan will be to promote the diversity of forest structure, composition and cover types in the landscape.

Action 1.1.1: Apply Ecosystem Management.

GIS technology and a landscape approach will be used in the development of this unit management plan. GIS (Geographic Information Systems) use computer-based mapping and databases to assist with decision-making and spatial analysis. GIS technology will be employed to make landscape level decisions which take into account the components of ecosystem management. By insuring that a variety of different habitats are present in a landscape, we can be assured that species diversity will also be enhanced.

Objective 1.2: Protect Soil and Water Resources.
Sustainability of a forest ecosystem depends on protecting the soil and water resources. While the aquatic, riparian and wetland ecotypes on the Unit are limited, they provide food, breeding areas and cover for numerous plant and animal species, as well as water which is essential for the growth of plants and animals. These water resources are an integral part of the hydrologic cycle (the route water takes from rainfall to evaporation), providing sediment filters, regulating runoff and recharging aquifers. The riparian zones along streams, wetlands and other bodies of water, as well as spring seeps and vernal pools are protected so that mechanical disturbance does not cause excessive soil movement, erosion and degradation of water quality. Soil is an extremely important component of the forest ecosystem. Soil provides habitat for many invertebrates as well as a medium for plant growth. Protection of the soil resource is imperative as it can take between 250 to 1,000 years for one inch of soil to form.

Action 1.2.1: Apply Best Management Practices on all Operations Including Timber Harvesting, the Development of Recreational Facilities and Oil or Gas Exploration and Development.

When properly managed, timber harvesting and construction activities are not a major cause of soil erosion and water quality problems. However, skid trails, haul roads, landings, parking lots and any earth moving construction project have the potential to be sources of sedimentation, erosion and siltation. Sediment and erosion are the primary potential non-point source pollution problems associated with construction and forest management activities, especially at stream crossings. Sedimentation and turbidity (cloudiness) - caused when eroded soil gets into a stream, wetland, pond or lake - damages fish habitat, spawning areas and makes the water unsuitable for downstream uses such as fishing and swimming. Erosion moves soil and can damage or destroy natural resources and personal property.

The key to success is proper planning and the appropriate use of Best Management Practices (BMPs). These are simple, often low-cost practices and techniques incorporated into timber harvests and construction projects. BMPs have been developed to protect streams, ground water and soils in order to maintain the productivity of the forest, improve public confidence in logging and maintain public support for activities, which are essential for **sustainable forest management**.

Best Management Practices will be followed for all construction, maintenance, logging, forest product landings, and mineral extraction projects. All main skid trails will be located by Department Foresters prior to harvesting. BMP recommendations for road placement, grading, water diversion

devices and culverts will be followed. Whenever possible, landings will be located at least 250 feet away from water bodies. If any landings are located closer than 250 feet, additional sediment control methods will be employed (including straw bales and silt fences) to prevent sedimentation and minimize erosion. Cutting and filling on roads and trails will be limited.

Upon completion of a logging job, the landing may be back-bladed and seeded with an appropriate mix of native, grass seed to reduce erosion and provide food and cover for wildlife. Depending on the species used, seeding rates may range from 10 pounds to 25 pounds per acre. The grass seed mix may include up to 20% (by weight) of annual ryegrass as a cover crop.

New York's BMPs are consistent with the United States Environmental Protection Agency approved Non-Point Source Pollution Management Plan. The State's plan outlines our approach to implementing timber harvesting BMPs. Proper use of BMPs can eliminate these problems before they occur (New York Forestry BMP Field Guide 2000).

Action 1.2.2: Establish special management zones and **buffer strips** along water resources.

The primary management objective for ponds within the Unit is to maintain good water quality and bank stability as well as **aesthetics** along the shorelines. To meet these management objectives, natural and/or protection areas have been established around all three ponds in the Unit. Also, Labrador pond is further protected by special regulations that are listed in Appendix IX.

The primary management objective for streams within the Unit is to maintain good water quality and bank stability which are essential in supporting healthy, self-sustaining fish populations. Good water quality in these streams will help ensure good water quality in their receiving waters. Establish a 100 foot special management zone along both sides of all streams in the Unit. A 50 foot protection buffer should be established along both stream banks to aid in maintaining stream bank stability and to ensure adequate shading. Limiting the extent of solar heating during summer months will help maintain cool water temperatures necessary to support wild trout. The next 50 feet should maintain at least 75% of the pre-harvest **basal area**, (tree density). Clearcutting should be avoided within 100 feet of any stream. Studies conducted in the western United States, in areas that have been **clearcut**, indicate that ambient air temperature in adjacent, uncut narrow stream corridor riparian zones tends to be much higher after clearcutting than prior to the clearcut. Increased ambient air temperature usually leads to increased water temperatures which, in turn, can negatively impact resident fish, herp and invertebrate populations. Stream habitat management activities (willow planting, bank stabilization projects, construction of fish habitat improvement structures, etc.) should be allowed within the Unit.

To protect spring seeps, special management zones will be established. The special management zones should be at least 100 foot around seeps where at least 75% of the pre-harvest basal area is maintained. All trees will be felled away from seeps.

To protect vernal pools, special management zones will be established. The special management zone

should be at least 100' wide, (if possible, wider is better) around pool perimeters. Maintain at least 75% crown cover and minimize disturbance of leaf litter and soil. In special management zones, restrict logging to frozen or dry ground conditions if possible. Do not create ruts deeper than 6 inches. If rutting begins, immediately suspend operations. Any ruts must be leveled.

Special management zones will be sheltered from most mechanical activities for environmental and aesthetic reasons. Stream banks, spring seeps and vernal pools will be protected so that mechanical disturbance does not cause excessive soil movement, erosion and degradation of water quality.

Land clearing for **log landings** and oil and gas activities will be avoided within 250 feet of all water resources (ponds, streams, wetlands) on the forests. Vegetation will be retained along water courses and stream crossings during timber harvesting, recreational facility development and all other construction activities. If steam crossings are necessary, temporary bridges or culverts will be required to protect the stream bank and prevent sedimentation from entering the stream channel. All stream crossings will comply with the Department's Protection of Waters Program and the New York State Forestry Best Management Practices for Water Quality.

All surface disturbance related to oil and gas exploration and development will be avoided within 250 feet of all ponds, streams, spring seeps, vernal pools and wetlands.

Action 1.2.3: Protect 408 acres of freshwater wetlands from harvesting, recreational development and oil/natural gas exploration activities.

360 acres of these wetlands are on Labrador Hollow Unique Area where timber harvesting or oil/natural gas exploration activities will be prohibited.

In the remaining 48 acres of wetlands, the following management guidelines will be followed. No timber harvesting equipment allowed in wetlands. Any trees cut within wetlands must be winched out. Maintain at least 75% of pre-harvest basal area evenly spread throughout both the wetlands and a 100 foot special management zone surrounding the wetlands. Any newly built forest access roads, haul roads, pipe lines or work associated with oil and gas development will be kept at least 250 feet from all wetlands. Additionally, surface disturbance related to oil and gas exploration and development will be avoided within 250 feet of any waterbody.

Action 1.2.4: Protect Water Resources from Hazardous materials spills

All contractors using heavy equipment on the Unit will be required to maintain their equipment to prevent the leakage of fluids. They will also be required to have fluid containment kits present on the job site at all times. In the event of a spill, all tainted soil will be removed and disposed of properly. Cleanup will be supervised by DEC Environmental Remediation staff.

Action 1.2.5: Protect aquatic and terrestrial ecosystems from the negative impacts resulting from invasive exotic species.

Continue to monitor and control Invasive exotic plant species Common Reed (*Phragmites australis*), Pale Swallowwort (*Cynanchum rossicum*) and Purple Loosestrife (*Lythrum saliceria*) on the Labrador Hollow Unique Area. Since 2003, the Department along with Adopt-A-Natural-Resource/ Volunteer Stewardship Agreement partners have been monitoring the presence of these invasive exotic species. Control measures have been implemented using **herbicide** and bio-controls. Control measures began by initiating the State Environmental Quality Review Act (SEQRA) and included the development of a herbicide application plan. Private contractors were hired to perform the herbicide treatments. A competitive bid process was used to determine the contractor with the lowest bidder awarded the contract. The Contractor was required to be, or be employed by, a NYSDEC Certified Pesticide Applicator certified in Category 2a (Forest Pest Control) and must be or be employed by a NYSDEC Registered Pesticide Business.

Additionally, milfoil may become a problem in Labrador pond. The Department will survey to determine if it is native or Eurasian milfoil. If it is native milfoil no control measures will be taken. However if it is Eurasian milfoil appropriate control measures such as herbicide or introduction of one of the following species of insects that feed on milfoil will be considered. Species of insects that feed on milfoil:

- milfoil weevil, *Euhrychiopsis lecontei*
- a naturalized pyralid moth, *Acentria ephemerella*
- a native chironomid midge, *Cricotopus myriophylli*

There is a 0.1 acre patch of Japanese knotweed (*Polygonum cuspidatum*) on Morgan Hill State Forest on and near Shackham Pond dam. The Department plans to begin controls measures as soon as possible.

In the event that invasive exotic (non-native) plants or insects are found elsewhere on the Unit, an overall assessment of the impacts will be conducted and control measures evaluated and considered. Control will follow the same process as has already been done on Labrador Hollow Unique Area.

Objective 1.3: Protect Endangered Species and Unique Habitats.
Protection of endangered species is a priority. No rare or endangered species of animals are known to exist on the forests at this time. The Department will work with the New York Natural Heritage Program to develop and implement management strategies that will protect and perpetuate the threatened and endangered plant species as well as the unique plant communities found on the Unit.

Action 1.3.1: The Department will work with the New York Natural Heritage Program to locate and protect the *threatened*, Northern Bog Aster (*Symphyotriuham boreale*), *endangered*, Puttyroot (*Aplectrum hyemale*) and *rare plant community*, a maple-basswood rich mesic forest that are found on the Unit.

Action 1.3.2: Continue the protection of Labrador Hollow Unique area by limiting recreational use, development, and restricting timber harvesting as outlined in the original Labrador Hollow Unique

Area management plan completed in 1979.

The Labrador Hollow Advisory Council recommended limiting recreational uses in order to protect the unique character of the area. Recommendation 19 on page 33 of the original plan addresses Active Recreation Facilities as follows: *None should be developed nor should such activities be encouraged in any way. Area is a Wilderness type area, and recreational opportunity should be passive. Small numbers of users and participants.*

In keeping with the recommendations in the original plan, special regulations were developed. These regulations were amended when the plan was updated in 1991 and will continue to be implemented. The following special regulations have been implemented to protect rare and endangered species, reduce illegal activities, manage high level recreation use and to provide for the safety of visitors to Labrador Hollow Unique Area:

- Bathing or swimming is prohibited.
- Boat launching is permitted only from the designated boat launch on the west side of Labrador Pond.
- Motorized boats are prohibited.
- Camping and open fires are prohibited.
- Snowmobiling is prohibited.
- Domestic animals must be under the complete control of their owner/handler.
- Off-road vehicle traffic is prohibited.
- Hunting and trapping are permitted as follows (see map):
    - Zone 1 (556 acres) - Hunting and trapping are prohibited. This area includes all of Labrador Pond, the boardwalk, Tinker Falls, and most of the trails.
    - Zone 2 (918 acres) - Hunting and trapping are permitted. Zone 2 is the remaining area of Labrador Hollow Unique Area outside of Zone 1.
- Fishing in Zone 1 is permitted only from a boat on the pond or creek or from the fishing pier. To protect the shoreline vegetation, fishing from the shoreline is prohibited. Fishing is permitted in Zone 2.
- Non-motorized hang-gliding is allowed by special permit only.
- Although not legally prohibited, there are no approved horseback riding or mountain biking trails or facilities in Labrador Hollow Unique Area.

The original plan outlined development of the following facilities on the Area.

- Two outdoor education trails, as well as parking/staging areas with maps and regulation signs.
    - One at the site of the boardwalk trail. The boardwalk trail and parking area were developed in 1985 and the boardwalk was rebuilt in 2007-08. Sanitary facilities were also developed in 1992. The sanitary facilities were no longer functional and have been removed. The sanitary facilities were replaced by portable facilities that were placed in an Adirondack style structure that was constructed in 2009. In 2009, a new kiosk was installed at the boardwalk parking area.
    - The second proposed trail was north of the Tinker Falls trail and would proceed north and west into the wetland complex. This trail was never developed and the Tinker Falls

trail was developed instead. In 2008 the Tinker Falls trail was made accessible to people with mobility impairments. This included an accessible parking area on the east side of Route 91.

- Allow the FLT to create a hiking trail from Kettlebail State Forest through Labrador Hollow Unique Area to the Hang gliding launch site. This trail has been recently completed and named the Skyline Trail.
- Pond access was initially developed at the north end of the pond as outlined in the plan. Upon acquisition of the Chanoke property in 1988, a car top boat launch was constructed on a narrow channel on the west side of Labrador pond. In 2004, a fishing pier was constructed along the channel to provide fishing opportunities for people with mobility impairments.

The original plan sought to minimize development on the area. The only development done outside of the original recommendations were the facilities created to provide opportunities for people with mobility impairments. Most all of the proposed projects in the original plan have been completed. Therefore, the only new development proposed for Labrador Hollow Unique Area are kiosks at the Tinker Falls parking area and boat launch/fishing pier site as well as the Tinker Falls sustainable trail. Off trail travel on steep fragile slopes in the Tinker Falls area is becoming a problem. Traversing steep slopes is causing vegetation loss resulting in erosion. Efforts are being made to re-vegetate sensitive slopes. The Tinker Falls sustainable trail is being developed to allow access from the existing trail to the falls amphitheater with minimal negative impact. Additionally, hiking trails will be relocated when necessary to minimize adverse impacts on the environment.
As was recommended in the original plan, timber management will not occur on Labrador Hollow Unique Area. Tree cutting on Labrador Hollow Unique Area will be limited to hazard trees along roads, trails, utility lines, near parking areas, if needed for habitat improvement or to perpetuate rare, threatened or endangered species, species of special concern, as well as unique habitats.

Objective 1.4: Conduct Periodic Forest Inventories.
Natural resource research can influence management decisions and strategies. Periodic collection of data on vegetation and wildlife will monitor ecosystem conditions and help predict future changes. A forest inventory was conducted on the Unit during the winters of:

- 2002 on Kettlebail State Forest
- 2003 on Labrador Hollow Unique Area
- 2007 on Morgan Hill State Forest, (Onondaga RA #1)
- 2008 on Morgan Hill State Forest, (Cortland RA #4)

Periodic inventories and re-inventory after each silvicultural treatment will continue to be conducted.

Action 1.4.1: Forest inventories will be conducted in advance of management plan updates.

Objective 1.5: Address the "Gaps" Identified in the Landscape Surrounding the Unit.
Action 1.5.1: Address changes in forest structure by increasing young early successional forest acreage through natural regeneration harvests. The long term goal will be to maintain 15 to 20% of the Unit in an early successional forest stage. Young early successional forests provide critical habitat

for a suite of wildlife species that require early successional cover such as the ruffed grouse, American woodcock, white-throated sparrow, chestnut side warbler, yellow warbler, Adler flycatcher, brown thrasher, gray catbird and white tailed deer.

A). Designate 28 stands totaling 562 acres for creation of early successional forests through even-aged regeneration harvests over the next 20 years. These harvests will strategically promote plant species that require high amounts of sunlight, such as aspen, red oak, chestnut oak, white ash, black cherry and pin cherry. Larger stands may be converted to natural hardwoods with a series of smaller regeneration harvests over time, instead of one large regeneration harvest. Most regeneration harvests will vary from 1 to 25 acres in size.

B). Designate 51 stands totaling 1096 acres to be managed on a 60-year **rotation** to provide early successional habitat. 447 acres of these stands will be regenerated over the next 20 years. Many of these stands contain aspen or have aspen growing in adjacent stands. Some of these stands will be managed to perpetuate aspen while others will likely grow other hardwoods such as red maple and white ash. Even-aged regeneration methods will be used to create thickets of dense seedling sapling trees that provide ideal brood cover for many species, most notably woodcock and ruffed grouse. If a commercial harvest is not viable, early successional habitat management will be done as sale related work with a commercial forest products sale that is conducted in the vicinity of the stand. Early successional habitat has been divided up into a series of 18 blocks that range from 3 to 220 acres in size. Blocks of less than 8 acres will be regenerated in one treatment. Blocks of 8 acres and larger will be treated by regenerating ¼ of the block every 15 years. Most regeneration harvests will vary from 1 to 25 acres in size.

A total of 1009 acres or 14% of the Unit is scheduled for even-aged regeneration harvests. These regeneration harvests are scheduled evenly throughout a 20 year cutting cycle so as to provide a shifting mosaic of early successional habitat. Most of these stands are softwood plantations that have received little or no past treatment. Some of these stands are beginning to decline. Therefore these softwood plantations will be salvaged before they decline and will be regenerated to natural hardwoods. The regeneration harvests combined with the existing early successional habitat will result in a total of 18% of the Unit in early successional forest at the end of this planning period.

<u>Action 1.5.2:</u> Address changing forest composition - reduced presence of high value species.

The demand for high value timber species (black cherry, hard maple, and red oak) has resulted in these species being harvested from private lands at a rate that reduces their dominance in the forest. As a result, species like red maple, which is not in high demand, have become more dominant and plentiful in the forest. Since many life forms from fungi, to insects, to birds, depend on specific tree species, their populations could also be altered.

Changes in the prevalence of oak types provide a picture of this issue. According to the United States Forest Service surveys between 1980 and 2003, the oak types in the South Central Highlands Unit have declined 35 percent. The three forests addressed in this assessment are within the South

Central Highlands Unit. From the standpoint of biological diversity, it is important to continue to perpetuate oak types within this Unit. Insects and diseases have affected other mast-producing species including beech, ash, and butternut. The decline of these hardwood species has the potential to negatively impact wildlife populations.

When conducting intermediate forest **thinning** favor high quality black cherry, hard maple and red oak as future crop trees where site conditions are favorable.

Action 1.5.3: Address changing forest composition - small percentage of conifers in the landscape.

Long term conifer areas were identified through the forest inventory process because this cover type is especially important to wildlife and for landscape diversity. Conifer trees provide a variety of special functions for many species of wildlife. Conifer forests moderate temperature extremes, which can help provide winter thermal cover, help moderate snow depth, provide shelter from wind and provide escape cover on a year-round basis. Conifer stands provide valuable habitat for many groups of wildlife species, including white-tailed deer, grouse, and wild turkey. In native eastern hemlock stands, the diversity of wildlife species increases with age. This is due to increased diversity of structural habitat in these older stands (DeGraff et al, 1989). For purposes of this assessment, long term conifers are **long lived conifer** species - specifically eastern hemlock, eastern white pine, and Norway spruce. Norway spruce, which is a non-native species, will be considered a long term conifer species because it has proven well suited to the heavy clay soils of Central New York. Also, it is a desirable forest product, regenerates more readily than most native conifers, is relatively disease resistant and has proven to be a valuable substitute for natural species.

Long term conifer areas are forest stands where the management objective is to maintain at least 50% conifer species in the stand. Species of conifers that will be retained are hemlock, white pine and Norway spruce. The long term objective in DEC Region 7 is to maintain a minimum of 20% of each State Forest in conifer cover.

On the Unit, the Department will attempt to maintain at least 34% in conifer cover by perpetuating the existing hemlock component and promoting natural regeneration of spruce and white pine when conducting timber harvests. Softwood cover types provide essential habitat for numerous species from fungi to birds and mammals. This will help to maintain the biodiversity of both the Unit and the surrounding landscape. The softwood component will be enhanced by managing:

- 845 acres of Norway spruce, Norway spruce mixed with other softwood or Norway spruce mixed with hardwoods using even-aged management techniques to create future forests comprised predominately of conifers.
- 591 acres of Norway spruce, Norway spruce mixed with other softwood or Norway spruce mixed with hardwoods using uneven-aged management techniques to create future forests comprised predominately of conifers.
- 126 acres of white pine or white pine mixed with other softwood plantations using even-aged management techniques to create future forests comprised predominately of conifers.
- 254 acres of native northern hardwoods mixed with hemlock using the uneven-aged

management system on 20-30-year **cutting intervals** to perpetuate the hemlock component.

- There are 531 acres of northern hardwood/hemlock, 102 acres of Norway spruce and 37 acres of white pine that are either **forested wetlands**, protection areas or riparian zones. There will be no forest management activities in these areas. These areas will be part of the 34% softwood cover on the Unit.

Creating additional softwood acreage by future tree planting may be considered. However, natural regeneration methods will be attempted first as tree planting may necessitate extensive **site preparation**, the use of herbicides and considerable expense.

Action 1.5.4: Address changing forest composition - impacts from introduced insects and diseases by retaining healthy ash, beech, butternut and elm trees.

Ash, beech and butternut trees have been declining in recent years. **Ash decline** has been described as the decline and death of ash trees by unknown pathogens. Some pathogens may include diseases, poor soil/sites, cankers, insects, winter injury, or drought. There are several problems that affect ash trees including ash yellows and ash anthracnose. Additionally, the discovery of the emerald ash borer in western New York in 2009 will likely contribute to ash decline in central New York in the future.

Beech bark disease has damaged and killed many of the oldest beech trees. The disease is a pathogen complex involving a scale insect and a nectria fungus. The insect pierces the bark to feed, creating a place for the fungus to enter at a later date. The fungus begins to grow within the bark, resulting in round scars. Fungal activity interrupts the tree's normal physiological processes and a severely infected tree will most likely die. Trees that do not die will remain weak and become more susceptible to wind damage.

Kettlebail and Morgan Hill State Forests as well as Labrador Hollow Unique Area are within the native range of butternut, but these trees are very rare on the Unit. Butternut is being killed throughout its range by a fungus most likely introduced from outside North America. The fungus initially infects trees through buds, leaf scars and possibly insect wounds or other openings in the bark. The fungus rapidly kills small branches and spreads throughout the tree. Butternut is the only natural host known to be killed by the fungus. The fungus can survive on dead trees for at least two years.

Healthy ash, beech and butternut trees are occasionally found growing among diseased and dying trees. Also healthy elm trees are occasionally found growing on these forests. Forest management activities will retain these potentially resistant trees using the following guidelines:

- Retain some dead or declining trees for their wildlife value (snags and/or coarse woody material).
- Retain trees free of symptoms with at least 50% live crown which are growing among diseased trees. These trees may be resistant and have value for the gene pool.
- All butternut and elm trees will be retained.

The Land Management Approach we are taking is an adaptive management approach. Therefore

management activities may be altered in the event that exotic pests species such as Asian long-horned beetle (*Anoplophora glabripennis*), hemlock wooly adelgid (*Adelges tsugae*) and wood wasps (*Sirex noctilio)* invade the Unit. For example, emerald ash borer (*Agrilus planipennis*), is getting closer to the Unit every year. Therefore, forest management activities will target ash as the species to harvest over all over the species of trees.

Action 1.5.5: Address fragmentation on the landscape through land acquisition or conservation easements.

Fragmentation of the landscape occurs when there is a change in land use. For example, many times when a farmer sells his land, the farm is broken into smaller parcels with different land uses. Fragmentation can also be caused by forests being subdivided and cleared for home development. Fragmentation of the landscape can adversely affect ecosystems and the overall beauty of the landscape. Fragmentation of the landscape surrounding the Unit is occurring at a relatively slow rate.

The landscape surrounding the Unit is about 58% forested and 32% in agriculture. There are several large blocks of undeveloped land on the landscape. These large blocks are made up of public land and the adjacent private land. Some of the adjacent private parcels are partly or totally surrounded by State land. In order to prevent fragmentation of the landscape next to the State lands, the Department will seek to purchase or obtain conservation easements on in-holdings and some adjacent private parcels. Purchases will only be made from willing sellers. The Department will also work with local land trusts and conservation based not-for-profit organizations which can purchase and hold conservation easements on adjacent private lands.

Action 1.5.6: Provide large blocks of forest land with high canopy cover.

Areas with continuous high canopy forest conditions are noticeably lacking in the surrounding landscape. **High canopy forest areas** that are a minimum of 100 acres in size will be designated to provide habitat for wildlife species that require large blocks of mature forests. Studies suggest that forests with a minimum of 60% (on average) forest canopy closure provide the greatest benefit to species of wildlife that require mature forest habitat. A total of 1,718 acres have been set aside as natural areas and protection areas in the Unit. Some of the areas are isolated and will not be large enough to meet high canopy forest criteria. However they will provide closed canopy habitat. There are three existing large blocks of forest on the Unit that meet the high canopy forest criteria:

- 389 acres of the eastern slope of Labrador Hollow Unique Area.
- 264 acres of the forested wetland on Labrador Hollow Unique Area.
- 392 acres of the western slope of Labrador Hollow Unique Area. This area includes 11 acres of natural area on Kettlebail State Forest.

All three of these areas have been designated as natural or protection areas. Natural areas are areas allowed to develop naturally; intervention will be considered to protect forest health (e.g. fire or invasive plant or animal invasive species), to enhance structural or species diversity, to protect, restore or enhance significant habitats or to create regeneration opportunities for desired plant

species. Protection areas may include rare, threatened and endangered species habitat, steep slopes, forested wetlands and riparian zones. As such, natural and protection areas will provide blocks of forest land with high canopy cover.

Action 1.5.7: Provide attributes of mature forests such as coarse woody material, den and snag trees as per the Department retention policy.

Coarse woody material is an important component of the forest ecosystem. This woody material stores moisture, cycles nutrients as it decays, and provides habitat **niches** for insects, reptiles, plants and fungi. Coarse wood material naturally occurs when limbs break, trees are blown over or snags fall. Coarse woody material will be provided as follows:

- Tops of felled trees will not be sold for firewood following sawtimber harvests, except along travel corridors or where aesthetics are important.
- Non-commercial logs will be left in the woods during harvesting.
- Minimum utilization limits will generally not be required in timber harvests.
- Whole tree harvesting will not be permitted.
- Natural occurrences of tree mortality.

Where den trees, legacy trees and snags are present, an average of one den tree and three snag trees per acre will be retained during forest management activities. The Occupational Safety and Health Administration, (OSHA) considers snag trees to be hazard trees. During harvesting operations timber harvesters are required to either stay two tree lengths away from hazard trees or fell the trees to eliminate the hazard. Therefore, it may be difficult to retain snag trees in managed forest stands. However, over time high concentrations of snag trees will develop in the protection and natural areas on the Unit.

Den trees, legacy trees and snags will provide foraging, perching and nesting opportunities for cavity nesting birds (woodpeckers, owls, wrens, nuthatches, vultures, ducks) and cavity nesting mammals (raccoons, squirrels, bats, mice, opossum, black bear, porcupine) as well as insects. Snags will eventually become coarse woody material. To provide wildlife habitat, emphasis will be given to maintain den trees and snags near water, fields and edges where possible. When possible, mast producing species of trees like beech, black cherry, butternut, hickories and oaks will be left as den and legacy trees. This will be applied in both even-aged and **uneven-aged system**s. In many forest stands, den trees and snags are not common (i.e. red pine plantations). Some declining trees will be retained to become future den, legacy and or snag trees where needed.

Action 1.5.8: Address the lack of mast producing trees in the landscape.

Many species of birds and mammals use mast as a food source. To provide diversity of mast producing trees on the landscape, all management activities on the Unit will favor the retention of healthy beech, black cherry, butternut, hickories and oaks.

There is some red oak growing on the Unit. There are 9 stands totaling 172 acres on the Unit that will

be managed to perpetuate red oak. If efforts to regenerate oak fail, planting of oak seedlings will be considered. Planting would be done as additional work required in conjunction with forest product sales. Additionally, 346 acres of the eastern slope of Labrador Hollow Unique Area contains red oak. These trees will provide acorns as food for wildlife far into the future.

Action 1.5.9: Address the lack of old growth forest characteristics in the landscape.

There are no large blocks of old growth forests in the landscape. By its very definition, true old growth forests cannot be created. However, stands which are protected from direct human impact over a very long period of time can develop many of the valuable characteristics associated with old growth. A long term management strategy of this nature cannot be implemented on private land, considering the typically short tenure of ownership. Publically held forest land is better suited to support long term management strategies such as the development of old growth characteristics in dedicated areas. There are 1,718 acres, or 23% of the Unit that have been designated as natural areas and protection areas. Additionally, there are about 2,858 acres that have been designated as natural areas and protection areas on State Forests and Parks in the surrounding landscape. Natural and protection areas will provide blocks of forest land that will develop old growth characteristics over time.

Even though old growth forests are limited in this landscape there are over 3 million acres of preserved forests in the Adirondack Forest Preserve, Catskill Forest Preserve, Allegheny State Park and other smaller State Parks. Forests with old growth characteristics will likely develop in these preserves/ parks, which are 18% of New York States forest land and 11% of the entire State.

Objective 1.6: Provide for Species and Structural Diversity by Employing a Variety of Silvicultural Systems and Strategies throughout the Time Frame of this Plan.

Table 8: Summary of Present and Predicted Management Direction

	Present Stand Structure			*Predicted Future Stand Structure*		
	# Stands	Structure	Acres	# Stands	Structure	Acres
	204	Even-aged	4154	123	Even-aged	2694
	55	Uneven-aged	1229	121	Uneven-aged	2537
	0	Even or Uneven-aged	0	7	*Even or Uneven-aged	79
	4	Hay field	97	4	Hay field	85
	63	Protection/Natural Areas	1645	71	Protection/Natural Areas	1730
	27	**Other	221	27	**Other	221
TOTAL	**353**		**7346**	**353**		**7346**

*These include stands where the decision of what long term management system to use has been

delayed until the time of treatment. This includes stands that will not be managed for 20 years, stands that need additional analysis and young stands that need time to develop.
**Other includes roads, shale pits, parking lots, ponds and non-forest stands (open land, open wetlands and shrub/brush lands).

Forest product sales are the primary means of achieving the desired stand structures. Forest management activities may vary slightly due to workloads, natural disturbances such as ice and wind storms, and the availability of markets for low grade forest products. The forest product sales procedure starts by analyzing the stand to be treated. **Stand analysis** includes collecting updated stand inventory data, then summarizing and analyzing the data to determine if a treatment is appropriate and referencing the UMP to determine the long term management direction in the stand. Once the analysis is complete the information is used along with published silvicultural guides to develop a forest products marking prescription. A marking prescription details how many and what types of trees will be marked for harvest and the **residual** trees to leave. The long term management direction is the primary factor in determining the marking prescription. Upon completion of the forest products marking, a notice of sale is developed. A notice of sale includes:

- a summary of the forest products by tree species
- a location map of the sale area
- minimum acceptable bid
- bid opening date
- terms and conditions of the sale such as:
    - timing of harvest
    - required use of Best Management Practices
    - environmental protection requirements
    - insurance requires
    - equipment limitations
    - payment schedule
    - length of the contract
    - cleanup work required
    - additional work required
    - performance bond requirements

Once the notice of sale is completed and approved, the forest products are offered for sale to the forest products industry through a competitive bid process. When bids are received the sale is awarded to the highest approved bidder and a forest products sale contract is signed and approved. The high bidder is allowed to harvest the forest products in compliance with the terms and conditions of the forest products sale contract and under close supervision of a Department Forester. Upon completion of harvesting the buyer must restore the sale area to a condition that is acceptable to the Department.

<u>Action 1.6.1:</u> Manage 2,537 acres using uneven-aged silvicultural systems.

Uneven-aged **silviculture** is a management system that maintains at least three or more age groups

ranging from seedlings and **saplings** to very large, mature trees. Uneven-aged silviculture is commonly referred to as the **selection system**. The selection system uses two different methods, **single tree selection** and group selection.

Single tree selection is the selection of individual or very small groups of trees for harvest. This method is used to maintain unbroken forest canopy as desired in the uneven-aged high canopy forest areas. Single tree selection tends to favor **shade tolerant** tree species such as hemlock, beech, and sugar maple. Many of these species are long lived. Through this system, a vertical layering of tree crown canopy is created with each layer providing distinct habitat niches. This maintains a relatively continuous tree crown canopy which lessens the impact for plant and animal species that cannot tolerate substantial changes in their habitat.

Group selection is the selection of a group of trees up to 2 acres in size for harvest. This method is used to create openings for the regeneration of shade-intolerant species such as black cherry, red oak and white ash. Group selection allows for greater species diversity in uneven-aged stands.

Many of the uneven-aged stands in this Unit will be managed using a combination of single tree and group selection. Single tree and group selection treatments will occur every 20 to 30 years in uneven-aged stands. In these treatments, trees up to 25" in diameter may be left as residual crop trees. Some trees of unique characteristic and size will be left as biological legacy trees as determined by the forester.

<u>Action 1.6.2:</u> Manage 2,694 acres using even-aged silvicultural systems.

Even-aged silviculture is a management system that maintains a forest stand where the trees are about the same age. Even-aged silviculture will promote natural regeneration of **shade intolerant** species such as black cherry, red oak, aspen and white ash. This system most often involves several intermediate thinning in a stand over time and ends with a regeneration cut at a rotation age. Rotation age is the time between stand establishment and the final regeneration harvest. In most cases **intermediate treatments** will occur every 20 years in even-aged stands. At the end of the rotation seed cuts are done to establish regeneration. Once the regeneration is established a **release** cut or **overstory removal** will be done to release the new stand of trees. Rotation age on the Unit will vary from 60 to 120 years. Regeneration of even-aged stands will be accomplished using one of three methods: clearcut, shelterwood or **seed tree method**s.

The clearcut method is the removal of all trees in a stand at the same time. There are insufficient amounts of advance regeneration present on the ground when the **overstory** trees are removed. After the removal of the overstory trees, seedlings become established in several ways. Trees in adjacent stands provide seed that will help establish new growth. The increased sunlight allowed to reach the ground will cause some seeds on the forest floor to germinate and establish new growth. Also some of the trees that are cut will sprout at the stump and establish new growth. In clearcuts of 20 acres and larger, **variable patch retention** may be practiced. This involves leaving patches of uncut trees and large individual trees in the clearcut area. The patches provide islands of forest cover as

well as seed sources in the middle of the clearcut areas. The number and size of patches retained will vary depending on the size of the clearcut. The individual trees and some of the trees in the patch retention areas may blow down over time. These blown down trees will provide two important benefits to the forest ecosystem. First they will create coarse woody material on the forest floor. Second they will contribute to the establishment of pit and mound micro-topography. This is especially important in plantations where past agricultural practices had eliminated the micro-topography.

The **shelterwood method** is the removal of all trees in a series of two to three treatments. The preparatory cut is done to prepare the site for the establishment of regeneration. Preparatory cuttings may be done to encourage the development of thrifty seed bearing trees, to eliminate undesirable trees or to accelerate the decomposition of unfavorable humus layers. The seed cut is done to establish regeneration. This involves a heavy cutting that will allow enough light to reach the forest floor and encourage the establishment of tree seedlings. The trees that remain provide seed source and shelter for the establishment of regeneration. The best quality timber trees in the stand are left for this purpose. Finally the removal cut is done to release tree seedlings when they are established. All of the overstory trees are removed in this treatment and a new stand is created.

The seed tree method is the removal of all trees in a series of one or two treatments. This method is similar to the clearcut method except that a few individual trees or groups of trees are left to provide seed source. The remaining trees may or may not be removed once regeneration has become established.

Action 1.6.3: Manage 79 acres using uneven-aged or even-aged silvicutural systems.

The decision of which management system to use on these stands will be delayed until the time of treatment. Many of these stands need more time for stand structure to develop before a management system can be considered.

Objective 1.7: Enhance Wildlife Habitat.
Action 1.7.1: Protect habitat for birds of prey.

Many raptors in New York are listed as species of special concern. Within the Unit, these may include: Sharp-shinned Hawk, Cooper's Hawk, Goshawk and Red-shouldered Hawk. Each species has specific habitat requirements when nesting. Birds may occupy territory seasonally, or return to the same location yearly. During breeding season, usually between April and July, human activity near nests may disrupt breeding or cause the adult birds to abandon their young. DEC Bureau of Wildlife staff will be consulted and management activities will be adapted to minimize disturbance to birds that are known to be nesting on the Unit. Adaptive management strategies and actions will be developed and applied on a case by case basis. These strategies may place restrictions on timber harvesting and gas exploration activities and could include: setbacks, natural areas or seasonal restrictions. For recreational uses, actions may include trail closures or rerouting of trails. When specific management strategies for individual species are developed, they will be incorporated into the management plan.

Action 1.7.2: Licensed falconers will be permitted to remove raptors from the Unit, in compliance with ECL Article 11 and 6 NYCRR Part 173.

Action 1.7.3: The Department will encourage monitoring and research on the status of northern goshawks to ensure sustainable populations, and to ensure that our knowledge of the natural history and ecology of these raptors continues to increase.

Action 1.7.4: Diversify the State Forest landscape through adaptive forest management. Management activities will provide important landscape components for wildlife.

- Gradually convert 921 acres of short lived conifer plantations into natural hardwood seedling/sapling stands as previously described by action 1.5.1. This action will provide habitat for a suite of birds that require young dense vegetation for breeding, nesting and foraging. Bird species represented include the ruffed grouse, American woodcock, white-throated sparrow, American goldfinch, rufous-sided towhee, chestnut-sided warbler, yellow warbler, blue-winged warbler, white-eyed vireo, alder flycatcher, willow flycatcher, least flycatcher, hermit thrush, brown thrasher, Indigo bunting and gray catbird. Early successional forests provide habitat for mammals that benefit from a brushy habitat component. Many mammals benefit from a variety of habitats and edges with adjacent cover types. Species that use brushy areas include the red fox, gray fox, white-tailed deer, eastern cottontail, woodland vole, eastern chipmunk, woodchuck, southern bog lemming and meadow jumping mouse.
- Maintain and develop 2,486 acres of long term conifer areas as previously described by action 1.5.3. This conifer area will provide important habitat for a suite of bird species requiring conifers such as the Magnolia warbler, blackburnian warbler, pine warbler, yellow-rumped warbler, pine siskin, red-breasted nuthatch and black-throated green warbler. Conifer forests moderate temperature extremes and thereby provide winter thermal cover. Mammals that require or benefit from conifer cover include the red squirrel, snowshoe hare, white-tailed deer and bobcat.
- Designate natural/protection areas to grow trees beyond financial maturity as described by action 1.5.9. Over time, natural/protection areas will eventually develop old growth forest characteristics. Old growth forests provide unique aesthetic and biological values.

Action 1.7.5: Create 10 to 20 vernal pools to enhance habitat for wildlife.

Vernal Pools are seasonal wetlands. Their defining characteristics are that they dry up and do not contain fish. Drying may occur annually or in drought years. In North America, about one half of all frogs and one third of all salamanders rely on seasonal or temporary wetlands (vernal pools) for development. Vernal pools are less likely than permanent wetlands to contain *Sapro legnia*, a fungus that is detrimental to frog, toad and salamander eggs. Vernal pools also have low numbers of eastern and red spotted newts that prey heavily on amphibian eggs. Reptiles such as the eastern box turtle and common garter snake also use vernal pools. (Biebighauser, 2003) Vernal pools are used by mammals, including the Indiana bat, as a source of drinking water. Neotropical migratory birds such as the worm-eating warbler, veery and wood thrush also use vernal pools.

Creation of vernal pools may be done in conjunction with forest products sales. The pools will be 100 to 10,000 square feet in size and about 1 to 3 feet deep. Vernal pools will be created in or near natural and protection areas. This will provide closed canopy forest cover and minimize impacts from mechanical activities. Over time the areas around the vernal pools will contain coarse woody material from dead falls, which is also important habitat for many amphibians and reptiles.

Action 1.7.6: Protect spring seeps and wetlands as valuable wildlife habitat.

Spring seeps are broad shallow flows that occur where groundwater emerges on sloping terrain usually on the lower slopes of hillsides and mountains. Spring seeps provide important habitat for many species of reptiles and amphibians. Many animals that use them do so opportunistically, but several species of salamanders, including the Dusky and Spring salamanders, are dependent upon the existence of spring seeps. Wood turtles may forage in the shallow waters and rehydrate before further upland travels. Leopard Frogs may also be found hunting insects in such areas, and many snakes such as Garter snakes visit in search of the frogs. (Partners in Amphibians and Reptile Conservation, 2003) Spring seeps are also valuable to birds and mammals, particularly wild turkey, in severe winters because the emerging groundwater provides snow-free feeding sites in winter and are among the first sites to provide green plants in spring. Spring seeps are used by neotropical migratory birds such as the worm-eating warbler, veery and wood thrush.

Wetlands are areas that are either transitional between land and water (where the water table is at or near the land surface) or areas of land that are covered by shallow water. Wetlands provide habitat for birds that require water in close proximity for breeding, nesting or foraging. The pond provides habitat for birds such as the tree swallow, wood duck, hooded merganser, mallard, American black duck, green heron and Canada goose. Wetlands also provide important habitat for a variety of amphibians and reptiles.

Action 1.7.7: Release and prune wild apple trees to improve habitat for wildlife.

There are 14 forest stands totaling 118 acres that contain wild apple trees on the Unit. Five stands totaling 62 acres are on the north end of Labrador Hollow Unique Area adjacent to the fields. Wild apples provide a valuable food source for many species of game including cottontail rabbit, gray squirrel, ruffed grouse, white-tailed deer and woodcock. Apples or apple seeds have been found in the stomachs of bobcat, fisher, fox, porcupine and red squirrel. Apple trees also provide good habitat for songbirds including blue birds, fly catchers, orioles and robins. Release and pruning of wild apple trees will improve the overall health of the trees and thereby increase the production of apples. The release will include cutting trees that overtop or potentially will overtop the apple trees. Many of the stands that contain wild apple trees will be managed as early successional habitat. Most of the forest management activities on the Unit will favor the retention of wild apple trees.

Action 1.7.8: Continue to provide habitat for grassland nesting birds by selling hay on up to 85 acres of Labrador Hollow Unique Area.

Since the development of the original Labrador Hollow Unique Area plan, the Department has managed the fields on the north end of the area for agriculture. Over time the management has changed from leasing for tilled crops and hay to just selling hay. The assessment conducted on the landscape surrounding the Unit showed that grassland habitat is lacking. Also, the Vesper Sparrow, which is a species of special concern and a bird that requires grassland habitat has been confirmed present on or around the Unit. Therefore, management objectives for these fields will be a combination of managing for grassland habitat and agricultural hay production. Hay will be sold to the highest approved bidder with a contract term of up to three years.

34 acres of fields 1, 2 and 5 will be managed for agricultural hay production. There will be no seasonal restriction for cutting of hay in these fields and multiple cuttings will be allowed each year. In order to maintain quality forge hay, tilling and planting of the fields to corn or soybeans may be allowed but only for two years at a time. At the end of the two years, the fields must be planted to species of grasses that are approved by the Department. There will be a minimum of six years of hay management between tilling and planting of corn or soybeans.

51 acres of fields 3 and 4 will be managed primarily for grassland bird habitat with agricultural hay production as a secondary objective. In order to provide ideal breeding opportunities for grassland birds, cutting of hay in these two fields will not occur before July 15th. Buyer will be required to mow these fields at least every other year with the option of removing or leaving the hay.

A field management map for Labrador Hollow Unique Area can be found in Appendix XIII.

Objective 1.8: Maintain Existing Fisheries Habitat.
There are 0.9 miles of protected streams on the Unit that are known to support brook trout. Past surveys suggest many other streams in the Unit may support a variety of fish species including brook trout. As such, all streams in the Unit will receive protection as outlined in the Department's Protection of Waters Program.

Action 1.8.1: Sample several of the larger non-classified streams in the Unit that may support a variety of fish species including brook trout.

Based on their size, several non-protected streams in the Unit may be capable of supporting trout. Bureau of Fisheries (BOF) staff will attempt to sample these waters in the coming years to determine if wild trout now inhabit them. If any streams do support trout, BOF staff will petition the Division of Water to have the water quality classification upgraded.

Action 1.8.2: Apply Best Management Practices on all activities as outlined in Action 1.2.1.

Action 1.8.3: Establish special management zones along all streams in the Unit to aid in maintaining stream bank stability and to ensure adequate shading as outlined in Action 1.2.2.

Action 1.8.4: Maintain the three ponds on the Unit as habitat for fish and wildlife.

The water level of the ponds will be maintained as outlined in Action 4.7.1. The Department will conduct periodic fish surveys in the ponds. Additionally, the Department will work with Onondaga County to continue stocking of trout in Spruce Pond. There are no plans to build any new ponds on the Unit.

GOAL 2: Provide Forest-Based Recreational Opportunities

Our goal is to provide a variety of rustic, forest-based recreational opportunities that are sustainable and compatible with the resources of the three forests. Trails are designed for family enjoyment for beginner-to-intermediate level users. New recreational facilities will be designed to provide access for people with disabilities as required by the Americans with Disabilities Act (ADA). Construction will be guided by the Principles of **Universal Design**.

Compatible recreation is a mainstay in a use-oriented management plan. Outdoor activities are widely enjoyed by millions of Americans. These State Forests provide opportunities for both active and passive forms of recreation. Some of the important attributes that contribute to pleasurable recreational experiences include public safety, accessibility, aesthetic character and quality of facilities.

A landscape perspective was applied when considering recreational opportunities. State Forest management proposes not to duplicate services and opportunities found nearby or within the landscape. Many developed recreational opportunities are provided at other locations in the area.

Objective 2.1: Maintain Existing Recreational Opportunities.
The Department will focus resources on the maintenance of existing trail systems in a way that protects the resource and maintains the rustic character of State Forests. In keeping with the primitive nature of the Labrador Hollow Unique Area, signing of trail locations will continue to be minimal. The Department will continue to work cooperatively with user groups through Volunteer Stewardship Agreements to maintain existing trails. Building trails without authorization from the Department is prohibited. Trail relocation requests will be considered on a case-by-case basis. Seasonal trail closures and other restrictions may be required to protect the trail surface from degradation. Volunteer Stewardship Program partners and user groups will be made aware of necessary trail closures or restrictions.

To help meet the increasing demand for recreation, the DEC has established partnerships with recreation groups to help maintain, enhance and build recreational assets. Partnerships are formalized through the Department's Volunteer Stewardship Program (VSP). The program is authorized by Section 3-0301 of the Environmental Conservation Law. The statute authorizes the Department to use a stewardship agreement for activities it approves for the preservation, maintenance or enhancement of State-owned natural resources. Volunteerism is the cornerstone of the VSP. Activities may involve remediating vandalism, establishing or maintaining access or nature

trails, building camping sites, providing interpretive services for school groups and other citizens, managing fish and wildlife habitats and otherwise providing positive benefits to the natural resource. The VSP program is a valuable tool that allows land managers to accomplish tasks with volunteers that otherwise would not be completed and with minimum cost to the State.

Action 2.1.1: Continue to allow the following recreational activities that do not require developed recreational facilities.

Activities that do not require developed recreational facilities that will be allowed on the Unit:

- big and small game hunting
- boating, non-motorized only
- informal camping subject to Environmental Conservation Law Rules and Regulations
- downhill/back country skiing
- fishing
- geocaching
- nature observation
- orienteering
- picnicking
- snowshoeing
- trapping

These activities may be prohibited or subject to special regulations on Labrador Hollow Unique Area. Labrador Hollow Unique Area special regulations are listed in Appendix IX.

Action 2.1.2: Maintain Hiking trails with the assistance of volunteers under the DEC's Volunteer Stewardship Program.

A VSP agreement currently exists with the Onondaga Chapter of the Adirondack Mountain Club and the Finger Lakes Trail Council to maintain the North Country National Scenic trails and Onondaga trails on the Unit. Routine trail maintenance is performed by volunteers in cooperation with Department Foresters. The Department will supply materials whenever possible within budget constraints. In some instances the Onondaga Chapter of the Adirondack Mountain Club or the Finger Lakes Trail Council has provided materials through grants or fund raising within the organization.

The North Country National Scenic Trail is built primarily for pleasure walking and hiking. When completed it will be the longest trail in the country. It will start near Crown Point, New York traverse through Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota and end near Lake Sakakawea, North Dakota. Because the trail is constructed for foot use, all sections of the NCNST within the Unit will be limited to foot travel only. This will include hiking, snowshoeing and cross country skiing.

The Skyline trail is a trail that runs from the hang glider launch site through Labrador Hollow Unique Area to the western edge of Kettlebail State Forest on Kettlebail road. The trail gets its name from the fact that sections of the trail run along the top or skyline of the two ridges on the east and west side

of Labrador Hollow Unique Area.

In order to protect the unique character of Labrador Hollow, hikers are encouraged to stay on marked trails, particularly in the Tinker Falls area. The Tinker Falls sustainable trail is being developed to allow access from the existing trail to the falls amphitheater with minimal negative impact.

The original Labrador Hollow Unique Area management plan sought to limit development and recreational uses in order to protect the unique character of the area. In keeping with this management philosophy, all trails on Labrador Hollow Unique Area will be limited to foot travel only. This will include hiking, snowshoeing and cross country skiing. The only exceptions are the trails and facilities that have been upgraded to allow access for people who are confined to wheelchairs.

Action 2.1.3: Maintain existing opportunities for snowmobiling on designated trails.

Snowmobiles primarily use corridor trails which pass through the State Forests. There are 18.8 miles of snowmobile trails on Kettlebail and Morgan Hill State Forests. Snowmobiling will be restricted to designated roads and trails. Requests from snowmobile clubs for trail relocations and corridor trail connections will be considered on a case-by-case basis.

The Department has a VSP agreement with the LaFayette Snowmobile Club for the grooming and maintenance of the snowmobile trails on Kettlebail State Forest and the Onondaga #1 portion of Morgan Hill State Forest. Also the Department has a VSP agreement with the Truxton Snowmobile Club for the grooming and maintenance of the snowmobile trails on the Cortland #4 portion of Morgan Hill State Forest. Routine trail maintenance is performed by volunteers in cooperation with Department Foresters. Funding for these activities is provided in part by the Snowmobile Trail Fund administered by New York State Office of Parks, Recreation and Historic Preservation.

Action 2.1.4: Maintain the trail on Morgan Hill State Forest that is available for four-(or more) wheeled ATV use by people with mobility impairments as outlined in Action 2.5.3.

Action 2.1.5: Maintain existing Hang Gliding opportunities by permit only.

Annually the Department issues a temporary revocable permit for the use of State land to the Condor Hang Gliding Club for use and maintenance of the hang gliding launch site on Labrador Hollow Unique Area. The permit also allows use of and requires maintenance of the existing “4-wheel drive” access trail from NYS Route 91 to the hang gliding launch site. As long as the club continues to meet the requirements of the permits, hang gliding will be allowed. There is a gate on the access trail to the launch site that prevents vehicle use by the general public. This gate is broken and will be replaced.

Action 2.1.6: Maintain existing camp sites at Spruce Pond.

The opportunity to camp at one of the twelve designated campsites at Spruce Pond will continue. Camping is allowed at these sites by permit only. Appendix IX - Department Rules, Regulations, Laws

and Policies lists the Spruce Pond Camping Rules. Appendix XIV – MAPS shows a Spruce Pond Campsite Map.

Action 2.1.7: Continue to allow ice climbing at Tinker Falls.

Tinker Falls is a popular destination for central New York ice climbers. The falls is close to Cortland, Ithaca and Syracuse and when ice conditions allow, it provides a good opportunity for day trips. Ice climbing will continue to be allowed under the following guidelines:

- Ice climbing at Tinker Falls is at your own risk.
- Climbers are to use conventional ice climbing gear such as helmet, ice axe, crampons etc.
- In order to protect the unique character of the falls and surrounding gorge, climbing in areas without ice and/or rock climbing are prohibited.
- No possession of glass containers or alcoholic beverages.
- No motorized vehicles including snowmobiles on the property.
- The area is closed from sunset to sunrise.

Additionally, ice climbers must follow the special regulations for Labrador Hollow Unique Area listed in Appendix IX.

Action 2.1.8: Monitor recreational use on the Unit.

Heavy recreational use is already occurring on the Unit, particularly the Tinker Falls area. As stated earlier in the plan, hikers are encouraged to stay on marked trails to protect this unique area. Off trail travel has become a serious problem in the Tinker Falls area, therefore the Tinker Falls sustainable trail project is being developed as outlined in Action 2.2.1. If off trail travel continues to be an issue, the Department will need to take measures necessary to protect sensitive areas. These measures may include trail relocations, trail blocking, trail closures or implementation of new Rules and Regulations.

Additionally, all other recreational facilities on the Unit will be monitored to assess impacts and determine if any of the above mentioned measures should be taken to reduce adverse impacts. The Department will look to Volunteer Stewardship Program partners to assist in monitoring and mitigation work whenever possible.

Action 2.1.9: Continue to allow horseback riding on the Unit.

Horseback riding will continue to be allowed on designated snowmobile trails when the trail surface is free of snow.

Action 2.1.10: Maintain aesthetics along trails by following special management zone guidelines.

Whenever harvesting close to or over a recreational trail, contact must be made with representatives of known trail adopter or trail user groups to explain the rationale for the harvest. Additionally,

educational or interpretive signs explaining the rationale for the harvest must be installed on site. Tops & slash must be kept at least 25' back from the edge of trails. Where possible, avoid clearcutting over and across any recreational trail. Oil and gas exploration and development surface disturbance will be avoided within 250' of trails. Temporary trail closures may be required to avoid conflicts and prevent safety hazards.

Objective 2.2: Enhance Recreational Opportunities

Action 2.2.1: Enhance the Tinker Falls trail by extending the existing trail.

The Tinker Falls sustainable trail is being developed to allow access from the existing trail to the falls amphitheater with minimal negative impact. Development of this trail will provide a quality recreational experience while helping to mitigate erosion caused by off trail travel on steep fragile slopes.

Action 2.2.2: Create a new single track multiple use trail system on Morgan Hill State Forest.

The Department will begin development of a 10 to 15 mile single track multiple use trail system on Morgan Hill State Forest. The maximum trail mileage will be 15 miles of single track trail. The trail system will be designed to provide a quality single track mountain biking experience. Trail design will seek to avoid crossing other summer use recreational trails whenever possible. DEC would consider using a short section of hiking trail as multiple use trail but only if there is no other alternative, meaning it is the best option from an environmental stand point. Other uses that will be allowed on the trails are cross country skiing, hiking and snowshoeing. The development phase of the project will be a cooperative effort between Department staff and members of CNY DIRT. Availability of Department staff and resources will be limited during the construction phase of this project. Therefore, trail construction will be largely the responsibility of volunteers. In order to complete the project, DEC will enter into a Volunteer Stewardship Agreement with volunteers from CNY DIRT.

Development of the trail system will include construction of a new parking/trailhead area on the Cross Road PFAR. Additionally, an existing log landing/shale pit on the Burma Road PFAR will be upgraded to provide a second parking/trailhead area.

Action 2.2.3: Enhance ATV access for people with mobility impairments by developing additional trails as outlined in action 2.5.3.

Action 2.2.4: Enhance camping opportunities by designating additional campsites on Morgan Hill State Forest.

Designate 6 to 8 campsites on Morgan Hill State Forest that are located away from the Spruce Pond campsites. These sites will provide a more remote camping experience and can provide campsites for hunters in the fall. There are several informal campsites that are currently being used by the public located outside of the designated Spruce Pond camping zone. Most of these campsites require a permit in order to legally camp at the site. A few of these informal campsites are in areas that can

sustainably support camping while others are in environmentally sensitive areas. Those informal campsites that are in environmentally sensitive areas will be closed. The Department will designate campsites that can provide an aesthetically pleasing camping experience, while minimizing adverse impacts to sensitive areas. Campsite designation will include placing signs to identify the sites and educate the public. All sites will be primitive sites with no sanitary facilities available. Camping at these designated sites will not require a permit and will be on a first come first served basis. Informal camping, camping where there is no designated campsite is allowed on Kettlebail and Morgan Hill State Forests. Camping on Labrador Hollow Unique Area is prohibited.

Whether camping at a designated site or informally, the following Department Rules and Regulations apply:

- Camping for more than three nights or in groups of more than nine people requires a permit. Camping permits may be obtained from DEC Forest Rangers. No camping permit will be issued to individuals under 18 years of age.
- Camping within 150 feet of a road, trail, spring, stream or other water body is not allowed, except at designated sites.
- Cutting, defacing, injuring in any manner, any live tree shrub or plant is prohibited.
- What you carry in, carry out. All garbage and refuse must be removed from camp site.
- Campfires are permitted for cooking, warmth or smudge. Campers can only use wood from dead and down trees. Use a fire ring when available. Fires must not be left unattended until fully extinguished.

Additionally, campers are encouraged to:

- Use designated camp sites whenever possible.
- Keep campsites in a clean and sanitary condition at all times.
- Use a camping stove for cooking rather than an open fire.

Objective 2.3: Enhance Public Information.

Action 2.3.1: Produce public use brochures and maps for the State Forests.

Brochures for Kettlebail and Morgan Hill State Forests as well as Labrador Hollow Unique Area will be produced. Brochures will use at least 12-point type to comply with the Principles of Universal Design (See Objective 2.5). We will develop large print versions on request. When brochures and maps have been completed, they will be posted on the Department website. The brochures will outline the recreational uses allowed on the Unit including permitted uses on the trails in the Unit.

Action 2.3.2: Construct and install informational kiosks.

Two new informational kiosks will be constructed and installed on Morgan Hill State Forest. One kiosk will be located near the intersection of the Herlihy PFAR, Cross road PFAR and Shackham road. The kiosk will hold brochures and maps of the State Forest and contain information pertinent to public use of the State Forest. The second kiosk will be at the fisherman parking lot near spruce pond. The kiosk will contain information pertinent to camping and fishing at Spruce Pond.

Action 2.3.3: Educate the public on forest management activities.

During forest product harvesting operations, educational signs will be posted in the area to explain the goals and objectives of the harvest.

Action 2.3.4: Continue to allow the use of the cabin at Labrador Hollow for environmental education.

The Department will allow use of the cabin by Volunteer Stewardship Program partners for outdoor recreation and environmental education.

Objective 2.4: Restrict ATV Use to Protect Forest Sustainability.
ATV use has always and will continue to be prohibited on Labrador Hollow Unique Area. Upon evaluation of past efforts to accommodate ATV use and the many impacts and constraints associated with off road vehicles, within the context of ecosystem management, the Department has made a final determination to prohibit ATV use on State Forests; except as may be considered to accommodate a "connector trail" through the Unit Management Planning process, and; except those specific routes designated for use by DEC-issued Motorized Access Permit for People with Disabilities (MAPPWD). For more information see the (Strategic Plan for State Forest Management, Chapter 5, Off Highway and All- Terrain Vehicle Use, page 213).

Objective 2.5: Provide Recreational Opportunities for People with Mobility Impairments.
Universal Access
DEC has an essential role in providing universal access to recreational activities that are often rustic and challenging by nature, and ensuring that facilities are not only safe, attractive and sustainable, but also compatible with resources. For more information on universal access policies, please see SPSFM page 173 at http://www.dec.ny.gov/lands/64567.html.

Application of the Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA), along with the Architectural Barriers Act of 1968 (ABA) and the Rehabilitation Act of 1973; Title V, Section 504, have had a profound effect on the manner by which people with disabilities are afforded equality in their recreational pursuits. The ADA is a comprehensive law prohibiting discrimination against people with disabilities in employment practices, use of public transportation, use of telecommunication facilities and use of public accommodations. Title II of the ADA requires, in part, that reasonable modifications must be made to the services and programs of public entities, so that when those services and programs are viewed in their entirety, they are readily accessible to and usable by people with disabilities. This must be done unless such modification would result in a fundamental alteration in the nature of the service, program or activity or an undue financial or administrative burden.

Title II also requires that new facilities, and parts of facilities that are newly constructed for public use, are to be accessible to people with disabilities. In rare circumstances where accessibility is

determined to be structurally impracticable due to terrain, the facility, or part of facility is to be accessible to the greatest extent possible and to people with various types of disabilities.

Consistent with ADA requirements, the Department incorporates accessibility for people with disabilities into the planning, construction and alteration of recreational facilities and assets supporting them. This UMP incorporates an inventory of all the recreational facilities or assets supporting the programs and services available on the unit, and an assessment of the programs, services and facilities on the unit to determine the level of accessibility provided. In conducting this assessment, DEC employs guidelines which ensure that programs are accessible, including buildings, facilities, and vehicles, in terms of architecture and design, transportation and communication to individuals with disabilities.

Any new facilities, assets and accessibility improvements to existing facilities or assets proposed in this UMP are identified in the section containing proposed management actions.

The Department is not required to make each of its existing facilities and assets accessible as long as the Department's programs, taken as a whole, are accessible. The facilities or assets proposed in this UMP are identified in the "Management Actions" section.

For copies of any of the above mentioned laws or guidelines relating to accessibility, contact the DEC Universal Access Program Coordinator at 518-402-9428 or UniversalAccessProgram@dec.ny.gov

Action 2.5.1: Continue to maintain the existing facilities for people with mobility impairments.

Department staff will annually inspect the Labrador Hollow boardwalk, fishing pier and Tinker Falls trail to ensure that access and safety are maintained. If repairs are needed, work will be accomplished by DEC Operations crews. Temporary facility closure may be necessary if hazards are present.

Action 2.5.2: Any new construction of facilities and hiking trails on the Unit will follow Americans with Disabilities Act (ADA) requirements, the Principles of Universal Design, and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Action 2.5.3: Enhance ATV access for people with mobility impairments by developing additional trails.

Presently there is a trail on Morgan Hill State Forest that is available for four-(or more) wheeled ATV use by people with mobility impairments. The trail is an old fire lane that starts at the old fire tower site and heads south for 1.7 miles. A no-fee permit to use this trail must be issued by the Department. This trail is a short dead end trail that does not provide adequate opportunities for individuals with mobility impairments.

To provide a better recreational experience the Department will create two new loop trails and a

parking area. The two new trails will be 1.5 miles in length and made part of the existing trail. Additionally, in order to improve access to the trail, the Fire Tower Haul Road will be up to PFAR standards and a parking area will be constructed at the end of the road.

Action 2.5.4: Enhance hunting opportunities for people with mobility impairments by creating early successional habitat along sections of accessible ATV trails.

In order to provide a quality hunting experience for people with mobility impairments, the Department will create early successional habitat, as outlined in Action 1.5.1, along sections of accessible ATV trails. Additionally, the Department will monitor use by hunters and would consider constructing a hunting platform for people confined to wheel chairs if demand is demonstrated and funding can be obtained. Additionally a trail would be developed to allow access to the platform.

Action 2.5.5: Enhance camping opportunities for people with mobility impairments by developing three universally designed campsites.

Action 2.2.3 outlines the designation of six to eight campsites on Morgan Hill State Forest. Two of these sites will be at the fire tower site where the parking area and CP3 trail head will be developed. These two campsites will be universally designed sites to provide camping opportunities for people with mobility impairments. One site will be designed to accommodate a medium sized camper the other will be a tent site. Additionally, campsite #1 at the Spruce Pond Camping Area will be developed into a universally designed campsite.

GOAL 3: Provide Economic Benefits to the Local Community & the State of New York.

Ecotourism - State Forests provide a base for eco-tourism business. Individuals using the forests for recreational purposes also frequent local businesses for other needs. Thus, the recreational services provided by the lands in the Unit benefits the service and retail sectors of the local economy.

Renewable Resources - Well managed forests produce sustainable forest products. Properly designed prescriptions and harvest plans promote biodiversity and forest health. At the same time, the State Forests of the Unit provides jobs and locally produced natural materials to support the local economy.

Mineral Resources - The leasing and development of natural gas and oil resources can provide jobs and income to the State while increasing domestic energy supplies. Oil and natural gas are valuable resources which can provide energy and revenue, as well as the opportunity for improvements to the existing infrastructure of the Unit (such as improving safe and restricted access through upgrading existing roads, culverts and gates) and creation of additional early successional habitat which may or may not enhance habitat diversity. As with any other human activity on State lands, oil and natural gas exploration and development can impact the environment. Most impacts are short term and occur during the siting and drilling phases of a well.

Objective 3.1: Provide a Steady Flow of Forest Products to Generate Income to the State of New York, Raw Materials to the Forest Products Industry and Create Local Jobs.
These activities will be managed to limit their impact and protect the important ecological, recreational and water resources on the Unit.

Action 3.1.1: Designate 5,224 acres (71%) on the forests as available for long term forest management and harvesting on a sustainable basis using science-based silvicultural systems and ecosystem management. 3,928 acres (53%) of the Unit will be treated over the next 20 years.

Action 3.1.2: Salvage forest stands that are destroyed or severely damaged by natural events before they lose significant value from decay. Leave some snag trees and coarse woody material as per the Department's Retention Policy.

Action 3.1.3: Sell up to 100 standard cords of firewood to homeowners in the area as a fuel source for home heating.

Firewood will be sold in stands that need intermediate thinning, have easy access and contain trees too small in size to support a timber harvest. The amount of firewood sold will be based on staffing levels and budgetary constraints.

Objective 3.2: Provide for Mineral Resource Exploration and Development while Protecting Natural Resources and Sustaining Quality Recreation Opportunities.
Action 3.2.1: Make no decision with respect to oil and gas exploration, development and extraction on this unit in this management plan.

Technology and techniques with respect to the oil and gas industry are ever changing. Practices that may have been common place in the industry decades ago may be outdated, deemed infeasible or are no longer applicable. Therefore, no decision with respect to Oil and Gas exploration on the Unit will be made in this unit management plan.

Should any portion, or all of the unit be nominated for oil and gas exploration, development and extraction, or new requests for new or additional pipelines be made, this will trigger a new public process before final decisions are made with respect to the proposal(s). The Department will conduct a tract assessment of the Unit, and hold a public meeting to receive comments in regard to the proposal(s). A 30 day public comment period would then follow the public meeting. The Department will consider all comments and the tract assessment prior to making a decision. If the Department decides to go forward with a lease proposal, this section of the unit management plan will be amended. In addition, the Division of Lands and Forests will collaborate with the Division of Mineral Resources to incorporate special conditions into the proposed lease. These conditions would include, but not be limited to criteria for site selection, mitigation of impacts and land reclamation upon completion of the proposal.

For more information on oil and natural gas exploration and development see the (Strategic Plan for State Forest Management, Chapter 5, Mineral Resources, page 225).

Objective 3.3: Provide Property Tax Income to Local Governments and Schools.
Action 3.3.1: The State Forests are subject to town, school, and fire district property taxes, but are exempt from county taxes. State Forest land is taxed at the same rate as private forest land.

Objective 3.4: Attract Forest-Based Tourism which Creates Spinoff Income and Benefits for Local Businesses.
Action 3.4.1: Enhance the Department's website to include downloadable trail maps. Produce and make available on the Department's website, downloadable trail maps for Kettlebail and Morgan Hill State Forests as well as Labrador Hollow Unique Area.

GOAL 4: Provide Sound Stewardship of the Unit.

Objective 4.1: Protect the Cultural Resources.
Action 4.1.1: Protect cemeteries, old foundations and stone walls.

Cemeteries, old foundations and stone walls on the Unit will be protected during management activities and recreational trail development. Cemeteries and old foundations will be appropriately buffered during forest management activities. The Hodgson family cemetery is located in a natural area and will not be impacted by forest management activities. Should stone wall disturbances be necessary for access during forest product sales and oil and gas development, the contract or TRP will require that the structures be returned to their pre-impact condition.

Objective 4.2: Protect the Natural Resources on the State Forests.
Action 4.2.1: Protect the natural resources from wildfire.

A program of protection from wildfire will be maintained to assure minimum risk of loss to humans, structures and forest resources. This program is the responsibility of Forest Rangers from the Department's Division of Forest Protection and Fire Management.

Action 4.2.2: Protect the natural resources from insects, disease and invasive species.

The protection of resources from injurious insects, diseases and invasive exotic (non-native) species will be accomplished through a program of integrated pest management. This program includes elements of reconnaissance, analysis, and determination of thresholds and controls when necessary emphasizing natural methods. Forest management activities have been designed to promote a wide diversity of tree species and forest structure. Diverse forests are more resilient to insect and disease attacks. Aerial detection flights will be conducted annually to identify significant insect and disease problems. On the ground follow-up will be conducted when problems are identified.

Action 4.2.3: Protect the natural resources from over browsing by white-tailed deer.

High deer populations can have adverse impacts on forest regeneration and herbaceous plants. Over-browsing by deer can drastically alter biodiversity and change the dynamics of ecosystems. While there are no known impacts from white-tailed deer on the Unit at this time, we recognize the need may arise to address deer impacts. In the event that the deer impacts are identified, Department Foresters and Wildlife biologists will work together to alleviate problems. Land managers will conduct surveys of deer density on State Forests where impacts are evident. Direct methods such as spotlight surveys and indirect methods such as pellet group surveys should be encouraged on lands where deer impacts are high. If surveys indicate that actions should be taken to reduce adverse impacts by deer, the following methods of mitigation will be considered:

- fencing to protect a site with a rare plant species.
- adjusting the scale of forest management activities.
- taking measures to reduce deer numbers on the Unit.

If deer population reduction is needed measures seeking to maximize deer harvest through traditional hunting programs would be used and use of the Deer Management Assistance Program (DMAP) would be considered. DMAP provides a mechanism for landowners or managers to boost doe harvests by providing additional antlerless tags valid only on designated lands.

Action 4.2.4: Protect the natural resources from damage by beavers.

The colonization of a site by beavers results in the flooding of an area. This on occasion can inundate sites with rare plants or other rare habitat features. Beavers can also cause flooding damage to adjoining property owners, recreational trails and roads. Currently there are no known sites where beaver have damaged adjoining property owners, rare plants or other rare habitat features. However, there are two sites in the Unit where beavers have caused damage to roads in the past. In many cases flooding by beavers enhances biodiversity. Ponds created by beavers can provide valuable habitat for amphibians, aquatic insects, fish, waterfowl as well as water for a variety of wildlife. Therefore, the Department will only look to control beaver numbers in sensitive areas and areas that would adversely impact adjoining property owners, recreational trails and roads. Recreational trapping is a valuable tool in beaver population control. However, reduced popularity in trapping and fluctuations in the markets for beaver fur have caused an overall reduction in recreational trapping. If recreational trapping is not effective in controlling beaver populations on the Unit, the Department may obtain an Article 11 permit and hire a nuisance wildlife trapper to remove problem beavers.

Objective 4.3: Prevent Illegal Activities on the State Forests.
Action 4.3.1: Maintain patrols and enforcement on the State Forests.

Communicate closely with Forest Rangers and Conservation Officers to maintain patrols and enforcement on the Unit on a regular basis. Encourage the public to provide specific information on any illegal activities they observe.

Action 4.3.2: Install barriers to restrict illegal use by four-wheel drive and all- terrain vehicles.

Illegal ATV (all- terrain vehicle) and 4x4 use is a problem on the Unit. This has resulted in erosion and environmental degradation. Litter and conflicts with other users are additional problems that have been encountered. Old skid trails that have been illegally used for off road access to the Unit will be blocked with large rocks in conjunction with forest products sales. Some of the illegal use by four-wheel drive and all- terrain vehicles has been addressed and mitigation work completed in conjunction with forest product sales. Annual inspections to assess the damage done by illegal use will be conducted. Measures needed to mitigate damage done by illegal use and prevent further illegal use will continue to be carried out through trade-off work in conjunction with forest product sales or through work projects by the DEC's Division of Operations.

Action 4.3.3: Close the gate on the north end of the Morgan Hill PFAR to prevent illegal activities.

The gate on the north end of the Morgan Hill PFAR will be closed between June 1st and September 1st to prevent illegal activities including littering, off road vehicle use and vandalism to adjacent private land. The gate will be open during spring turkey season, fall hunting season and when snowmobile trails are open.

Objective 4.4: Maintain and Enhance Public Forest Access Roads, Access Trails, Haul Roads and Parking Areas.

The public forest access road system exists to provide reasonable vehicular access throughout the State Forests for management activities and recreational purposes. Well maintained roads are important for safe, enjoyable vehicular travel. Periodic maintenance activities include road grading, culvert cleaning, mowing and replacement of culverts and signs.

Access trails are not built to public forest access road standards. They endure less travel and therefore, require maintenance sufficient only to keep the road passable unless scheduled for an upgrade. Haul roads used at the time of forest product sales are maintained during those sales.

Action 4.4.1: Maintain 11.6 miles of existing public forest access roads and seven parking areas.

Roads will be graded, shoulders mowed, culvert catch basins cleaned and culvert head walls repaired every five years. Roads and parking areas will be resurfaced as outlined in the project priority table. Roads and parking areas may be resurfaced by contractors during timber harvests in lieu of payment. To maintain water quality standards, all road maintenance activities on State Forests including but not limited to, ditch cleaning, stream bank stabilization and culvert replacement, will be done in accordance with Bureau of Fisheries/Bureau of Habitat guidelines or as described in "New York Guidelines for Urban Erosion and Sediment Control."

Action 4.4.2: Upgrade the 0.2 miles Fire Tower Haul Road to a PFAR.

The Fire Tower haul road will be upgraded to a PFAR by widening the road surface and right-of-way,

installing culverts, installing turnouts and establishing ditches. The project may be accomplished by a contractor during a timber harvest in lieu of payment or when funding becomes available.

Objective 4.5: Maintain Boundary Lines to Prevent Timber Theft and Encroachment.
Timber theft is a real threat to the proper management of public lands. Properly marked and maintained boundary lines are a significant deterrent to trespass and theft. Periodic maintenance of 49 miles of boundary lines on the State Forests and Unique Area and surveying, when necessary, will maintain the integrity of the property lines.

Action 4.5.1: Post State Forest signs every 0.1 mile along boundary lines and public roads passing through the Unit. Repaint 49 of the 51.4 miles of boundary lines. There are 2.4 miles of boundary line that are common line between Morgan Hill Cortland #4 and Onondaga #1. Because the ownership is State Forest on both sides of the line, painting or posting of signs is not needed. Posting of signs and painting of boundary lines will be done every seven years according to the schedule in the periodic maintenance/projects table.

Action 4.5.2: Survey and establish boundary lines along the power line on Morgan Hill Cortland #4.

An electric transmission line crosses Proposals A, E, F and M. The line is on a 150 foot wide strip of land owned in fee title by Niagara Mohawk Power Corporation (National Grid). The boundary lines of the 150 foot wide strip have never been established and will be surveyed and painted along with the other boundary lines on the property.

Objective 4.6: Acquire Adjacent Land from Willing Sellers.
Action 4.6.1: It is the intention of the Department to purchase in fee, or a conservation easement, parcels that will consolidate State ownership (in-holdings and properties surrounded on three sides by State property), or will protect endangered species or habitat. The purchase of in-holdings, lands that will consolidate boundary lines and lands that connect two or more State Forests will facilitate public and administrative access, reduce management costs and provide larger blocks of undeveloped land on the landscape. The Department will pursue fee title or a conservation easement of unimproved parcels which fit the criteria above, if they are put up for sale by their owner. Purchases will only be made from willing sellers. The Department may be interested in all or only a portion of larger parcels. Appendix XIII, Hill and Hollow Unit Conceptual Acquisition and/or Conservation Easement Vision map shows desired blocks of acquisitions.

Action 4.6.2: Determine ownership of Cortland Reforestation Area #13.

In 1963 the College of Forestry at Syracuse requested transfer of Cortland #13 to their Jurisdiction for addition to the Tully Forest. Department records show that this transfer was never completed. The Department will seek to resolve this issue by completing the transfer to SUNY ESF. If the transfer is not completed, the Department will assume management responsibilities of Cortland #13 and the area will be added to the Hill and Hollow Unit.

Objective 4.7: Maintain and Repair Impoundments (Dams).
Action 4.7.1: Maintain two impoundments (dams) on Morgan Hill State Forest.

Maintenance includes removing trees, mowing the dike after August 1st, cleaning the drop box, trickle tube and spillway when necessary. The impoundments will be inspected every five years and necessary repairs and maintenance will be determined at that time. Dam repairs may include drawing down the water level of the pond. The Department's Bureau of Fisheries will be notified when maintenance activities are planned. At present, no repairs or draw downs are expected.

Objective 4.8: Maintain usable Shale Pits.
Where appropriate, shale pits on the Unit will be blocked to prevent illegal use. The shale pits will be available for future use. Shale from these pits may be used to repair and resurface PFARs, to build and maintain parking lots and to build and maintain recreational trails. Each time a shale pit is used the active face will be restored to a slope of 2:1 upon completion of use. The Regional Mined Land Reclamation Specialist will be notified and given the opportunity to make an assessment of materials that will be extracted to determine if a mined land use permit is required.

Action 4.8.1: Restore three shale pits totaling 0.7 acres on Morgan Hill State Forest, (Onondaga #1).

The pits will be restored after mining enough material to repair and resurface 0.9 miles of the Cross Road PFAR. If the Department proposes future mineral resource extraction within the Unit, the Regional Forester, Operations Supervisor and Mined Land Reclamation Specialist will determine if a mined land reclamation permit is required before excavation begins. If it is determined that proposed annual extraction requirements will be above present Mined Land Reclamation Law thresholds, then a mining and reclamation permit application will be prepared and submitted to the Regional Mined Land Reclamation Specialist for review and approval before any excavation takes place.

If it is so determined that a mined land reclamation permit is not required, but mineral resources will be extracted for infrastructure maintenance and construction necessitated by the Department, then the basic mining and reclamation standards will be followed as recommended by the Division of Mineral Resources. These recommendations are outlined in Appendix XI.

If extraction takes place at any level within the Unit, the site location will be identified on the State Forest inventory mosaic and will be incorporated into the UMP.

Objective 4.9: Address Unresolved Real Property Issues on the Unit.
The property use agreements section lists several oil and gas contracts or leases that were negotiated pryor to State ownership. The status of these contracts or leases are assumed to be expired. However the Department will investigate the status of these agreements and determine what actions if any will be needed.

Action 4.9.1: Determine the status of a contract executed on 9/18/1931, between Homer Gallinger, et al and the New York Gas Development and Distributing Corporation of Syracuse and an oil and gas

lease granted to Eastern Gas & Oil on 2/19/1974 both on Kettlebail State Forest, (Cortland #5).

Action 4.9.2: Determine the status of an oil and gas lease acquired by D. S. Webber dated 11/29/1930 and an oil and gas lease held by the Lycoming Natural Gas Corporation dated 12/1931 both on Morgan Hill State Forest, (Cortland #4).

Action 4.9.2: Determine the status of an oil and gas lease dated May 1, 1931, on Morgan Hill State Forest, (Onondaga #1).

XV. MANAGEMENT ACTION SCHEDULES

A. Key to Land Management Action Schedules

The following table shows the 20-year schedule of planned management actions referenced by stand number and treatment period. Maps showing the specific stand locations are available for viewing at the Department's Cortland office. Maps of existing and proposed management are included in Appendix XIV. Abbreviations used in the management table are listed below.

Please note: Stand acreages in the following tables were generated by GIS computations which potentially could vary as much as 1.5% from land record or deed acreages. These differences could be caused by cumulative errors in deed or GIS calculations, and/or rounding errors. This slight variation does not affect management decision making.

Forest Type Codes:	Definition:
10	Natural: Northern Hardwood
11	Natural: Northern Hardwood-Hemlock
12	Natural: Northern Hardwood-White Pine
14	Natural: Pioneer Hardwood
15	Natural: Swamp Hardwood
17	Natural: Black Locust
20	Natural: Hemlock
31	Natural: Transition Hardwood
32	Natural: Other
40	Plantation: Red Pine
41	Plantation: White Pine
42	Plantation: Scotch Pine
45	Plantation: Norway Spruce
47	Plantation: Japanese Larch
48	Plantation: European Larch
49	Plantation: White Cedar
61	Plantation: Red Pine-Spruce
62	Plantation: Red Pine-Larch
67	Plantation: Larch-Spruce
68	Plantation: Bucket Mix

70	Plantation: Pine-Natural Species
71	Plantation: Spruce-Natural Species
97	Natural: Seedling-Sapling
99	Non-forest

Tree Species:	**Definition:**
Asp	Aspen, Bigtooth or Quaking
Bass	American Basswood
BC	Black Cherry
Bee	American Beech
BF	Balsam Fir
BL	Black Locust
Cotw	Eastern Cottonwood
DF	Douglas Fir
Elm	American Elm
EL	European Larch
Hem	Eastern Hemlock
HM	Sugar (Hard) Maple
Iwd	Ironwood (hophornbeam)
JL	Japanese Larch
NS	Norway Spruce
PC	Pin Cherry
RM	Red (Soft) Maple
RO	Northern Red Oak
RP	Red Pine
SP	Scotch Pine
Str.M	Striped Maple
Tapl	Thornapple
Wapl	Wild Apple
WA	White Ash
WC	Northern White Cedar
WP	Eastern White Pine
WS	White Spruce
YB	Yellow Birch

Size Class/DBH:	**Definition:**
S-S	Seedling-Sapling; trees up to 5" diameter at breast height
PT	Poletimber; trees 6"-11" diameter at breast height
SST	Small Sawtimber; trees 12"-17" diameter at breast height
MST	Medium Sawtimber; trees 18"-23" diameter at breast height

Management Codes:	**Definition:**
EA	Even-aged

EAES	Even-aged Early Successional 60 Year Rotation
EUA	Even-aged or Uneven-aged
NA	Natural Area
PA	Protection Area
UA	Uneven-aged

Treatment Codes:	**Definition:**
TAT	**Apple Tree Release** for Wildlife
TBM	Brush hog/mow
TCT	Intermediate Commercial Thinning
TFS	**Forest Stand Improvement**
TG	Group Selection
TGST	Single Tree and Group Selection
TNO	No Treatment Recommended
TOR	Overstory Removal
TR	Regeneration Cuts for Wildlife
TS	Salvage
TSS	Shelterwood/**Seed Tree Cut**
TST	Single Tree Selection

Treatment Period	**Years**
A	2015 through 2019
B	2020 through 2024
C	2025 through 2029
D	2030 through 2034
EY	Every Year

B. Land Management Action Schedules

Kettlebail State Forest, Cortland #5

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-01	20	10	PT	HM	RM	BC	UA	TGST	10	A	20
A-02	31	16	PT	RO	HM	RM	EA	TCT	31	C	31
A-03.1	52	45	SST	NS	RP	WA	EUA	TCT	71	D	52
A-03.2	8	45	SST	NS	RP	WA	NA	TNO	71		0
A-04	30	40	PT	RP	BC	HM	EAES	TR	10	A&D	15
A-05	31	10	SST	BC	HM	RM	EA	TCT	10	C	31
A-06	24	31	PT	RO	HM	RP	EAES	TNO	31		0
A-07	51	61	PT	NS	RP	BC	EA	TR	71	D	25

Kettlebail State Forest, Cortland #5

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-08	18	31	SST	HM	RO	NS	EA	TCT	31	C	18
A-09	25	10	MST	HM	WA	Bass	UA	TGST	10	C	25
A-10	10	10	MST	HM	WA	Bee	NA	TNO	10		0
A-11	116	10	SST	HM	WA	Bee	UA	TGST	10	B	116
A-12	22	31	PT	RO	RM	WA	EA	TCT	31	C	22
A-13	10	99	-				PA	TNO	99		0
A-14	3	40	PT	RP	WA	Asp	EAES	TNO	14		0
A-15	18	70	PT	RP	SP		EAES	TR	14	A	9
A-16	5	10	PT	Bee	HM	BC	UA	TGST	10	D	5
A-17	4	71	PT	NS	RM	HM	EA	TCT	71	D	4
A-18	25	71	SST	NS	WA	RP	EA	TR	71	D	6
A-19	13	71	PT	NS	WA	RP	NA	TNO	71		0
A-20	22	11	SST	HM	Hem	WA	UA	TGST	11	A	22
A-21	5	10	SST	HM	WA	BC	UA	TGST	10	A	5
A-22	4	61	SST	NS	RP	WA	EA	TCT	71	A	4
A-23	8	61	SST	NS	RP	WA	EA	TCT	71	A	8
A-24	4	99	-				PA	TNO	99		0
A-25	2	40	PT	RP	Asp	WA	EAES	TR	14	A	2
A-26	11	45	PT	NS			EA	TCT	45	A	11
A-27	4	10	PT	WA	HM	Bass	UA	TGST	10	A	4
Roads	9	99	-						99		0
P. Line	3	99	-						99		0
Total	**588**										**435**

Labrador Hollow Unique Area, Onondaga #39

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-01	8	20	PT	Hem	RM		NA	TNO	20		0
A-02	14	10	S-S	BC	HM	RM	EAES	TAT	10	B	14
A-03	17	32	S-S	Br	Op		EAES	TAT	14	C	17
A-04	19	99	Field				Field	TBM	99	EY	18
A-05	9	32	S-S	Elm	RM	HM	EAES	TAT	14	A	9
A-06	12	99	Field				Field	TBM	99	EY	11
A-07	13	32	S-S	BC	Elm	RM	EAES	TAT	14	A	13
A-08	9	32	S-S	Op	Br		EAES	TAT	14	D	9
A-09	36	99	Field				Field	TBM	99	EY	34
A-10	4	32	S-S	Br	Op		PA	TNO	32		0
A-11	4	45	S-S	NS			NA	TNO	45		0
A-12	135	31	MST	HM	RO	WA	NA	TNO	31		0
A-13	34	31	PT	HM	Bee	RO	NA	TNO	31		0
A-14	48	31	SST	Bee	HM	RO	NA	TNO	31		0
A-15	90	10	PT	HM	YB		NA	TNO	10		0
A-16	22	10	PT	HM	RM	WA	NA	TNO	10		0
A-17	8	10	PT	BC	WA	HM	NA	TNO	10		0
A-18	7	14	PT	WA	Elm	RM	NA	TNO	14		0
A-19	30	99	Field				Field	TBM	99	EY	22
A-20	14	22	PT	Hem	WP	RM	NA	TNO	22		0
A-21	32	22	PT	Hem	WP	RM	NA	TNO	22		0
A-22	40	32	PT	RM	Br	Op	PA	TNO	32		0
A-23	115	10	SST	HM	WA	BC	NA	TNO	10		0
A-24	8	32	PT	RM	Bass	Hem	NA	TNO	32		0
A-25	100	99	Pond				Pond	TNO	99		0
A-26	74	10	SST	HM	WA	BC	NA	TNO	10		0

Labrador Hollow Unique Area, Onondaga #39

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-27	35	10	SST	HM	BC	WA	NA	TNO	10		0
A-28	37	22	PT	WP	Hem	RM	NA	TNO	22		0
A-29	39	99	S-S	RM	Br	Op	PA	TNO	99		0
A-30	193	11	PT	Hem	WP	RM	NA	TNO	11		0
A-31	25	10	SST	HM	WA	Asp	NA	TNO	10		0
A-32	6	47	PT	JL	DF	WA	NA	TNO	47		0
A-33	4	32	S-S	Br	Op		NA	TNO	32		0
A-34	16	11	PT	HM	WA	Hem	NA	TNO	11		0
A-35	129	31	SST	HM	RO	WA	NA	TNO	31		0
A-36	13	42	PT	SP	BC		NA	TNO	42		0
A-37	14	99	S-S	Br	Op		PA	TNO	99		0
A-38	14	70	PT	HM	RM	SP	NA	TNO	70		0
A-39	26	45	PT	NS	BC	HM	NA	TNO	45		0
Roads	21	99							99		0
Total	**1474**										**147**

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-01	58	45	SST	NS	WA	RM	UA	TGT	71	D	58
A-02	28	10	SST	HM	WA	BC	UA	TGST	10	C	28
A-03	10	45	SST	NS	BC	RM	UA	TGT	71	D	10
A-04	13	10	SST	HM	WA	BC	UA	TGST	10	C	13
A-05	22	10	MST	HM	WA	RO	UA	TGST	31	C	22
A-06	19	10	SST	HM	WA	BC	UA	TGST	10	C	19
A-07	40	67	SST	NS	EL	HM	UA	TGT	71	D	40
B-01	15	67	SST	NS	EL	BC	NA	TNO	71		0

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
B-02	79	11	SST	Hem	HM	WA	NA	TNO	11		0
B-03	9	45	SST	NS	BC	HM	UA	TGT	45	C	9
B-04	14	10	SST	HM	WA	Bass	UA	TGST	10	D	14
B-05	5	10	SST	WA	HM	BC	UA	TGST	10	D	5
B-06	40	10	PT	HM	WA	Iwd	UA	TGST	10	D	40
B-07	10	10	SST	HM	BC	Bass	EA	TNO	10		0
B-08	15	10	PT	HM	Bee	BC	UA	TGST	10	D	15
B-09.1	22	70	PT	WA	HM	SP	EAES	TR	14	A&D	11
B-09.2	12	10	SST	WA	HM	BC	UA	TR	10	D	12
B-10	7	14	SST	HM	WA	RM	EAES	TR	14	A&D	3
B-11.1	25	10	SST	HM	WA	BC	UA	TGST	10	D	25
B-11.2	9	10	SST	HM	WA	BC	UA	TGST	10	D	9
B-12	13	10	PT	WA	HM	RM	UA	TGST	10	A	13
B-13	39	45	SST	NS	WA	HM	EA	TR	71	B&D	20
B-14.1	26	45	SST	NS	BC	HM	UA	TGT	71	C	26
B-14.2	25	45	SST	NS	BC	HM	UA	TGT	71	C	25
B-15	70	71	SST	WA	NS	HM	EA	TNO	71		0
B-16	14	31	SST	HM	RO	BC	UA	TGST	31	D	14
B-17	6	40	SST	BC	RP	HM	NA	TNO	10		0
B-18	36	11	PT	HM	Hem	BC	UA	TGST	11	A	36
B-19	7	71	SST	NS	BC	RM	UA	TGST	71	A	7
B-20	10	70	SST	RP	BC	WA	UA	TGST	10	A	10
B-21	36	10	SST	HM	WA	BC	EA	TCT	10	B	36
B-22	78	40	SST	RP	BC	SP	EAES	TR	10	B&D	39
B-23.1	8	11	SST	HM	Hem	BC	UA	TGST	11	B	8
B-23.2	9	10	PT	HM	WA	BL	UA	TGST	10	B	9

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
B-23.31	30	10	SST	HM	BC	Bee	EA	TCT	10	B	30
B-23.32	10	10	SST	HM	BC	Bee	EA	TCT	10		0
B-24.1	24	10	SST	BC	HM	RP	UA	TGST	10	B	24
B-24.2	6	40	SST	RP	BC	HM	EA	TSS	10	B	6
B-25.1	4	10	SST	RM	WA	BC	NA	TNO	10		0
B-25.2	11	10	SST	HM	BC	Iwd	EA	TCT	10	B	11
B-26	12	14	S-S	HM	Asp	BC	EAES	TNO	14		0
B-27	90	45	SST	NS	BC	WA	EA	TR	71	D	23
B-28	30	10	PT	BC	HM	Bee	EA	TFS	10	B	30
B-29.1	6	45	SST	NS	HM	BC	NA	TNO	71		0
B-29.2	23	45	SST	NS	BC	HM	UA	TGT	71	A	23
B-30	9	10	PT	HM	WA	BC	EUA	TCT	10	A	9
B-31.1	13	71	SST	WS	BC	Wapl	EAES	TR	71	A&D	7
B-31.2	15	71	PT	WS	BC	WA	EAES	TNO	71		0
B-32	17	48	SST	EL	WA	HM	EAES	TR	10	A&D	9
B-33	14	71	SST	NS	BC	WA	UA	TGST	71	A	14
B-34.1	26	11	SST	HM	Hem	WA	UA	TGST	11	B	26
B-34.21	80	10	SST	HM	WA	BC	UA	TGST	10	B	80
B-34.22	32	10	SST	HM	WA	BC	UA	TOR	10	B	32
B-35	8	71	SST	NS	HM	BC	UA	TGST	71	A	8
B-36	10	71	PT	HM	NS	BC	EA	TCT	71	A	10
B-37	12	10	PT	HM	WA	BC	UA	TGST	10	C	12
B-38.1	2	67	SST	WA	EL	NS	EA	TCT	71	A	2
B-38.2	48	67	SST	NS	BC	WA	EAES	TR	71	A&D	24
C-01	21	14	PT	RM	HM	Asp	EAES	TR	14	A&D	10
C-02	8	10	S-S	RM	BC	WA	EA	TCT	10	C	8

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
C-03	9	10	PT	HM	BC	Bee	EA	TCT	10	C	9
C-04.1	6	11	MST	HM	Bass	Hem	UA	TGST	11	C	6
C-04.2	31	10	SST	HM	BC	WA	UA	TGST	10	C	31
C-05.1	12	10	SST	HM	WA	BC	UA	TGST	10	C	12
C-05.2	14	10	SST	HM	WA	BC	UA	TGST	10	C	14
C-06	13	32	SST	HM	WA	Wapl	PA	TAT	14	D	4
C-07	5	11	SST	Hem	WA	Bee	UA	TGST	11	A	5
C-08.1	15	11	PT	HM	Hem	WA	NA	TNO	11		0
C-08.2	6	10	SST	HM	WA	BC	EA	TCT	10	C	6
C-09.1	11	67	SST	EL	NS	BC	EAES	TR	71	A&D	6
C-09.2	29	67	SST	EL	NS	BC	EAES	TR	71	A&D	14
C-09.3	39	48	SST	EL	RO	WA	EA	TSS	31	A&D	20
C-10	10	10	SST	HM	BC	WA	EA	TCT	10	C	10
C-11	30	14	S-S	Asp	RM	WA	EAES	TNO	14		0
C-12	39	70	SST	WP	WA	Iwd	EAES	TR	14	D	10
C-13	10	10	SST	BC	RM	Bee	EA	TR	10	C	10
C-14	7	71	MST	BC	NS	RM	EA	TR	71	D	7
C-15	20	10	MST	HM	BC	WA	EA	TOR	10	C	20
C-16	30	67	SST	EL	NS	RM	EAES	TR	71	D	7
C-17.1	7	67	MST	EL	BC	HM	EA	TCT	71	D	7
C-17.2	20	48	MST	EL	HM	BC	EAES	TR	10	A&D	10
C-17.3	35	48	SST	EL	RM	NS	EAES	TR	10	B&D	18
C-18.1	3	71	PT	NS	BC	WA	EAES	TNO	71		0
C-18.2	39	71	SST	NS	WA	HM	EAES	TR	71	B&D	19
C-19	11	10	SST	BC	EL	HM	EA	TCT	10	C	11
C-20.1	9	11	SST	Hem	NS	EL	NA	TNO	11		0

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
C-20.2	17	11	SST	HM	WA	Hem	UA	TGST	11	C	17
C-21.1	27	10	SST	HM	WA	Bee	EA	TNO	10		0
C-21.21	80	10	SST	HM	BC	Bee	UA	TGST	10	C	80
C-21.22	27	10	SST	HM	BC	Bee	EA	TNO	10		0
C-21.23	21	10	SST	HM	BC	Bee	EA	TOR	10	C	21
C-22	51	11	SST	HM	Hem	YB	NA	TNO	11		0
C-23	57	71	SST	NS	RP	BC	EAES	TR	71	B&D	28
C-24	20	71	SST	NS	RM	HM	EA	TR	71	B&D	10
C-25	5	10	SST	HM	WA	RM	UA	TGST	10	A	5
C-26	18	11	SST	HM	WA	BC	UA	TGST	11	A	18
C-27	12	14	S-S	RM	Asp	NS	EAES	TNO	14		0
D-01	18	10	PT	BC	RM	Bee	EA	TSS	10	A	18
D-02.1	23	67	MST	EL	NS		NA	TNO	71		0
D-02.2	5	67	SST	NS	EL	Bee	EA	TR	71	D	5
D-02.3	59	67	SST	NS	EL	BC	EA	TSS	71	A&D	29
D-03	21	71	SST	NS	RM	EL	UA	TGT	71	A	21
D-04.1	33	10	SST	RM	BC	HM	UA	TNO	10		0
D-04.2	5	31	SST	RO	BC	HM	EA	TCT	31	A	5
D-05	44	61	SST	NS	EL	BC	UA	TGT	71	A	44
D-06	54	10	SST	HM	BC	Bee	UA	TGST	10	A	54
D-07	8	61	SST	SP	NS	BC	EAES	TR	71	A	8
D-08	5	10	SST	HM	BC	NS	EA	TCT	10	A	5
D-09	8	10	SST	HM	WA	Iwd	UA	TGST	10	B	8
D-10	11	71	S-S	NS	RP	BC	EA	TNO	71		0
D-11	12	70	SST	BC	HM	NS	UA	TGST	71	A	12
D-12	32	10	PT	HM	Bee	Iwd	UA	TGST	10	B	32

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
D-13.1	10	70	SST	RP	RM	NS	UA	TGST	71	B	10
D-13.2	30	10	SST	HM	WA	Iwd	UA	TGST	10	B	30
D-14	32	45	SST	NS	BC	RM	EA	TR	71	B&D	16
D-15	22	61	SST	NS	RP	RM	EA	TR	71	B&D	11
D-16	29	61	SST	NS	RP	BC	EAES	TR	71	B&D	14
D-17	28	10	PT	HM	Bee	WA	EA	TOR	10	D	28
D-18	15	10	PT	BC	HM	Bee	EA	TCT	10	D	15
D-19.1	14	10	PT	HM	BC	Iwd	UA	TOR	10	D	14
D-19.2	17	10	SST	HM	BC	WA	UA	TGST	10	B	17
D-20.1	9	45	SST	NS	WA	BC	UA	TGT	71	C	9
D-20.2	33	45	SST	NS	RM	WA	UA	TGT	71	C	33
D-21.1	8	11	SST	HM	WA	BC	NA	TNO	11		0
D-21.2	16	10	SST	HM	BC	WA	UA	TGST	10	D	16
D-22	48	10	SST	HM	WA	BC	UA	TGST	10	A	48
D-23	8	10	SST	HM	Hem	WA	UA	TGST	10	C	8
D-24.1	8	11	SST	HM	Hem	NS	NA	TNO	11		0
D-24.2	12	10	PT	HM	BC	WA	UA	TGST	10	D	12
D-25.1	17	71	SST	RM	NS	BC	UA	TGST	71	A	17
D-25.2	26	71	SST	NS	WA	BC	EA	TR	71	A&D	13
D-26.1	5	10	PT	HM	BC	WA	UA	TGST	10	D	5
D-26.2	35	61	SST	NS	RP	BC	EAES	TR	71	C	9
D-27.1	14	11	SST	HM	RM	Hem	NA	TNO	11		0
D-27.2	10	11	PT	HM	RM	Hem	UA	TGST	11	C	10
D-27.3	12	10	SST	HM	WA	BC	UA	TGST	10	C	12
D-28	7	10	PT	WA	BF	HM	UA	TGST	10	C	7
D-29	26	11	PT	HM	BC	Hem	UA	TGST	11	C	26

Morgan Hill State Forest, Cortland #4

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
D-30.1	3	10	SST	HM	WA	BC	UA	TGST	10	D	3
D-30.2	12	71	PT	NS	HM	RM	UA	TGST	71	D	12
D-31	12	47	MST	JL	WA	RM	EAES	TR	10	C	3
D-32.1	5	10	PT	HM	WA	Hem	NA	TNO	10		0
D-32.2	26	10	SST	HM	WA	BC	UA	TGST	10	D	26
Roads	35	99									0
S. Pit	1	99									0
Total	**3108**										**2074**

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-01	11	45	PT	NS	WA		UA	TGT	71	C	11
A-02	39	10	PT	HM	WA	Bee	UA	TNO	10		0
A-03	3	45	SST	NS	WA	HM	UA	TGT	71	C	3
A-04	10	10	SST	HM	WA	Bass	NA	TNO	10		0
A-05	20	10	SST	BC	HM	Bee	UA	TGST	10	A	20
A-06	5	10	PT	HM	WA	BC	UA	TST	10	A	5
A-07	9	71	PT	NS	BC	HM	UA	TST	71	C	9
A-08	54	45	SST	NS	WA	BC	UA	TGST	71	C	54
A-09	46	10	SST	HM	BC	WA	UA	TGT	10	D	46
A-10	6	10	PT	HM	Bee		UA	TNO	10		0
A-11	9	45	SST	NS	BC		NA	TNO	71		0
A-12	13	10	MST	HM	WA	Str.M	NA	TNO	10		0
A-13	3	99	-	Br	Op		PA	TNO	99		0
A-14	32	71	SST	NS	HM	WA	UA	TST	71	D	32
A-15	3	99	-	Br	Op		PA	TNO	99		0

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
A-16	31	71	PT	NS	WP	Asp	UA	TGST	71	A	31
A-17	11	71	PT	RO	NS	BC	EA	TCT	71	D	10
A-18	3	31	SST	RO	HM	WA	EA	TCT	31	D	3
A-19	6	10	PT	HM	WA	RM	UA	TGST	10	D	6
A-20	25	11	PT	Hem	RM	HM	NA	TNO	11		0
A-21	7	10	SST	HM	WA	BC	UA	TGST	10	D	6
A-22	21	10	PT	HM	WA	BC	UA	TGST	10	D	21
A-23	14	11	SST	HM	Hem	WA	UA	TGST	11	D	14
A-24	12	10	PT	HM	WA	Bee	UA	TGST	10	D	12
A-25	63	40	SST	RP	BC	WP	UA	TGT	12	D	60
A-26	2	10	PT	WA	HM	BC	UA	TGST	10	A	2
A-27	19	71	PT	NS	WA	HM	UA	TGST	71	D	19
A-28	4	10	PT	WA	HM	RM	NA	TNO	10		0
A-29	17	70	PT	WA	HM	RP	UA	TGST	10		0
A-30	20	10	SST	HM	WA	Str.M	UA	TGST	10	D	20
A-31	16	10	SST	HM	WA	BC	UA	TGST	10	D	16
A-32	7	10	SST	HM	WA	BC	UA	TGST	10	D	7
B-01	57	47	SST	JL	NS	WP	UA	TGT	71	A	55
B-02	32	45	SST	NS	BC	Bee	EA	TR	71	C	10
B-03	6	10	PT	HM	Bee	BC	UA	TGST	10	B	6
B-04	23	10	PT	HM	WA	Str.M	UA	TGST	10	B	20
B-05	44	68	SST	RP	WP	NS	EAES	TR	71	A&C	22
B-06	85	45	SST	NS	WP		EA	TR	71	C	21
B-07	3	70	PT	WA	SP	RM	EAES	TR	14	C	3
B-08	18	45	SST	NS	WP	SP	UA	TGT	71	C	4
B-09	10	45	SST	NS	WP	SP	NA	TNO	71		0

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
B-10	25	45	SST	NS	WP	SP	UA	TGT	71	C	5
B-11	3	10	PT	Bee	HM	BC	UA	TGST	10	B	2
B-12	71	68	SST	NS	WP	SP	UA	TGT	71	A	71
B-13	9	10	SST	HM	BC	WA	EA	TSS	10	A	8
B-14	6	70	SST	BC	WA	WP	EA	TCT	12	A	6
B-15	9	10	PT	HM	Iwd	Bee	EA	TCT	10	A	9
B-16	12	10	SST	WA	HM	BC	EA	TCT	10	A	12
B-17	25	67	SST	JL	NS	WA	EA	TR	71	A&D	12
B-18	5	10	SST	WA	HM	RP	UA	TST	10	C	5
B-19	16	40	SST	RP	WA	WP	EAES	TR	12	D	4
B-20	22	70	SST	RP	BL	BC	EAES	TR	14	A&C	11
B-21	4	32	SS	Tapl	WA	Wapl	EAES	TAT	14	C	4
C-01	5	11	SST	Hem	YB	Asp	NA	TNO	11		0
C-02	8	11	SST	Hem	HM	RM	UA	TGST	11	D	8
C-03	8	10	PT	WA	HM	Hem	EA	TCT	10	D	8
C-04	26	10	SST	HM	WA	BC	EA	TCT	10	D	26
C-05	52	71	SST	NA	WA	RP	EAES	TR	71	C	13
C-06	5	71	SST	NS	RP	WA	NA	TNO	71		0
C-07	9	11	SST	Hem	HM	WA	UA	TGST	11	D	9
C-08	12	71	SST	NS	WA	RP	EA	TCT	71	C	12
C-09	8	32	PT	Wapl	Tapl	NS	EAES	TAT	14	C	8
C-10	31	48	SST	EL	RP	BC	EAES	TR	14	A&D	15
C-11	9	11	SST	Hem	YB	WA	NA	TNO	11		0
C-12	20	67	SST	NS	EL	SP	EA	TSS	71	A	15
C-13	4	11	SST	Hem	WA	HM	UA	TGST	11	D	4
C-14	5	61	PT	RP	NS	WA	EAES	TR	71	A	5

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
C-15	2	71	PT	NA	WA	Wapl	EAES	TAT	71	A	2
C-16	5	11	SST	Hem	HM	RM	NA	TNO	11		0
C-17	6	10	PT	HM	WA	YB	UA	TGST	10	D	6
C-18	4	32	PT	Tapl	WA	EL	EAES	TAT	14	A	4
C-19	20	67	SST	NS	EL	SP	UA	TST	71	A	18
C-20	74	10	SST	HM	WA	BC	UA	TST	10	B	74
C-21	98	45	SST	NS	WA	EL	EA	TR	71	B&D	49
C-22	2	32	SS	WA	Wapl	Tapl	EAES	TAT	14	D	2
C-23	12	62	SST	RP	JL	BL	NA	TNO	10		0
C-24	3	99	-	Br	Op		PA	TNO	99		0
C-25	12	11	SST	HM	NS	BC	NA	TNO	11		0
C-26	15	10	SS	HM	WA	BC	UA	TNO	10		0
C-27	6	71	SST	NS	WA	HM	UA	TGT	71	B	6
C-28	4	99	SS	WA	Asp	Hem	PA	TNO	99		0
C-29	13	10	SST	EL	WA	HM	NA	TNO	10		0
C-30	15	48	SST	EL	BF	WA	NA	TNO	10		0
C-31	20	45	SST	NS	WA	BC	UA	TGT	71	C	18
C-32	21	71	SST	NS	WA	HM	UA	TGT	71	A	22
C-33	7	62	SST	RP	EL	WA	UA	TGT	10	C	7
C-34	45	11	SST	HM	WA	Hem	UA	TGST	11	D	45
C-35	13	11	SST	Hem	RM	HM	NA	TNO	11		0
C-36	24	10	SST	HM	WA	BC	UA	TGST	10	D	24
D-01	5	71	SST	NS	WA	BC	EUA	TCT	71	A	5
D-02	3	10	SST	HM	WA	BC	UA	TGST	10	A	3
D-03	19	32	PT	Cotw	WA	YB	NA	TNO	14		0
D-04	7	10	SST	HM	BC	WA	UA	TGST	10	A	7

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
D-05	13	45	SST	NS	WA	HM	EUA	TCT	71	A&B	13
D-06	4	61	PT	RP	NS	WC	EAES	TR	71	A	4
D-07	3	10	SST	HM	WA	BC	UA	TGST	10	B	3
D-08	12	10	PT	WA	BC	HM	EA	TCT	10	C	12
D-09	21	10	PT	WA	HM	RM	EA	TCT	10	C	21
D-10	8	10	MST	HM	WA	BC	EA	TCT	10	C	8
D-11	13	61	SST	NS	WA	RP	EAES	TR	71	A	6
D-12	4	32	PT	Wapl	WA	Tapl	EAES	TAT	14	A	4
D-13	3	71	PT	WA	NS	BC	EAES	TAT	71	A	3
D-14	4	10	SST	HM	WA	Bass	EA	TCT	10	C	4
D-15	5	10	SST	WA	HM	BC	EA	TCT	10	C	5
D-16	19	61	SST	RP	NS	WA	EA	TR	71	A&D	10
D-17	4	71	PT	HM	NS	WA	UA	TST	71	A	4
D-18	12	14	PT	RM	Asp	WA	NA	TNO	14		0
D-19	35	70	SST	WP	BC	RM	EA	TSS	10	A	35
D-20	142	70	SST	WP	WA	BC	EAES	TR	14	A&C	60
D-21	7	99	S-S	Br	Op		NA	TNO	99		0
D-22	8	11	PT	Hem	YB	WA	NA	TNO	11		0
D-23	8	10	SST	HM	BC	WA	EA	TCT	10	B	8
D-24	37	10	SS	PC	BC	Asp	EA	TFS	10	B	37
D-25	15	10	SST	HM	BC	WA	EA	TCT	10	B	15
D-26	9	70	SST	WP	BC	HM	EA	TSS	10	B	9
D-27	10	11	SST	Hem	HM	WA	NA	TNO	11		0
D-28	16	10	SST	RM	BC	HM	EA	TCT	10	B	16
D-29	27	10	PT	HM	Bee	WA	EA	TCT	10	B	27
D-30	3	10	SST	HM	WA	BC	EA	TCT	10	B	3

Morgan Hill State Forest, Onondaga #1

Stand	Acres	Forest Type	DBH	Tree 1	Tree 2	Tree 3	Manage.	Treat.	Obj. For Type	Treat. Period	Treat. Acres
Roads	28	99							99		0
Ponds	19	99							99		0
S. Pits	4	99							99		0
Total	**2176**										**1419**

XVI. PROJECTS

Capital and Stewardship projects needing funding and staffing priority.

A. Projects Listed by Priority

Action
Tinker Falls sustainable trail project.
Survey and establish boundary lines along the power line on Morgan Hill Cortland #4.
*Create 10 to 20 vernal pools to enhance habitat for wildlife.
*Unit wide release and prune wild apple trees as outlined in the management actions schedules.
Morgan Hill designate 6 to 8 formal campsites by signing the areas.
Labrador Hollow replace the broken gate on the access trail to the hang glider launch site with the gate removed from intersection of Cross Road and Morgan Hill PFARs.
*Morgan Hill supervise design and construction of 10 to 15 miles of single track multiple use trails.
*Upgrade .2 mile Fire Tower haul road to a PFAR.
Morgan Hill upgrade Spruce Pond campsite #1 to Universal Design Standards.
Morgan Hill create 1.5 miles CP3 trail, parking area & 2 campsites to Universal Design Standards.
*Morgan Hill restore .7 acre shale pit after resurfacing .9 miles of PFAR.
Labrador Hollow create brochure/map & post on website.
Labrador Hollow construct and install kiosk at fishing pier/boat launch.
Morgan Hill create brochure/map & post on website.
Morgan Hill construct and install 2 kiosks.

A. Projects Listed by Priority

Action
Kettlebail create brochure/map & post on website.

* Projects that will try to be completed as additional work required in a forest product sales contract or via VSA or TRP by volunteers.

B. Annual Maintenance/Projects

Action
Labrador Hollow inspect boardwalk, boat launch, fishing pier, sanitary facilities & tinker falls trail to identify safety & or maintenance issues. Make needed repairs.
Morgan Hill inspect/maintain the 12 designated Spruce Pond campsites.
Unit wide forest products sales, 194 acres/year.
Unit wide coordination w/other agencies or divisions.
Unit wide coordination w/ public user groups.
Unit wide post-harvest inventory.
Unit wide supervision, training & reporting.
Unit wide coordination w/ Law enforcement.
Unit wide disease control.
Unit wide monitor illegal use.

C. Periodic Maintenance/Projects

Action
Labrador Hollow maintain/grade & rake .1 mile of boardwalk access road every 5 years.
Morgan Hill inspect/maintain Shackham & Spruce pond dams every 5 years.
Morgan Hill maintain/grade, rake & mow shoulder of 11.6 mile of PFARs every 5 years.
Morgan Hill maintain 27.8 miles of boundary lines every 7 years.
Kettlebail maintain 9 miles of boundary lines every 7 years.
Labrador Hollow maintain 12.8 miles of boundary lines every 7 years.
Conduct fishery surveys on the ponds and streams of the Unit.

C. Periodic Maintenance/Projects

Action
Kettlebail conduct forest inventory 588 acres.
Labrador Hollow conduct forest inventory 1,474 acres.
Morgan Hill conduct forest inventory, Onondaga #1 2,176 acres.
Morgan Hill conduct forest inventory, Cortland #4 3,108 acres.
Unit wide acquire private property or conservation easements from willing sellers at appraised value.

XVII. GLOSSARY OF TERMS

Access trails - temporary unpaved roads which do not provide all weather access within the Unit. They are not designed for long term and repeated use by heavy equipment. These corridors were originally built for the seasonal removal of forest products by skidding to landings or other staging areas. Built according to best management practices, these trails may be used to support other management objectives such as recreational access corridors. Maintenance is limited to activities which minimally support seasonal access objectives. (I)

Adaptive management - a dynamic approach to forest management in which the effects of treatments and decisions are continually monitored and used, along with research results, to modify management on a continuing basis to ensure that objectives are being met. (D)

Aesthetics - forest value, rooted in beauty and visual appreciation and providing a distinct visual quality. (F)

Age class - trees of a similar size and/or age originating from a single natural event or regeneration activity. *see* **cohort**. (D)

Anticlinal Trend - the map direction of the long axis of an **anticline**. (M)

Anticline – a fold in rock that is convex upward. (M)

Apple tree release - a management action; the act of removing an overstory of trees and/or competing vegetation that are shading and potentially inhibiting apple tree growth and fruit production. (F)

Ash decline - the progressive loss of vigor and health causing the death of ash trees by a combination of factors. Some factors may include diseases, poor soil/sites, cankers, insects, winter injury or

drought. (F)

Basal area - the cross sectional area, measured in square feet, of a single stem, including the bark, measured at breast height (4½ ft above the ground). (D)

Beech bark disease - a insect and disease pathogen complex involving a scale insect (*Cryptococcus fagi*) and a nectria fungus (*Nectria coccinea* var. *faginata*). The insect pierces the bark to feed, allowing a place for the fungus to enter the tree. Fungal activity interrupts the tree's normal physiological processes and a severely infected tree will most likely die. (F)

Best Management Practices (BMP's) - a practice or a combination of practices that are designed for the protection of water quality of water bodies and riparian areas, and determined to be the most effective and practicable means of controlling water pollutants. (D)

Biological diversity (Biodiversity) - **1.** the variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at spatial scales that range from local through regional to global —synonym biological diversity, diversity
2. an index of richness in a community, ecosystem, or landscape and the relative abundance of these species —note 1. there are commonly five levels of biodiversity: (a) genetic diversity, referring to the genetic variation within a species; (b) species diversity, referring to the variety of species in an area; (c) community or ecosystem diversity, referring to the variety of communities or ecosystems in an area; (d) landscape diversity, referring to the variety of ecosystems across a landscape; and (e) regional diversity, referring to the variety of species, communities, ecosystems, or landscapes within a specific geographic region —note 2. each level of biodiversity has three components: (a) compositional diversity or the number of parts or elements within a system, indicated by such measures as the number of species, genes, communities, or ecosystems; (b) structural diversity or the variety of patterns or organizations within a system, such as habitat structure, population structure, or species morphology; and (c) functional diversity or the number of ecological processes within a system, such as disturbance regimes, roles played by species within a community, and nutrient cycling within a forest. (O)

Biological legacy - an organism, living or dead, inherited from a previous ecosystem; biological legacies often include large trees, snags, and down logs left after timber harvesting. (D)

Blowdown - tree or trees felled or broken off by wind. (D)

Buffer strip - a vegetation strip or management zone of varying size, shape and character maintained along a stream, lake, road, recreation site or other vegetative zone to mitigate the impacts of actions on adjacent lands, to enhance aesthetic values or as a best management practice. (D)

Clearcut - the cutting of essentially all trees, producing a fully exposed microclimate for the development of a new age class —note 1. regeneration can be from natural seeding, direct seeding,

planted seedlings, or advance reproduction —note 2. cutting may be done in groups or patches (group or patch clearcutting), or in strips (strip clearcutting) —note 3. the management unit or stand in which regeneration, growth, and yield are regulated consists of the individual clearcut stand — note 4. when the primary source of regeneration is advance reproduction, the preferred term is overstory removal. (O)

Climax forest - an ecological community that represents the culminating stage of a natural forest succession for its locality / environment. (D)

Coarse Woody Material (CWM) - any piece(s) of large dead woody material on the ground in forest stands or in streams. (D)

Cohort - a population of trees that originate after some type of disturbance. (F)

Community – 1. an assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape.
2. a group of people living in a particular local area. (G) (O)

Conifer - a cone-bearing tree, also referred to as softwood; *note*: the term often refers to gymnosperms in general. (D)

Conversion - a change from one silvicultural system to another or from one tree species to another. (D)

Coppice - stems originating primarily from vegetative reproduction; e.g. the production of new stems from stumps, roots or branches. *see* **low forest** (D)

Corridor - a linear strip of land identified for the present or future location of a designed use within its' boundaries. *Examples*: recreational trails, transportation or utility rights-of-way. When referring to wildlife, a corridor may be a defined tract of land connecting two or more areas of similar management or habitat type through which a species can travel from one area to another to fulfill any variety of life-sustaining needs. (D)

Cover type - the plant species forming a majority of composition across a given area. (D)

Crown - the part of a tree or woody plant bearing live branches and foliage. (D)

Cultural resources - significant historical or archaeological assets on sites as a result of past human activity which are distinguishable from natural resources. (F)

Cutting interval - the number of years between treatments in a stand. (F)

Deciduous - tree and shrub species that lose their leaves or needles in autumn. (F)

Defoliation - the partial or complete loss of leaves or needles, usually caused by an insect, disease or drought. (F)

Den tree - a tree containing an excavation sufficiently large for nesting, dens or shelter; tree may be alive or dead. (F)

Designated recreational trail - a Department authorized recreational trail that is signed and/or mapped. (F)

Diameter (at) Breast Height (DBH) - the diameter of the stem of a tree (outside bark) measured at breast height (4.5 ft) from the ground. (D)

Disturbance - a natural or human-induced environmental change that alters one or more of the floral, faunal, and microbial communities within an ecosystem. Timber harvesting is the most common human disturbance. Wind or ice storms are examples of natural disturbance. (A)

Early successional habitat - the earliest stage of development in a ecosystem. An example: vegetative habitat where early successional is seen as old fields, brushy shrubby type plants, with species that are shade intolerant. (O)

Ecoregion - sometimes called a **bioregion**, is an ecologically and geographically defined area that is smaller than an ecozone and larger than an ecosystem. Ecoregions cover relatively large areas of land or water, and contain characteristic, geographically distinct assemblages of natural communities and species. (N)

Ecosystem - a spatially explicit, relatively homogeneous unit of the earth that includes all interacting organisms and components of the abiotic environment within its boundaries - *note*: an ecosystem can be of any size, e.g., a log, pond, field, forest or the earth's biosphere. (D)

Ecosystem management - the appropriate integration of ecological, economic, and social factors in order to maintain and enhance the quality of the environment to best meet our current and future needs. Involves management at the landscape level, prompting the biodiversity of natural communities of plants, animals and seeking to maintain healthy, productive environments. (C)

Edge - the more or less well-defined boundary between two or more elements of the environment, e.g., a field next to a woodland or the boundary of different silvicultural treatments. (D)

Endangered species - any species of plant or animal defined through the Endangered Species Act of 1976 as being in danger of extinction throughout all or a significant portion of its range, and published in the Federal Register. (D)

Even-aged stand/forest- a class of forest or stand composed of trees of about the same age. The maximum age difference is generally 10-20 years. (J)

Even-aged system - a program of forest management directed to the establishment and maintenance of stands of trees having relatively little (10-20 yrs) variation in ages. The guidelines to be applied in using this system at all stages of tree development are uniquely different from the uneven-aged system. (F)

Exotic - any species introduced from another country or geographic region outside its natural range. (D)

Flood plain - the level; or nearly level land with alluvial soils on either or both sides of a stream or river that is subject to overflow flooding during periods of high water level. (D)

Forestry - the profession embracing the science, art, and practice of creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner to meet desired goals, needs, and values. (D)

Forest Stand Improvement (FSI) - pre-commercial silvicultural treatments, intended to regulate stand density and species composition while improving wood product quality and fostering individual tree health and vigor, through the removal of undesirable trees. (F)

Forest type - a community of trees defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees. (D)

Forested wetland - an area characterized by woody vegetation where soil is periodically saturated with or covered by water. (F)

Fragipan - a dense and brittle layer of soil. Its hardness results mainly from extreme density or compactness rather than from high clay content. The material may be dense enough to restrict root, nutrient, and water penetration. (F)

Fragmentation - 1. the process by which a landscape is broken into small islands of forest within a mosaic of other forms of land use or ownership. Note- fragmentation is a concern because of the effect of noncontiguous forest cover on connectivity and the movement and dispersal of animals in the landscape.
2. islands of a particular age class that remain in areas of younger-aged forest. (D) (O)

Gaps - communities, habitats, successional stages, or organisms which have been identified as lacking in the landscape. (F)

Geocaching - an outdoor activity in which the participants use a Global Positioning System (GPS) receiver or other navigational techniques to hide and seek containers. (O)

Geographic Information System (GIS) - an organized collection of computer hardware, software, geographic and descriptive data, personnel, knowledge and procedures designed to efficiently capture, store, update, manipulate, analyze, report and display the forms of geographically referenced information and descriptive information. (D)

Grassland - land on which the vegetation is dominated by grasses, grass like plants or forbs. (D)

Group selection - a type of **uneven-aged forest** management where trees are removed and new age classes are established in small groups —note 1. The width of groups is commonly approximately twice the height of the mature trees with smaller openings providing microenvironments suitable for shade tolerant regeneration and larger openings providing conditions suitable for more shade intolerant regeneration —note 2. the management unit or stand in which regeneration, growth, and yield are regulated consists of an aggregation of groups. (F) (O)

Habitat - the geographically defined area where environmental conditions (e.g., climate, topography, etc.) meet the life needs (e.g., food, shelter, etc.) of an organism, population, or community. (A)

Hardwoods - broad-leafed, deciduous trees belonging to the botanical group Angiospermae. (D)

Haul roads - permanent, unpaved roads which are not designed for all-weather travel, but may have hardened or improved surfaces with artificial drainage. They are built according to best management practices primarily for the removal of forest products, providing limited access within the unit by log trucks and other heavy equipment. These roads may or may not be open for public motor vehicle use, depending on management priorities and objectives. They may serve as recreational access corridors, but are not maintained according to specific standards or schedules. (K)

Herbicide - a chemical used for killing or controlling the growth of plants. (D)

High canopy forest area - a portion of a State Forest that will be dedicated to establishing and maintaining forest stands with high canopy cover. The areas will be created to provide habitat for wildlife species that require mature forests. These areas will be strategically managed using uneven-aged management systems. Management will be predominately single tree selection. Group selection may also be done on a limited basis to regenerate mast producing trees like oak, cherry and hickory. The areas will be managed to limit the size of forest canopy openings to no greater than ½ acre in size. Management will include variable patch retention areas, (which will include protection areas and natural areas), retention of biological legacy trees, den trees, snags and course woody material. (F)

Homocline - sedimentary rock unit, which may be associated with a stratigraphic landform, where the underlying strata are tilted in the same direction, especially with near uniform dip angle. (N)

Igneous intrusions - **igneous rock** that was pushed up into cracks in overlying rocks, where it cooled and hardened. (M)

Igneous rock - is formed through the cooling and solidification of magma or lava. (N)

Intermediate treatment - any silvicultural treatment designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest. (D)

Invasive species - species that have become established outside their natural range which spread prolifically, displacing other species and sometimes causing environmental damage. (F)

Kame – a long, low, steep sided mound made of layers of sand and gravel deposited by meltwater streams from a glacier. (M)

Landscape - a spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout. (O)

Landscape ecology - the study of the distribution and abundance of elements within landscapes, the origins of these elements, and their impacts on organisms and processes. (O)

Late successional - forests with older and larger trees, having more structural complexity than mature forest and being either in the process of developing or have developed old growth characteristics; they may exhibit evidence of past human or natural disturbances; these forests may exist as entire stands or as smaller patches within younger stands. (O)

Legacy tree - a tree, usually mature or old-growth, that is retained on a site after harvesting or natural disturbance to provide a biological remnant. (D)

Lineament - is a linear feature in a landscape which is an expression of an underlying geological structure such as a fault. (N)

Log landing - a cleared area to which logs are skidded and are temporarily stored before being loaded onto trucks for transport. (F)

Long lived conifer - conifers that are capable of living 135 years or more on forest sites in Central New York. Tree species typically include eastern hemlock, eastern white pine, Norway spruce and northern white cedar. (F)

Low forest - a forest produced primarily from vegetative regeneration, i.e. coppice. (D)

Mast - all fruits of trees and shrubs used as food for wildlife. Hard mast includes nut-like fruits such as acorns, beechnuts and chestnuts. Soft mast includes the fleshy fruits of black cherry, dogwood and serviceberry. (A)

Mature forest - pertaining to an even-aged stand that has attained most of its potential height growth, or has reached merchantability standards. Within uneven-aged stands, individual trees may become mature but the stand itself consists of trees of diverse ages and stages of development. (O)

Mesic - of sites or habitats characterized by intermediate moisture conditions; i.e., neither decidedly wet nor dry. (O)

Metamorphic rock - is the transformation of an existing rock type, the *protolith*, in a process called metamorphism, which means "change in form". The protolith is subjected to heat and pressure (temperatures greater than 150 to 200 °C and pressures of 1500 bars[1]) causing profound physical and/or chemical change. The protolith may be sedimentary rock, igneous rock or another older metamorphic rock. (N)

Multiple use - a strategy of land management fulfilling two or more objectives, e.g. forest products removal and recreation. (F)

Multiple Use Area - Lands acquired pursuant to Article 15, Section 15.01 (b) of the Parks and Recreation Land Acquisition Bond Act. Multiple Use Areas are acquired to provide additional opportunities for outdoor recreation, including public camping, fishing, hunting, boating, winter sports, and, wherever possible, to also serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and reforestation. (F)

Native species - indigenous species that is normally found as part of a particular ecosystem. (D)

Natural area(s) - an area allowed to develop naturally; intervention will be considered to protect forest health (e.g. fire or invasive plant or animal invasive species), to enhance structural or species diversity, to protect, restore or enhance significant habitats or to exploit or create regeneration opportunities for desired plant species. (O)

Natural regeneration - the establishment of a forest stand from natural seeding, sprouting, suckering or layering. (D)

Neotropical migratory birds - birds that breed in Canada and the United States and spend the winter in Mexico, Central America, South America or the Caribbean islands; these species represent more than 50% (340 of the 600 species) of North American birds. (O)

Niche - **1.** the ultimate unit of the habitat, i.e., the specific spot occupied by an individual organism
2. by extension, the more or less specialized relationships existing between an organism, individual or synusia, and its environment
3. the specific set of environmental and habitat conditions that permit the full development and completion of the life cycle of an organism —note the ecological niche of a species is the functional role of the species in a community; the fundamental niche is the totality of environmental variables

and functional roles to which a species is adapted; the realized niche is the niche a species normally occupies. (O)

Northern hardwood - a forest type usually made up of sugar and red maple, American beech, yellow birch, and to a lesser extent black cherry and white ash. This type represents about 70 percent of all forests in New York State. (A)

Old growth - an abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring canopy gaps formed by natural disturbances creating an uneven canopy and a conspicuous absence of multiple stemmed trees. Old growth forest sites typically are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; show limited signs of artificial disturbance and have distinct soil horizons. The understory displays well developed and diverse surface herbaceous layers. Single, isolated trees may be considered as old growth if they meet some of the above criteria. (F)

Organic matter – carbon rich material derived from living organisms. (M)

Overstory - that portion of the trees in a forest forming the upper canopy layer. (D)

Overstory removal - the cutting of trees constituting an upper canopy layer to release adequate desirable advanced regeneration in the understory. (O)

Parcelization - the subdivision of land into smaller ownership blocks. This intrudes new features and activities into the forest and changes its character but does not necessarily fragment it in biophysical terms. (J)

Pioneer - a plant capable of invading bare sites (newly exposed soil) and persisting there or colonizing them until supplanted by successional species. (D)

Plantation - a stand composed primarily of trees established by planting or artificial seeding; a plantation may have tree or understory components that resulted from natural regeneration. (D)

Poletimber - trees that are generally 6-11 inches diameter at breast height. (F)

Protection area - land excluded from most active management to protect sensitive sites. Exclusions include: wood product management, oil and gas exploration and development, and some recreational activities. These sites most often include steep slopes, wet woodlands and riparian zones along stream corridors. (F)

Public Forest Access Roads (PFAR)- permanent, unpaved roads which may be designed for all-

weather use depending upon their location, surfacing and drainage. These roads provide primary access for administration and public use within the unit. The design standards for these roads are those of the Class A and Class B access roads as provided in the Unpaved Forest Road Handbook (8/74). As a general guideline, sufficient access is typically achieved when 1 mile of PFAR is developed for each 500 acres of state land, and no position within the Unit lies more than 1 half mile from a PFAR or public highway. (I) (K)
Pulpwood - low grade or small diameter logs used to make paper products, wood chips, etc. (F)

Quality Deer Management (QDM) - is a management philosophy/practice that unites landowners, hunters and managers in a common goal of producing biologically and socially balanced deer herds within existing environmental, social and legal constraints. This approach typically involves the protection of young bucks, (yearlings & some 2.5 year-old), combined with an adequate harvest of female deer to maintain a healthy population in balance with existing habitat conditions and landowner desires. This level of deer management involves the production of quality deer (bucks, does & fawns), quality habitat, quality hunting experiences and most importantly quality hunters. (L)

Reforestation - the re-establishment of forest cover by natural or artificial means. (A)

Regeneration - seedlings or saplings of any origin. (J)

Release - **1.** a treatment designed to free trees from undesirable, usually overtopping, competing vegetation. (D)
2. a treatment designed to free young trees not past the *sapling* stage from undesirable competing vegetation that overtops or closely surrounds them. (E)

Residual - trees remaining after any type of treatment. (D)

Riparian zone - areas of transition between terrestrial and aquatic ecological systems. They are characterized as having soils and vegetation analogous to floodplains, or areas transitional to upland zones. These areas help protect the water by removing or buffering the effects of excessive nutrients, sediments, organic matter, pesticides, or pollutants. (A)

Rotation - the period of years between stand establishment and regeneration as designated by management decisions. (J)

Salvage cutting - the removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost. (D)

Sapling - trees that are generally 1 and 5 inches diameter at breast height. (F)

Sawtimber - trees that are generally 12 inches and larger diameter at breast height. (F)

Sedimentary rock - is a type of rock that is formed by sedimentation of material at the Earth's surface

and within bodies of water. (N)

Seedling - a young tree originating from seed that is less than1 inch in diameter. (A)

Seedling/sapling - trees less than 6 inches diameter at breast height. (F)

Seed tree cut/method - a regeneration action that removes most of the mature timber in one cutting, except for a small number of trees left singly, or in small groups, as a source of seed for natural regeneration. (I)

Selection cut/method/system - the removal of trees over the entire range of size classes either singly or in groups at regular intervals, resulting in multiple age-classes of reproduction. Individual trees are chosen for removal due to their maturity, because they are of poor quality or thinning is needed to improve the growth rate of the remaining trees. (F)

Shade tolerance - the ability of a tree species to germinate and grow at various levels of shade.

Shade tolerant: having the capacity to compete for survival under shaded conditions.

Shade intolerant: having the capacity to compete for survival only under direct sunlight conditions; light demanding species. (D) (F)

Shelterwood method - a regeneration action designed to stimulate reproduction by implementing a series of cuts over several years that will gradually remove the overstory trees. Gradual reduction of stand density protects understory trees and provides a seed source for stand regeneration. (A)

Silviculture - the art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis. (D)

Single tree selection - a type of uneven-aged forest management where individual trees of all size classes are removed more or less uniformly throughout the stand, to promote growth of remaining trees and to provide space for regeneration — synonym individual tree selection. (O)

Site - the area in which a plant or forest stand grows, considered in terms of its environment, particularly as this determines the type and quality of the vegetation the area can support. (D)

Site preparation - hand or mechanized manipulation of a site, designed to enhance the success of regeneration. (D)

Skid trail - a temporary or permanent trail used to skid or forward felled trees from the stumps to the log landing. (F)

Snags - standing, dead trees, with or without cavities; function as perches, foraging sites and/or a source of cavities for dens, roosting and/or nesting for wildlife. (F)

Softwoods - generally refers to needle and/or cone bearing trees (conifers) belonging to the botanical group Gymnospermae. (F)

Spatial analysis - an examination of data in the context of where it occurs geographically or "on the ground". This is usually accomplished by tying database information to GIS based maps. (F)

Species - the main category of taxonomic classification into which genera are subdivided, comprising a group of similar interbreeding individuals sharing a common morphology, physiology, and reproductive process. (D)
Species richness - the number of different species present within a defined area. (A)

Stand - a contiguous group of trees sufficiently uniform in age-class distribution, composition and structure, growing on a site of sufficiently uniform quality to be a distinguishable unit. (D)

Stand analysis - systematic method of evaluating stands to determine the need for treatment. (F)

Stand structure - the horizontal and vertical distribution of components of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and down woody material. (D)

State Forest / State Reforestation Area - lands owned by the State of New York, administered by the Department of Environmental Conservation Division of Lands & Forests, and authorized by Environmental Conservation Law to be devoted to the establishment and maintenance of forests for watershed protection, the production of timber and other forest products, and for recreation and kindred purposes. These forests shall be forever devoted to the planting, growth, and harvesting of such trees (Title 3 Article 9-0303 ECL). (F)

Stocking - the number of trees per unit area in relation to the desired number for optimum growth and management. Guides and tables have been developed that illustrate the optimum number of trees per acre based on the average diameter. (F)

Succession - the natural series of replacements of one plant community (and the associated fauna) by another over time and in the absence of disturbance. (A)

Suite - species similar in their habitat needs which may respond similarly to habitat changes. (A)

Sustainable forest management - management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things, while providing environmental, economic, social and cultural opportunities for present and future generations. (A)

Sustained yield - the achievement and maintenance in perpetuity of a reasonable regular periodic output of the various renewable resources without impairment of the land's productivity. (B)

Synclinal Trend - the map direction of the long axis of an **syncline**. (M)

Syncline – a fold in rock that is concave up. (M)

Tectonic Plates - are pieces of the Earth's crust and uppermost mantle, together referred to as the lithosphere. (N)

Temporary Revocable Permit (TRP) - a Department permit which authorizes the use of State land for a specific purpose for a prescribed length of time. (F)

Thinning - a silvicultural treatment made to reduce stand density of trees primarily to improve growth of remaining trees, enhance forest health, or recover potential mortality. (D)

Threatened species - a species likely to become endangered in the foreseeable future, throughout all or a significant portion of its range, unless protected. (A)

Understory - the smaller vegetation (shrubs, seedlings, saplings, small trees) within a forest stand, occupying the vertical zone between the overstory and the herbaceous plants of the forest floor. (A)

Uneven-aged system - a planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes. (D)

Uneven-aged stand/forest - a stand with trees of three or more distinct age classes, either intimately mixed or in small groups. (D)

Universal Design - Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. (O)

Variable patch retention - an approach to harvesting based on the retention of structural elements or biological legacies (trees, snags, logs, etc.) from the harvested stand for integration into the new stand to achieve various ecological objectives. (O)

Watershed - a region or area defined by a network of stream drainage. A watershed includes all the land from which a particular stream or river is supplied. (F)

Wetland - a transitional area between aquatic and terrestrial ecosystems that is inundated or saturated for periods long enough to produce hydric soils and support hydrophytic vegetation. (D)

XVIII. GLOSSARY REFERENCES

(A). Audubon-New York. Wildlife and Forestry in New York Northern Hardwoods: A Guide for Forest Owners and Managers. Audubon-New York. Albany, NY.

(B). Chambers, Robert. Integrating Timber and Wildlife Management Handbook. Chapter 1.

(C). Gelburd, Diane. Implementing Ecosystem Based Assistance for the Management of Natural Resources in the Soil Conservation District. USDA SCS.

(D). Helms, John A. 1998. *The Dictionary of Forestry.* Society of American Foresters, Bethesda, MD.

(E). Nyland, Ralph D. 2002, 1996. *Silviculture: Concepts and Applications.* 2nd ed. McGraw-Hill. New York, NY.

(F). New York State Department of Environmental Conservation (NYSDEC). Division of Lands and Forests. Internal references.

(G). Reshke, Carol. 1990. Ecological Communities of New York State. NYSDEC.

(H). Smith, D.M., B.C. Larson, M.J. Kelty, P.M.S. Ashton. 1997. *The Practice of Silviculture.* 9th ed. John Wiley & Sons, Inc., New York.

(I). 2004 State Forest Infrastructure Development Handbook. NYS DEC, Bureau of State Land Management.

(J). Biodiversity Project Working Group 2004, Terms and definitions.

(K). 2004 Unpaved Forest Road Handbook. NYS DEC, Bureau of State Land Management.
(L). Quality Deer Management Association. Available World Wide Web, www.qdma.com/qdm/.

(M) Y.W.Isachsen, E. Landing, J.M. Lauber, L.V. Rickard, W.B. Rogers 2000. Geology of New York a Simplified Account. New York State Museum Educational Leaflet 28.

(N) Wikipedia, the free encyclopedia 2010.

(O) Strategic Plan for State Forest Management, 2010. NYS DEC. Albany, New York.

XIX. REFERENCES

A Land Manager's Guide to Improving Habitat for Scarlet Tanagers and other Forest-Interior Birds (2004). Available World Wide Web http://birds.cornell.edu/conservation/tanager/appalachian.html.

Alerich, C. L. and Drake D. A. 1995. Forest Statistics for New York: 1980 and 1993. U.S. Forest Service Northeast Forest Experiment Station Resource Bulletin NE-132.

Barnes, Thomas G. (2000). Landscape Ecology and Ecosystems Management. University of Kentucky,

College of Agriculture Report FOR-76, Lexington, Kentucky.

Birch, Thomas W. (1994). Private Forest Landowners of the Northern United States. USDA Forest Service Technical Report RB-NE-136, Radnor, PA.

Davis, Mary, B. and Davis, John (1996). Eastern Old Growth Forests - Prospects for Rediscovery and Recovery. Island Press, Washington, DC.

DeGraff, Richard M., and Rudis, Deborah D. (1986). New England Wildlife: Habitat, Natural History, and Distribution. USDA Northeastern Forest Experiment Station General Technical Report NE-108.

Draft Habitat Management Guidelines for Amphibians and Reptiles of the Northeastern United States (2003). Partners for Amphibian and Reptile Conservation (PARC).

Edinger, G. J., et. al (editors) 2002. Ecological Communities of New York State. Second Edition.

New York Natural Heritage Program. New York State Department of Environmental Conservation (NYSDEC). Albany, New York.

Fabius Historical Society, Newsletter of the Fabius Historical Society No.15, Summer, Fall 2007.

Geologic Map of New York - Finger Lake Sheet - New York State Museum and Science Service - Map and Chart #15, 1970.

Hagan, John M. And Grove, Stacie L. (1999). Bird Abundance and Distribution in Managed and Old-Growth Forest in Maine. The Manomet Center for Conservation Sciences, Report No. MM-9901, Brunswick, Maine.

Kelty, Matthew J., and Kittredge, David B. (2003). The **Conversion** of Even-aged Stands to Uneven-Aged Structure in Southern New England. Northern Journal of Applied Forestry. 20:109-116.

Leak, William B. (2003). Regeneration of Patch Harvests in Even-Aged Northern Hardwoods in New England. Northern Journal of Applied Forestry: 20:188-189.

New York State 2nd Breeding Bird Atlas 2008. NYS DEC Albany, New York.

New York State Forestry Best Management Practices for Water Quality, Field Guide 2000. NYS DEC. Albany, New York.

New York State Open Space Conservation Plan (Draft) 2001. NYS DEC, New York State Office of Parks, Recreation, and Historic Preservation Albany, New York.

Nyland, Ralph D. (2003). Even-to uneven-aged: the Challenges of Conversion. Forest Ecology and

Management: 172:291-300.

Preliminary Brittle Structures Map of New York, New York State Museum-Map and Chart Series No.31E, 1974.

Quality Deer Management Association. Available World Wide Web, www.qdma.com.

Region 7 Recreation Master Plan for State Forests & Unique Areas (Draft). 2001. NYS DEC Albany, New York.

Report and Recommendations of the Labrador Hollow Advisory Council (1979). Labrador Hollow Unique Area Management Plan.

Report and Recommendations of the Labrador Hollow Advisory Council (1992). Labrador Hollow Unique Area Management Plan, (First Revision).

Seymour, Robert S. et. al. (2002). Natural Disturbance Regimes in Northern North America - Evaluating Silvicultural Systems using Natural Scales and Frequencies. Forest Ecology and Management. 155:357-367.

Smith, C.R., et. al. (2001). A GAP Analysis of New York, NY-GAP. Final Report and Data. U.S. Geological Survey, Biological Resources Division, National GAP Office, Moscow, Idaho.

State Land Unit Management Planning Handbook (Draft). 1996. NYS DEC Albany, New York.

Strategic Plan for State Forest Management, 2010. NYS DEC Albany, New York.

Stout, N. J. 1958. Atlas of Forestry in New York. State University College of Forestry at Syracuse University. Syracuse, New York.
Surficial Geologic Map of New York, New York State Museum - Geologic Survey - Map and Chart series #40, 1986.

Talbott, Susan C. and Yahner, Richard H. (2003). Temporal and Spatial Use of Even-Aged Reproduction Stands by Bird Communities in Central Pennsylvania. Northern Journal of Applied Forestry. 20:117-122.

The History of New York State, Lewis Historical Publishing Company, Inc 1927.

The Net: Finger Lakes Trail Conference. Available World Wide Web, http://www.fingerlakestrail.org/.

The Net: The GAP Analysis Program, Striving to Keep Common Species Common (2004). Available World Wide Web http://www.gap.uidaho.edu/com.

The Net: Global Perspectives on Neotropical Migratory Bird Conservation in the Northeast: Long-term Responsibility Vs. Immediate Concern (2004).

The Net: Goodchild on Spatial Analysis (2004). Available World Wide Web http://www.csiss.ncgia.ucsb.edu/learning-resources/content/good sa/.

The Net: New York State Parks, Recreation, and Historic Preservation (2004). Available World Wide Web http://www.dec.state.ny.us

The Net: Manomet Forest Conservation Program - Patch Retention Project (2003).

The Net: Hayword Brook Watershed Study: Breeding Birds (1998). Faculty of Forestry and Environmental Management at the University of New Brunswick, Canada. Available World Wide Web http://www.unbf.ca/forestry/centers/cwru/soe/bredbird.htm.

The Net: National Auduboun Society's Forest Biodiversity Research Project (2004). Available World Wide Web http://ny.audubon.org/FOREST/index.html.

The Net: U.S. EPA Environmental Monitoring and Assessment Program (EMAP) (2004). Available World Wide Web http://www.epa.gov/emap/.

Tyrrell, Lucy E. et al. (1998). Information About Old Growth for Selected Forest Type Groups in the Eastern United States. USDA Forest Service General Technical Report NC-197, St. Paul, Minnesota.

United States Architectural and Transportation Barriers Compliance Board. 1999. Regulatory Negotiations Committee on Accessibility Guidelines for Outdoor Developed Areas. Final Report.

U.S. Department of the Interior, Bureau of Land Management, et. al. 1993. Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Report of the Forest Ecosystem Management Team.

U.S. Soil Conservation Service Soil Survey of Cortland County, New York (1957) and Onondaga County, New York (1974).

Unpaved Forest Road Handbook. 2004. NYS DEC Albany, New York.

XX. APPENDICES

Appendix I - Previous Owners of the Hill and Hollow Unit.

Previous Owners of Kettlebail State Forest

Date Acquired	Acreage	Former Owner(s)	Town
5/5/1931	166.44	Reagan	Preble, Truxton
5/5/1931	171.22	H & C Gallinger	Truxton
5/5/1931	105.58	Padget	Preble, Truxton
5/5/1931	163.38	Etz	Preble
12/29/1931	239.35	Hoyt	Preble
2/29/1932	121.25	Gallinger	Truxton
4/4/1932	54.15	Wilcox	Truxton
7/14/1933	226.51	E. M. Phelps	Truxton
8/7/1933	132.64	F. L. Reasoner	Truxton
2/21/1934	25.93	M. F. O'Neill	Truxton
9/1/1937	500.40	Wells	Preble
11/24/1939	100.50	Argyle et al	Truxton
4/24/1942	100.47	M. Albanese	Truxton
2/24/1942	29.00	Bickford	Truxton
3/31/1944	78.52	Albanese & Ano	Truxton
9/29/1947	32.51	F. A. Goddard	Truxton
6/14/1948	-1648.49	Out to SUNY ESF	Preble, Truxton
1984	7.91	from Lab Hollow	Fabius
1984	-127.66	Out to Lab Hol	Truxton
11/7/1984	54.02	Young	Truxton
2/21/1985	54.01	Young	Truxton
Total Acreage =	**587.64**		

Previous Owners of Labrador Hollow Unique Area

Date Acquired	Acreage	Former Owner(s)	Town
12/28/1977	.42	Frey	Fabius
4/7/1978	808.81	Albanese	Fabius-100.72, Truxton-708.09
4/7/1978	6.75	Wilson	Fabius
4/7/1978	95.82	Chanoke	Fabius
4/7/1978	7.72	Troutman	Truxton
4/7/1978	15.52	Gittelson	Truxton
4/7/1978	21.19	Holman	Truxton
4/7/1978	1.54	Keating	Truxton
4/7/1978	11.45	Jones	Truxton
4/7/1978	20.49	Bizzell	Truxton
4/7/1978	29.06	Hosmer	Fabius
6/12/1984	5.87	Albanese	Truxton
4/5/1984	1.3	Holman	Truxton
6/12/1984	12.53	Holman	Truxton
1984	-7.91	Out to Kettlebail	Fabius
1984	307.12	From Kettlebail	Truxton
1984	127.66	From Morgan Hill	Truxton
8/14/1987	1.96	Chanoke	Fabius
	6.70	Composite	
Total Acreage =	**1474**		

Previous Owners of Morgan Hill State Forest, (Cortland R.A. #4)

Date Acquired	Acreage	Former Owner(s)	Town
6/25/1931	827.27	Mrs. H. Richards	Cuyler-551.44, Truxton-275.83

Previous Owners of Morgan Hill State Forest, (Cortland R.A. #4)

Date Acquired	Acreage	Former Owner(s)	Town
6/25/1931	375.94	C. C. Cook	Cuyler
6/26/1931	25.00	I. J. Washburn	Cuyler
7/2/1931	67.18	G. W. Lee	Cuyler
12/4/1931	247.30	C. Murray	Truxton
12/4/1931	132.98	W. Bell	Truxton
12/4/1931	113.50	G. Hawley	Truxton
12/14/1931	230.50	G. Young	Truxton
2/26/1932	376.75	T. W. Whorrall	Fabius-22.7, Cuyler-354.05
3/7/1932	86.06	Burr	Cuyler
9/15/1932	103.21	Mrs. A. Ryan	Cuyler
7/26/1935	132.81	J. O'Conner	Cuyler-22.00, Truxton-110.81
5/28/1936	396.42	Mrs. M. H. Carroll	Cuyler-209.61, Truxton-186.81
7/29/1941	167.23	R. Bell	Truxton
3/4/1965	120.67	Kennedy/Bock	Cuyler
1984	-307.12	Out to Lab Hol	Truxton
	5.07	Correction	Truxton
	7.00	Resurvey	Truxton
Total Acreage =	**3107.77**		

Previous Owners of Morgan Hill State Forest, (Onondaga R.A. #1)

Date Acquired	Acreage	Former Owner(s)	Town
8/14/1931	577.76	M. H. Smith	Fabius
9/12/1932	960.63	W. Bowers	Fabius
9/12/1932	282.32	E. Vinney	Fabius
12/23/1935	266.59	Onondaga Savings Bank	Fabius
12/20/1937	36.46	W. Parker	Fabius

12/19/1974	52.49	Greek Peak	Fabius
Total Acreage	**2176.25**		

Appendix II - Amphibians & Reptiles (Herps). NY Herp Atlas Data

#	Common Name	Scientific Name
1	Allegheny Dusky Salamander	Desmognathus ochrophaeus
2	American Toad	Bufo americanus
3	Brown Snake	Storeria dekayi
4	Bullfrog	Rana catesbeiana
5	Common Garter Snake	Thamnophis sirtalis
6	Common Snapping Turtle	Chelydra s. serpentina
7	Four-Toed Salamander	Hemidactylium scutatum
8	Gray Treefrog	Hyla versicolor
9	Green Frog	Rana clamitans
10	Jefferson Salamander complex	Ambystoma jeffersonianum x laterale
11	Milk Snake	Lampropeltis triangulum
12	Northern Dusky Salamander	Desmognathus fuscus
13	Northern Leopard Frog	Rana pipiens
14	Northern Redback Salamander	Plethodon c. cinereus
15	Northern Two-lined Salamander	Eurycea bislineata
16	Northern Water Snake	Nerodia s. sipedon
17	Painted Turtle	Chrysemys picta
18	Pickerel frog	Rana palustris
19	Redbelly Snake	Storeria occipitomaculata
20	Red-spotted Newt	Notophthalmus viridescens
21	Ringneck Snake	Diadophis punctatus
22	Spotted Salamander	Ambystoma maculatum
23	Spring Peeper	Pseudacris crucifer

Appendix II - Amphibians & Reptiles (Herps). NY Herp Atlas Data

#	Common Name	Scientific Name
24	Spring Salamander	Gyrinophilus porphyriticus
25	Wood Frog	Rana sylvatica
26	Wood Turtle	Clemmys insculpta

Appendix III - Mammals. NY Gap Analysis Data-EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	Model Status
1	American Beaver	Castor canadensis	Predicted & Confirmed
2	Big Brown Bat	Eptesicus fuscus	Predicted & Confirmed
3	Black Bear	Ursus americanus	Predicted
4	Bobcat	Lynx rufus	Predicted
5	Common Muskrat	Ondatra zibethicus	Predicted & Confirmed
6	Common Raccoon	Procyon lotor	Predicted
7	Coyote	Canis latrans	Predicted & Confirmed
8	Deer Mouse	Peromyscus maniculatus	Predicted & Confirmed
9	E. small-footed Myotis	Myotis leibii	Predicted
10	Eastern Chipmunk	Tamias striatus	Predicted & Confirmed
11	Eastern Cottontail	Sylvilagus floridanus	Predicted & Confirmed
12	Eastern Gray Squirrel	Sciurus carolinensis	Predicted
13	Eastern Pipistrelle	Pipistrellus subflavus	Predicted
14	Eastern Red Bat	Lasiurus borealis	Predicted
15	Fisher	Martes pennanti	Predicted
16	Gray Fox	Urocyon cinereoargentus	Predicted & Confirmed
17	Hairy-tailed Mole	Parascalops breweri	Predicted
18	Hoary Bat	Lasiurus cinereus	Predicted & Confirmed
19	House Mouse	Mus musculus	Predicted
20	Indiana Myotis	Myotis sodalis	Predicted

Appendix III - Mammals. NY Gap Analysis Data-EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	Model Status
21	Least Shrew	Cryptotis parva	Predicted
22	Little Brown Myotis	Myotis lucifugus	Predicted & Confirmed
23	Long-tailed Weasel	Mustela frenata	Predicted
24	Masked Shrew	Sorex cinereus	Predicted & Confirmed
25	Meadow Jumping Mouse	Zapus hudsonius	Predicted & Confirmed
26	Meadow Vole	Microtus pennsylvanicus	Predicted & Confirmed
27	Mink	Mustela vison	Predicted & Confirmed
28	N. Short-tailed Shrew	Blarina brevicauda	Predicted & Confirmed
29	Northern Flying Squirrel	Glaucomys sabrinus	Predicted & Confirmed
30	Northern Myotis (Keen's Myotis)	Myotis septentrionalis	Predicted & Confirmed
31	Norway Rat	Rattus norvegicus	Predicted & Confirmed
32	Porcupine	Erethizon dorsatum	Predicted
33	Pygmy Shrew	Sorex hoyi	Predicted
34	Red Fox	Vulpes vulpes	Predicted & Confirmed
35	Red Squirrel	Tamiasciurus hudsonicus	Predicted & Confirmed
36	River Otter	Lutra canadensis	Predicted & Confirmed
37	Short-tailed Weasel (Ermine)	Mustela erminea	Predicted & Confirmed
38	Silver-haired Bat	Lasionycteris noctivagans	Predicted
39	Smoky Shrew	Sorex fumeus	Predicted & Confirmed
40	Snowshoe Hare	Lepus americanus	Predicted
41	Southern Bog Lemming	Synaptomys cooperi	Predicted
42	Southern Flying Squirrel	Glaucomys volans	Predicted
43	Southern Red-backed Vole	Clethrionomys gapperi	Predicted & Confirmed
44	Star-nosed Mole	Condylura cristata	Predicted
45	Striped Skunk	Mephitis mephitis	Predicted
46	Virginia Opossum	Didelphis virginiana	Predicted

Appendix III - Mammals. NY Gap Analysis Data-EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	Model Status
47	White-footed Mouse	Peromyscus leucopus	Predicted
48	White-tailed Deer	Odocoileus virginianus	Predicted & Confirmed
49	Woodchuck	Marmota monax	Predicted
50	Woodland Jumping Mouse	Napaeozapus insignis	Predicted
51	Woodland Vole	Microtus pinetorum	Predicted

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
1	Acadian Flycatcher	Empidonax virescens	NR	P & C	Pro
2	Alder Flycatcher	Empidonax alnorum	Prob	P & C	Pro
3	American Bittern	Botaurus lentiginosus	Prob	P & C	Pro-SC
4	American Black Duck	Anas rubripes	Prob	P & C	GS
5	American Coot	Fulica americana	NR	P & C	GS
6	American Crow	Corvus brachyrhynchos	Con	P & C	GS
7	American Goldfinch	Carduelis tristis	Con	P & C	Pro
8	American Kestrel	Falco sparverius	Con	P & C	Pro
9	American Redstart	Setophaga ruticilla	Prob	P & C	Pro
10	American Robin	Turdus migratorius	Con	P & C	Pro
11	American Wigeon	Anas americana	NR	Pred	GS
12	American Woodcock	Scolopax minor	Prob	P & C	GS
13	Baltimore Oriole	Icterus galbula	Con	P & C	Pro
14	Bank Swallow	Riparia riparia	NR	P & C	Pro
15	Barn Swallow	Hirundo rustica	Con	P & C	Pro
16	Barred Owl	Strix varia	Prob	P & C	Pro

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
17	Belted Kingfisher	Ceryle alcyon	Con	P & C	Pro
18	Black Tern	Chlidonias niger	Prob	Pred	End
19	Blackburnian Warbler	Dendroica fusca	Pos	P & C	Pro
20	Black & White Warbler	Mniotilta varia	Prob	P & C	Pro
21	Black-billed Cuckoo	Coccyzus rethropthalmus	Prob	P & C	Pro
22	Black-capped Chickadee	Poecile atricapillus	Prob	P & C	Pro
23	Black-crested Night-Heron	Nycticorax nycticorax	NR	Pred	Pro
24	Black-throated Blue Warbler	Dendroica caerulescens	Prob	P & C	Pro
25	Black-throated Green Warbler	Dendroica virens	Prob	P & C	Pro
26	Blue Jay	Cyanocitta cristata	Prob	P & C	Pro
27	Blue-Gray Gnatcatcher	Polioptila caerulea	NR	P & C	Pro
28	Blue-headed Vireo	Vireo solitarius	Pos	P & C	Pro
29	Blue-winged Teal	Anas discors	Pos	P & C	GS
30	Blue-winged Warbler	Vermivora pinus	Prob	P & C	Pro
31	Bobolink	Dolichonyx oryzivorus	Con	P & C	Pro
32	Broad-winged Hawk	Buteo platypterus	Con	P & C	Pro
33	Brown Creeper	Certhia americana	Prob	P & C	Pro
34	Brown Thrasher	Toxostoma rufum	Pos	P & C	Pro
35	Brown-headed Cowbird	Molothrus ater	Prob	P & C	Pro
36	Canada Goose	Branta canadensis	Con	P & C	GS
37	Canada Warbler	Wilsonia canadensis	Prob	P & C	Pro
38	Carolina Wren	Thryothorus ludovicianus	NR	P & C	Pro
39	Cedar Waxwing	Bombycilla cedrorum	Prob	P & C	Pro
40	Cerulean Warbler	Dendroica cerulea	NR	P & C	Pro-SC

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
41	Chestnut-sided Warbler	Dendroica pensylvanica	Prob	P & C	Pro
42	Chimney Swift	Chaetura pelagica	Prob	P & C	Pro
43	Chipping Sparrow	Spizella passerina	Prob	P & C	Pro
44	Cliff Swallow	Hirundo pyrrhonota	NR	P & C	Pro
45	Common Barn-Owl	Tyto alba	NR	Pred	Pro
46	Common Grackle	Quiscalus quiscula	Con	P & C	Pro
47	Common Merganser	Mergus merganser	Pos	P & C	GS
48	Common Moorhen	Gallinula chloropus	Con	P & C	GS
49	Common Nighthawk	Chordeiles minor	NR	P & C	Pro-SC
50	Common Raven	Corvus corax	Pos	Pred	Pro
51	Common Snipe	Gallinago gallinago	NR	P & C	Pro
52	Common Yellowthroat	Geothlypis trichas	Prob	P & C	Pro
53	Cooper's Hawk	Accipiter cooperii	Pos	P & C	Pro-SC
54	Dark-eyed Junco	Junco hyemalis	Pos	P & C	Pro
55	Downy Woodpecker	Picoides pubescens	Pos	P & C	Pro
56	Eastern Bluebird	Sialia sialis	Con	P & C	Pro
57	Eastern Kingbird	Tyrannus tyrannus	Con	P & C	Pro
58	Eastern Meadowlark	Sturnella magna	Con	P & C	Pro
59	Eastern Phoebe	Sayornis phoebe	Con	P & C	Pro
60	Eastern Screech-Owl	Megascops asio	Pos	P & C	Pro
61	Eastern Towhee	Pipilo erythrophthalmus	Pos	P & C	Pro
62	Eastern Wood-Pewee	Contopus virens	Prob	P & C	Pro
63	European Starling	Sturnus vulgaris	Con	P & C	Unpro
64	Evening Grosbeak	Coccothraustes vespertinus	NR	P & C	Pro

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
65	Field Sparrow	Spizella pusilla	Prob	P & C	Pro
66	Gadwall	Anas strepera	NR	Pred	GS
67	Golden-crowned Kinglet	Regulus satrapa	Prob	P & C	Pro
68	Golden-winged Warbler	Vermivora chrysoptera	NR	P & C	Pro-SC
69	Grasshopper Sparrow	Ammodramus savannarum	NR	P & C	Pro-SC
70	Gray Catbird	Dumetella carolinensis	Prob	P & C	Pro
71	Great Blue Heron	Ardea herodias	Con	P & C	Pro
72	Great Crested Flycatcher	Myiarchus crinitus	Con	P & C	Pro
73	Great Horned Owl	Bubo virginianus	Pos	P & C	Pro
74	Green Heron	Butorides virescens	Con	P & C	Pro
75	Green-winged Teal	Anas crecca	Con	Pred	GS
76	Hairy Woodpecker	Picoides villosus	Con	P & C	Pro
77	Henslow's Sparrow	Ammodramus henslowii	NR	P & C	Thr
78	Hermit Thrush	Catharus guttatus	Pos	P & C	Pro
79	Hooded Merganser	Lophodytes cucullatus	Con	NR	GS
80	Hooded Warbler	Wilsonia citrina	Pos	P & C	Pro
81	Horned Lark	Eremophila alpestris	Con	P & C	Pro-SC
82	House Finch	Carpodacus mexicanus	Con	Con	Unpro
83	House Sparrow	Passer domesticus	Con	P & C	Pro
84	House Wren	Troglodytes aedon	Con	P & C	Pro
85	Indigo Bunting	Passerina cyanea	Pos	P & C	Pro
86	Killdeer	Charadrius vociferus	Prob	P & C	Pro
87	King Rail	Rallus elegans	NR	Pred	Thr
88	Least Bittern	Ixobrychus exilis	NR	Pred	Thr

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
89	Least Flycatcher	Empidonax minimus	Prob	P & C	Pro
90	Loggerhead Shrike	Lanius ludovicianus	NR	Pred	End
91	Long-eared Owl	Asio otus	NR	Pred	Pro
92	Louisiana Waterthrush	Seiurus motacilla	Pos	P & C	Pro
93	Magnolia Warbler	Dendroica magnolia	Pos	P & C	Pro
94	Mallard	Anas platyrhynchos	Con	P & C	GS
95	Marsh Wren	Cistothorus palustris	Prob	P & C	Pro
96	Mourning Dove	Zenaida macroura	Con	P & C	Pro
97	Mourning Warbler	Oporornis philadelphia	Pos	P & C	Pro
98	Nashville Warbler	Vermivora ruficapilla	Pos	P & C	Pro
99	Northern Bobwhite	Colinus virginianus	NR	Con	GS
100	Northern Cardinal	Cardinalis cardinalis	Pos	P & C	Pro
101	Northern Flicker	Colaptes auratus	Con	P & C	Pro
102	Northern Goshawk	Accipiter striatus	Con	P & C	Pro-SC
103	Northern Harrier	Circus cyaneus	Con	P & C	Thr
104	Northern Mockingbird	Mimus polyglottos	Prob	P & C	Pro
105	Northern Parula	Parlua americana	Prob	NR	Pro
106	Northern Pintail	Anas acuta	NR	Pred	GS
107	Northern Rough-winged Swallow	Stelgidopteryx serripennis	Prob	P & C	Pro
108	Northern Saw-whet Owl	Aegolius acadicus	Prob	P & C	Pro
109	Northern Shoveler	Anas clypeata	NR	Pred	GS
110	Northern Waterthrush	Seiurus noveboracensis	Pos	P & C	Pro
111	Orchard Oriole	Icterus spurius	Pos	P & C	Pro
112	Osprey	Pandion haliaetus	NR	Pred	Pro-SC

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
113	Ovenbird	Seiurus aurocapillus	Con	P & C	Pro
114	Pied-billed Grebe	Podilymbus podiceps	NR	P & C	Thr
115	Pileated Woodpecker	Dryocopus pileatus	Con	P & C	Pro
116	Pine Siskin	Carduelis pinus	Prob	P & C	Pro
117	Pine Warbler	Dendroica pinus	NR	P & C	Pro
118	Prairie Warbler	Dendroica discolor	NR	P & C	Pro
119	Prothonotary Warbler	Protonotaria citrea	NR	Pred	Pro
120	Purple Finch	Carpodacus purpureus	Con	P & C	Pro
121	Purple Martin	Progne subis	NR	P & C	Pro
122	Red Crossbill	Loxia curvirostra	NR	P & C	Pro
123	Red-bellied Woodpecker	Melanerpes carolinus	Con	P & C	Pro
124	Red-breasted Nuthatch	Sitta cacadensis	Prob	P & C	Pro
125	Red-eyed Vireo	Vireo olivaceus	Con	P & C	Pro
126	Red-headed Woodpecker	Melanerpes erythrocephalus	NR	P & C	Pro-SC
127	Red-shouldered Hawk	Buteo lineatus	Con	P & C	Pro-SC
128	Red-tailed Hawk	Buteo jamaicensis	Pos	P & C	Pro
129	Red-winged Blackbird	Agelaius phoeniceus	Con	P & C	Pro
130	Ring-necked Pheasant	Phasianus colchicus	Prob	P & C	GS
131	Rock Pigeon	Columba livia	Con	P & C	Unpro
132	Rose-breasted Grosbeak	Pheucticus ludovicianus	Prob	P & C	Pro
133	Ruby-throated Hummingbird	Archilochus colubris	Prob	P & C	Pro
134	Ruffed Grouse	Bonasa umbellus	Con	P & C	GS
135	Savannah Sparrow	Passerculus sandwichensis	Prob	P & C	Pro
136	Scarlet Tanager	Piranga olivacea	Prob	P & C	Pro

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
137	Sedge Wren	Cistothorus platensis	NR	Pred	Thr
138	Sharp-shinned Hawk	Accipiter striatus	Pos	P & C	Pro-SC
139	Short-eared Owl	Asio flammeus	NR	Pred	End
140	Song Sparrow	Melospiza melodia	Prob	P & C	Pro
141	Sora	Porzana carolina	Prob	NR	GS
142	Spotted Sandpiper	Actitis macularia	NR	P & C	Pro
143	Swainson's Thrush	Catharus ustulatus	NR	Con	Pro
144	Swamp Sparrow	Melospiza georgiana	Prob	P & C	Pro
145	Tree Swallow	Tachycineta bicolor	Con	P & C	Pro
146	Tufted Titmouse	Baeolophus bicolor	Pos	P & C	Pro
147	Turkey Vulture	Cathartes aura	Con	P & C	Pro
148	Upland Sandpiper	Bartramia longicauda	NR	P & C	Thr
149	Veery	Catharus fuscescens	Con	P & C	Pro
150	Vesper Sparrow	Pooecetes gramineus	NR	P & C	Pro-SC
151	Virginia Rail	Rallus limicola	Prob	P & C	GS
152	Warbling Vireo	Vireo gilvus	Pos	P & C	Pro
153	Whip-poor-will	Caprimulgus vociferus	NR	P & C	Pro-SC
154	White-breasted Nuthatch	Sitta carolinensis	Con	P & C	Pro
155	White-eyed Vireo	Vireo griseus	NR	Pred	Pro
156	White-throated Sparrow	Zonotrichia albicollis	Pos	P & C	Pro
157	White-winged Crossbill	Loxia leucop	Pos	Con	Pro
158	Wild Turkey	Meleagris gallopavo	Con	P & C	GS
159	Willow Flycatcher	Empidonax traillii	Prob	P & C	Pro
160	Wilson’s Snipe	Gallinago delicata	Prob	NR	GS

Appendix IV - Birds.2nd Breeding Bird Atlas – Blocks 4073B, 4073D, 4173A, 4173C & 4174C & New York Gap Analysis Data- EMAP Hexagon 354 & 384

#	Common Name	Scientific Name	BBA Stat	Gap Stat	NY Leg. Stat
161	Winter Wren	Troglodytes troglodytes	Prob	P & C	Pro
162	Wood Duck	Aix sponsa	Con	P & C	GS
163	Wood Thrush	Hylocichla mustelina	Prob	P & C	Pro
164	Worm-eating Warbler	Helmitheros vermivorum	NR	P & C	Pro
165	Yellow Warbler	Dendroica petechia	Con	P & C	Pro
166	Yellow-bellied Sapsucker	Sphyrapicus varius	Prob	P & C	Pro
167	Yellow-billed Cuckoo	Coccyzus americanus	NR	P & C	Pro
168	Yellow-breasted Chat	Icteria virens	NR	P & C	Pro-SC
169	Yellow-rumped Warbler	Dendroica coronata	Pos	P & C	Pro
170	Yellow-throated Vireo	Vireo flavifrons	Con	P & C	Pro
171	Yellow-throated Warbler	Dendroica dominica	NR	Pred	Pro

BBA Status: Con=Confirmed NR=No Record Pos = Possible Prob = Probable
NY Gap Status: Con=Confirmed NR=No Record Pred=Predicted P & C=Predicted & Confirmed
NY Legal Status: End=Endangered GS=Game Species Pro-SC=Protected Special Concern
Pro=Protected Thr=Threatened Unpro=Unprotected

Appendix V - Bureau of Fisheries Stream Listing.

Streams located in Kettlebail State Forest

Fisheries Index #	Name	Length in forest (mi.)	Article 15 Status
SR-44-14-59-10	Kenny Brook	.7	protected
SR-44-14-59-10-3	Unnamed tributary of Kenny Brook	.4	unprotected
SR-44-14-59-10-4	Unnamed tributary of Kenny Brook	.2	unprotected
Kettlebail Total		**1.3**	

Streams located in Labrador Hollow Unique Area

Fisheries Index #	Name	Length in forest (mi.)	Article 15 Status
SR-44-14-59-11	Labrador Creek	1.0	protected

SR-44-14-59-11-4	Tinker Falls Brook	.8	unprotected
SR-44-14-59-11-P51-1	Unnamed	.6	unprotected
SR-44-14-59-11-P51-2	Unnamed	.4	unprotected
Lab. Hollow Total		**2.8**	

Streams located in Morgan Hill State Forest

Fisheries Index #	Name	Length in forest (mi.)	Article 15 Status
Ont-66-11-P26-37-6-39	Unnamed	.4	unprotected
SR-44-14-59-11-3	Shackham Brook	1.2	protected
SR-44-14-59-11-3-1	Unnamed tributary Shackham Br.	1.0	protected
SR-44-14-59-11-3-2	Unnamed tributary Shackham Br.	1.2	protected
SR-44-14-59-11-3-3	Unnamed tributary Shackham Br.	.5	protected
SR-44-14-59-15	Morgan Hill Creek	1.2	protected
SR-44-14-59-21	Unnamed	1.7	unprotected
SR-44-14-59-21-1	Unnamed	.4	unprotected
SR-44-14-59-23	Unnamed	1.3	protected
SR-44-14-59-25-1	Unnamed	.1	unprotected
SR-44-14-59-25-2-1	Unnamed	.9	unprotected
SR-44-14-59-25-2-3-1	Unnamed	.4	protected
Morgan Hill Total		**10.3**	

Appendix VI - PFARs, Haul Roads, Access Trails, Town & County Roads in the Unit.

Public Forest Access Roads, (PFARs) in the Unit

Forest	Road Name	Length (miles)
Labrador Hollow Unique Area	Labrador Pond	0.1
Morgan Hill State Forest	Burma	2.2
Morgan Hill State Forest	Cross Road	0.9
Morgan Hill State Forest	Herlihy	2.2

Public Forest Access Roads, (PFARs) in the Unit

Forest	Road Name	Length (miles)
Morgan Hill State Forest	Morgan Hill	5.4
Morgan Hill State Forest	Spruce Pond	0.1
Total		**10.9**

Haul Roads in the Unit

Forest	Road Name	Length (miles)
Morgan Hill State Forest	Burma	0.1
Morgan Hill State Forest	Coan	0.6
Morgan Hill State Forest	Fire Tower	0.2
Morgan Hill State Forest	Herlihy	0.1
Morgan Hill State Forest	Keith Gutchess	0.7
Morgan Hill State Forest	Road to Nowhere	0.1
Morgan Hill State Forest	Spruce Pond	0.6
Total		**2.4**

Miles of Access Trails in the Unit

Forest	Length (miles)
Kettlebail State Forest	0.6
Morgan Hill State Forest	4.4
Total	**5**

County, State, & Town Roads in the Unit

Forest	Road Name	Road Type	Length (miles)
Kettlebail State Forest	Kettlebail	Seasonal Town Road	1.1
Kettlebail State Forest	Truxton Tully	County Road	0.5
Labrador Hollow Unique Area	Labrador	Town Road	0.9
Labrador Hollow Unique Area	Labrador Crossroad	Town Road	0.5

County, State, & Town Roads in the Unit

Forest	Road Name	Road Type	Length (miles)
Labrador Hollow Unique Area	Markham Hollow	Town Road	0.3
Labrador Hollow Unique Area	NYS Route 91	State Highway	2.2
Morgan Hill State Forest	Shackham	Town Road	1.7
Total			**7.2**

Appendix VII - Deer Harvest.

Wildlife Management Unit 7M					Towns of Fabius, Cuyler and Truxton			
Year	Buck	Doe	Total	Buck/sq. mi.	Buck	Doe	Total	Buck/sq. mi.
2001	6177	3873	10500	3.1	449	297	746	3.3
2002	5237	2713	7950	2.7	345	206	551	2.5
2003	4412	2382	6794	2.3	323	189	512	2.4
2004	3392	1205	4597	1.9	218	90	308	1.6
2005	4100	900	5000	2.4	253	50	303	1.9
2006	5133	2485	7618	2.7	337	191	528	2.5
2007	5627	3303	8930	2.9	403	266	670	2.9
2008	6146	4422	10568	3.1	380	266	646	2.8
2009	4685	2742	7427	3.3	443	240	683	3.3

* The Hill and Hollow Unit is within Wildlife Management Unit 7M.

Appendix VIII - Rare, Threatened, Endangered, and Special Concern Species.

Rare plants have been protected in New York State since 1933. After a long history of expanded protection efforts, the latest regulation was enacted in 1989 and includes three categories (rare, threatened, endangered) and one non-rare protection category (exploitably vulnerable). The categories of rare plants are defined as follows:

Rare Species:

- 20 to 35 sites in the state, or
- 3,000 to 5,000 individuals

Threatened Species:

- 6 to 20 sites in the state, or
- 1,000 to 3,000 individuals, or
- restricted to not less than four or more than seven United States Geological Survey 7½ minute topographical maps, or

- listed as threatened by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CAR 17.11

Endangered Species:

- 5 or fewer sites in the state, or
- fewer than 1,000 individuals, or
- restricted to less than four United States Geological Survey 7½ minute topographical maps, or
- species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CAR 17.11

Exploitably Vulnerable Species:

- listed species are likely to become threatened in the near future throughout all or a significant portion of their range within the state if causal factors continue unchecked.

The exploitably vulnerable category contains plants that are likely to be picked for commercial, medicinal or personal purposes and affords the landowner extra protection ability.

Rare plants included on the list are protected under the Environmental Conservation Law, Section 9-1503. Part (f) of the law reads as follows: "It is a violation for any person, anywhere in the state to pick, pluck, sever, remove, damage by the application of herbicides or defoliants, or carry away, without the consent of the owner, any protected plant. Each protected plant so picked, plucked, severed, removed, damaged, or carried away shall constitute a separate violation." Violators of the regulation are subject to fines and penalties.

The Nature Conservancy established the New York Natural Heritage Program in 1985 as a contract unit within the Department. The Program assumed the State Museum job of compiling a status list for rare plants in the state. Each year a rare plant status review meeting is sponsored by the Natural Heritage Program botanist to review the ranks and taxonomy of the listed plants. The meeting includes the state botanist, a Department representative, and other botanists from around the state who are familiar with rare plants. After the meeting, the list is updated and each plant is assigned a global and state rarity rank devised by The Nature Conservancy. This list is used by the Department as a basis for the legal protected plant list.

Since the Heritage Program began, the status list has changed significantly. On the positive side, many plants that were originally thought to be rare were shown to be more common after historical sites and potential habitat were searched. More than 70 plants that had not been seen in the past 20 years were rediscovered, many of them with historical records more than 50 years old. On the negative side, many plants were determined to be extirpated from the state after years of searching failed to identify a single plant.

The New York Natural Heritage Program also actively surveys rare animal species of all vertebrate groups (mammals, birds, reptiles, amphibians & fish) and selected rare species from the invertebrate groups (butterflies and moths, beetles, dragonflies and damselflies, mayflies, and freshwater bivalve

mollusks). The Heritage Program collects data on significant animal concentration areas including bat hibernacula, anadromous fish, warm and cold water fish, waterfowl, raptors and nesting areas of terns, herons and gulls.

Appendix IX - Department Rules, Regulations, Laws, and Policies.

A. New York Code Rules and Regulations

Title 6

Chapter I	Fish and Wildlife
Chapter II	Lands and Forests
Chapter III	Air Resources
Chapter IV	Quality Services
Chapter V	Resource Management Services
Chapter VI	State Environmental Quality Review
Chapter VII	Sub-Chapter A - Implementation of Environmental Quality Bond Act of 1972
Chapter X	Division of Water Resources

B. Environmental Conservation Laws

ECL Article 8	Environmental Quality Review
ECL Article 9	Lands and Forests
ECL Article 11	Fish and Wildlife
ECL Article 15	Water Resources
ECL Article 23	Mineral Resources
ECL Article 24	Freshwater Wetlands
ECL Article 33	Pesticides
ECL Article 51	Implementation of Environmental Quality Bond Act/1972
ECL Article 52	Implementation of Environmental Quality Bond Act/1972
ECL Article 71	Enforcement

C. Other Laws

New York State Historic Preservation Act Article 14 PRHPL

Education Law Section 233 State Museum Collections

D. Department Policies

Public Use	Prescribed Fire
Temporary Revocable Permits	State Forest Master Plan
Motor Vehicle Use	Inventory
Timber Management	Acquisition
Unit Management Planning	Road Construction
Pesticides	Recreational Use

E. The following special regulations have been implemented to protect rare and endangered species, reduce illegal activities, manage high level recreation use and to provide for the safety of visitors to Labrador Hollow Unique Area:

- Bathing or swimming is prohibited.
- Boat launching is permitted only from the designated boat launch on the west side of Labrador Pond.
- Motorized boats are prohibited.
- Camping and open fires are prohibited.
- Snowmobiling is prohibited.
- Domestic animals must be under the complete control of their owner/handler.
- Off-road vehicle traffic is prohibited.
- Hunting and trapping are permitted as follows (see map):
    - Zone 1 (556 acres) - Hunting and trapping are prohibited. This area includes all of Labrador Pond, the boardwalk, tinker falls, and most of the trails.
    - Zone 2 (918 acres) - Hunting and trapping are permitted. Zone 2 is the remaining area of Labrador Hollow Unique Area outside of Zone 1.
- Fishing in Zone 1 is permitted only from a boat on the pond or creek or from the fishing pier. To protect the shoreline vegetation, fishing from the shoreline is prohibited. Fishing is permitted in Zone 2.
- Non-motorized hang-gliding is allowed by special permit only.
- Although horseback riding and mountain biking are not legally prohibited, h there are no approved horseback riding and mountain biking trails or facilities in the Labrador Hollow Unique Area.

F. Spruce Pond Camping Rules

- Camping permit is required. Overnight camping is allowed by permit only at designated sites #1 - #12. You may obtain a camping permit, free of charge, by contacting the NYS Department of Environmental Conservation, Cortland Office, 1285 Fisher Avenue, Cortland, NY 13045-1090; or call (607) 753-3095, extension 298.
- Maximum number of people per permit is 9, with exception for special “group” camping.
- No camping permit will be issued to individuals under 18 years of age.
- All sites are tent camping only.
- Cutting, defacing injuring in any manner, any live tree, shrub or plant is prohibited.
- Campfires are permitted for cooking, warmth or smudge. Use wood from dead and down trees only. Use fire ring when available. Fires must not be left unattended until fully extinguished.
- Throwing glass, cans, aluminum foil, food wastes other non-burnable rubbish into the fire pit is prohibited.
- Camping sites must be kept in a clean and sanitary condition. What you carry in, carry out. All garbage and refuse must be removed from camp site.
- No motorized vehicles are allowed on State Forest or campsites.
- All pets must be on a leash.
- Swimming in the pond is prohibited.
- Fishing is allowed at Spruce Pond with valid fishing license.
- No motorized boats are allowed on Spruce Pond.
- No camping or overnight parking at the Fisherman’s Parking Area.

- Target shooting, whether with gun or bow, is prohibited.

Any questions regarding this area, please contact the Cortland DEC office at (607) 753-3095, extension 298. The NYS Ranger for Spruce Pond and Morgan Hill State Forest is William Giraud.

Appendix X - Taxes Paid on State Forests by Township (2014 Tax Rolls)

Town	County	State Forest Acres	# of Parcels	Town Taxes	School Taxes	Special District Taxes	Total Tax
Cuyler	Cortland	6,741.37	44	$79,291	$230,105	$15,162	$324,558
Truxton	Cortland	3,531.17	25	$25,284	$94,800	$4,787	$124,871
Fabius	Onondaga	2,198.95	7	$15,614	$62,574	$4,860	$83,048

Appendix XI - Mined Land Reclamation.

1. All final slopes will be neatly graded and left no steeper than one vertical on two horizontal (26 degrees from horizontal).

2. All mine floor areas shall be ripped and/or disked in order to alleviate compaction after grading. All final slope areas that are left one vertical on three horizontal or flatter shall be ripped and/or disked in a contour fashion. If ripping shale, finishing grading after replacement of available topsoil may be necessary.

3. All available topsoil shall be replaced (evenly spread) on all affected lands after grading and ripping/disking.

4. Following replacement of topsoil at reclamation, soils must be immediately seeded, fertilized, limed, and mulched. Permittees must either obtain and follow specific written rate recommendations from the local Natural Resource Conservation Service or Agricultural Extension offices or use the following general recommendations:

- Seed at 60 pounds per acre with a mixture that will provide an erosion resistant vegetative cover and will also provide for the long term productivity of legumes:
  - 20% Perennial Ryegrass (12 lbs)
  - 20% Creeping Red Fescue (12 lbs)
  - 25% Bird's-foot Trefoil* (15 lbs)
  - 13% Kentucky Blue Grass (7-8 lbs)
  - 17% Annual Ryegrass (10.2 lbs)
  - 5% White Clover (3 lbs)

  *This legume must be inoculated at time of seeding. If seeding by hand, use sticking agent, such as a cola or milk, to stick inoculant to seed. If seeding with hydro-seeder, use four times the recommended rate of inoculant.
- Fertilize at 800 pounds per acre with 10-10-10 fertilizer.
- Mulch with straw or hydromulch to cover 100% of the soil surface (2 tons/acre).

- Lime per soil test results (Natural Resource Conservation Service or private lab).

5. Vegetative cover must be established without rill or gully erosion before reclamation shall be approved by the Department.

Appendix XII - SEQR.

This Plan and the activities it recommends will be in compliance with State Environmental Quality Review (SEQR), 6NYCRR Part 617. The State Environmental Quality Review Act (SEQRA) requires the consideration of environmental factors early in the planning stages of any proposed action(s) that are undertaken, funded or approved by a local, regional or state agency. The Strategic Plan for State Forest Management (SPSFM) serves as the Generic Environmental Impact Statement (GEIS), regarding management activity on State Forests. To address potential impacts, the SPSFM establishes SEQR analysis thresholds for each category of management activity.

Management actions in this Plan are within the thresholds established in the SPSFM, therefore these actions do not require additional SEQR. Any future action that does not comply with established thresholds will require additional SEQR prior to conducting the activity.

STATE ENVIRONMENTAL QUALITY REVIEW ACT

This Unit Management Plan (UMP) does not propose pesticide applications of more than 40 acres, any clearcuts of 40 acres or larger, or prescribed burns in excess of 100 acres. Therefore the actions in the plan do not exceed the thresholds set forth in the Strategic Plan/Generic Environmental Impact Statement for State Forest Management**.**

This Unit Management Plan also does not include any of the following:

1. Forest management activities occurring on acreage occupied by protected species ranked S1, S2, G1, G2 or G3
2. Pesticide applications adjacent to plants ranked S1, S2, G1, G2 or G3
3. Aerial pesticide spraying by airplane or helicopter
4. Any development of facilities with potable water supplies, septic system supported restrooms, camping areas with more than 10 sites or development in excess of other limits established in this plan.
5. Well drilling plans
6. Well pad densities of greater than one well pad in 320 acres or which does not comply with the limitations identified through a tract assessment
7. Carbon injection and storage or waste water disposal

Therefore the actions proposed in this UMP will be carried out in conformance with the conditions and thresholds established for such actions in the Strategic Plan/Generic Environmental Impact Statement , and do not require any separate site specific environmental review (see 6 NYCRR 617.10[d]).

Any action taken by the Department on this unit that is not addressed in this Unit Management Plan and is not addressed in the Strategic Plan/Generic Environmental Impact Statement may need a

separate site specific environmental review.

Appendix XIII – Public Comment and Response Summary.
A public meeting was held March 11, 2013 at the Hartnett Elementary School located in Truxton, to gather public input on the Draft Hill and Hollow and Draft Taylor Valley Unit Management Plans (UMP). The meeting was advertised through a press release and a notice in the DEC's Environmental Notice Bulletin. Additionally, public meeting notices were sent by email or postcard, to various stakeholders including people that attended the scoping meetings for the UMPs (Hill and Hollow scoping meeting was held at Tully High School during April, 2009), DEC Adopt-A-Natural Resource (AANR) partners, other interested persons/groups and local libraries.

About 85 people attended the public meeting. The meeting allowed attendees the opportunity to meet informally with DEC staff; provide written comments via comment cards that were provided by the DEC and also on easels that were located throughout the gymnasium; listen to a short presentation about the UMPs; and provide verbal comments with use of a microphone.

A total of 218 public comments were received from 77 people for the Draft Hill and Hollow UMP. Twenty-seven people spoke at the meeting during the verbal comment session. Of those, 23 were directed towards the Hill and Hollow UMP or both UMPs. The remaining four speakers were specific to the Taylor Valley UMP. In addition to the verbal comments provided, 54 people provided written comments directed towards the Hill and Hollow UMP or both UMPs. These comments came in the form of easels (at the meeting), comment cards (provided at the meeting), emails and letters. Comments, whether verbal or written that were specific to the Taylor Valley UMP are not included in this UMP.

The check boxes on the 21 comment cards, that were received, indicate that the people that provided comment cards were interested in the following: minerals (52%), hiking (48%), mountain biking (48%), biodiversity (43%), ecosystem management (38%), wildlife habitat (33%), hunting/trapping (28%), cross country skiing (24%), fishing (24%), history (24%), ATV use (14%), camping (10%), forest products(10%), homeowner firewood (10%), other uses (10%), snowmobiling (10%), water quality (10%), geocaching (5%), horseback riding (5%) and wildlife photography (5%).

Verbal and written comments that were received for the Hill and Hollow UMP were similar. The following table contains broad comment subjects that were received by number of occurrences and percentage of occurrences based on people that provided comments.

Broad Comment Subject	Occurrences	%
Opposed to Oil & Gas or High Volume Hydraulic Fracturing	41	53
Support Mountain Bike Use or Inclusive Use of Trails on the Unit	37	48
Support Ecosystem Management/Timber Harvesting on the Unit	19	25
Support Pedestrian Only Hiking Trails on the Unit	19	25
Opposed to All Terrain and/or Off-Highway Vehicles on the Unit	16	21
Support Hunting and/or Trapping on the Unit	11	14
Support Early Successional Habitat Creation on the Unit	4	5
Support Oil & Gas or High Volume Hydraulic Fracturing	2	2
Concerned with Climate Change and How the UMP Addresses it	2	2

Concerned with Access During the Winter	2	2
Opposed to Hunting and/or Trapping on the Unit	2	2
Opposed to Ecosystem Management/Timber Harvesting on the Unit	1	1
Overall Support for the Entire UMP	1	1
Support All Terrain and/or Off-Highway Vehicle use on the Unit	1	1

The following table contains verbal and written comments that were received at the public meeting (March 11, 2013) or during the public comment period (March 11, 3013 to April 11, 2013) and responses to those comments. The comments found below have, in some cases, been edited for length and clarity. Comments with the same viewpoints have been combined to save space.

General	
Please focus on retaining the natural state of these lands and allow us to enjoy it without overdevelopment.	The focus of the plan is to retain the natural state of these lands by conducting sustainable forest management activities, limiting developed recreational facilities and prohibiting surface disturbance associated with high volume hydraulic fracturing.
The plan is educational, informational, substantial and balanced. The plan includes an exhaustive review of plant and animal species, habitat types, water, soil, and mineral resources, natural and cultural history as well as recreational opportunities and management plans for all of the above. DEC personnel are to be commended for this thorough study and for it presentation. A balanced approach is important, but there is room for a variety of different activities.	The plan takes an ecosystem management approach to balance the many values and services that the forests provide such as clean air and water, biodiversity, recreational opportunities, and sustainable forest products.
There should be a more adequate question and answer session in your presentation; after all we are here to find out what is being done. Ambiguous presentation at best.	The purpose of the meeting was to gather input from the public regarding the Draft Taylor Valley UMP. Therefore, the majority of time, at the meeting was dedicated to the verbal comment period. The presentation was not meant to inform the public of everything in the plan. The draft UMP was released prior to the meeting, so the public had time to review it.
Involve DEC professional, technical, and legal staff (including ECOs) in proposed UMP development on adjacent lands to or in close proximity to state owned lands.	DEC professional, technical and legal staff (Forest Rangers) was included in the development of this UMP. The plan does not include assessments of privately owned property except for desired acquisitions and land-use at a landscape level.
With climate change, there will be more droughts, extreme weather, erosion and changes to species present on these forests. What are the plans for climate change?	The plan mentions reducing carbon loss and increasing carbon sequestration both of which reduce the amount of green house gasses released into the atmosphere. An adaptive management objective was created under Objective A.4.f to address things such as species migration.
Mineral Resources	

The proposed UMP is predominately positive. The lone exception is the guidelines for oil and gas exploration and development. The Division of Mineral Recourses has different goals than the rest of the DEC.	DEC's stated mission is "To conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." The Division of Minerals Resources is responsible for ensuring the environmentally sound, economic development of New York's non-renewable energy and mineral resources for the benefit of current and future generations in such a manner to prevent waste, to obtain a greater ultimate recovery of oil and gas and protect the correlative rights of all persons.
Over half of the comments that were received during the public comment period opposed high-volume hydraulic fracturing on the Unit. A number of these comments expressed concern about the impacts of high-volume hydraulic fracturing on air and water quality, as well as forest health and wildlife habitat. The public comment period took place in 2013, which was before high-volume hydraulic fracturing was banned in New York State.	High- volume hydraulic fracturing was banned in New York State in 2015. However, using other methods of extraction, Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes the Department of Environmental Conservation to make leases on behalf of the State for exploration, production and development of oil and gas on State lands. Currently, there are not any proposals to explore, produce, or develop oil or gas on State Lands. Should there be any proposals for oil, gas, or mineral exploration and development in the future, the Department will ensure that environmental protections are in place.
ADK is deeply concerned about the potential for hydro-fracking on DEC managed state forests. ADK will oppose by all legal means available any effort by the state to grant new or expanded leases to private entities for natural gas exploration and exploitation in and beneath our state forests. DEC managed public forests deserve the same level of legal protection as our state parks managed by the Office of Parks, Recreation and Historic Preservation (OPRHP).	There are currently no plans to allow high-volume hydraulic fracturing on state lands as detailed in Chapter 7, section 7.4.4 of the September 2011 revised draft "Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program" (SGEIS) related to well permit issuance for horizontal drilling and high-volume hydraulic fracturing in the Marcellus Shale and other low-permeability gas reservoirs. This document may be accessed at: http://www.dec.ny.gov/energy/75370.html . Hydraulic fracturing is banned. Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes the Department of Environmental Conservation to make leases on behalf of the State for exploration, production and development of oil and gas on State lands.
Why is the state proposing gas drilling on state lands when it is not approved in New York State? Where is this directive coming from?	Gas drilling is allowed in the State and has been done on state land for many decades. High-volume hydraulic fracturing has not yet been approved to proceed.

Oil and gas drilling should be prohibited on all state lands including those in this plan. Oil and gas leasing should be prohibited within the unit and removed from the plan. The DEC and the Governor should not lease the oil and gas rights *under* DEC managed public lands and state parks, leasing in the immediate area will undoubtedly have a negative impact on the environment and the tourism economy supported by recreationists. The introduction of gas drilling, which is by nature is a large scale industrial process, would run directly contrary to the other purposes of the State Forests such as habitat protection and recreation. The ATV restrictions in this plan make perfect sense, but they should also be applied to oil and gas. Oil and gas development and high-volume hydraulic fracturing should be banned for the same reasons that ATVs are restricted (surface disturbance and noise will effect neighbors).	Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes the Department of Environmental Conservation to make leases on behalf of the State for exploration, production and development of oil and gas on State lands. DEC does not lease the oil and gas rights under state parks. Assessments and decisions regarding the leasing of oil and gas resources other than high-volume hydraulic fracturing would be based on the most current technologies, public policies, regulations, public feedback and the potential for environmental impacts. Assessments and decisions would not be made until the Unit is nominated. The leasing process is a public process described in detail at: http://www.dec.ny.gov/energy/1577.html . Possible future outcomes include: no leasing, non-surface occupancy leasing or surface occupancy leasing with significant safeguards and restrictions. No nominations have been received nor has the State proposed or planned any state land lease sales. Any proposed lease sale would include notice of public meetings and an opportunity for public comment.
The plan is misleading and fails to inform the public what oil and gas development is being planned for these sensitive natural areas. There seems to be contradicting messages with what is in the plan and what is being said at the meeting regarding hydraulic fracturing and these state lands. I am confused on the position of hydraulic fracturing in the plan. It says that surface disturbance will be prohibited, but also talks about leasing with surface rights, areas compatible with wells, etc…	Surface disturbance associated with high-volume hydraulic fracturing will not be allowed on State Forests (see below). Through this UMP process, DEC staff have operated transparently to propose potential uses of these lands and obtain feedback from the public prior to authorizing any proposal. Currently, there are no proposals for oil, gas, or mineral exploration or development.
The UMP objectives are inconsistent with oil and gas development. Objective 3.2 of the UMP states that NYSDEC intends to "Lease Natural Gas Exploration and Development Rights While Protecting Sensitive Areas and Other Management Objectives." This is oxymoronic. It is simply not possible to permit the large scale industrial development of these sensitive natural areas and at the same time maintain the biodiversity and natural character that these area are	The objectives of the Department with respect to development of state land include the safe development of resources and it is also permitted by law. Development will not occur in sensitive areas and restricted areas will be determined through the leasing process. The protection of area aquifers, surface waters, and air

intended to preserve. Objective 1.2: Protect Soil and Water Resources - It has been demonstratively shown in all states where O&G development has been allowed that regardless of what BMPs are employed, contamination of the area aquifers and surface waters have occurred. And it is further noted that Objective 1.2 fails to include protection of the air. -Does NYS DEC propose that timber harvesting BMPs will also apply to clearcutting for the ROWs of gas lines? It will simply not be possible to avoid wetlands and forest fragmentation as a result of the pads, access roads and pipelines if well permits are allowed in the unit. -The UMP proposes that only 408 acres of 7346 acres or 5% of the area under consideration be protected. By implication 95% of the acreage will be made available for O & G development. -It will not be possible to construct gathering lines and water lines without disturbing wetlands. -It is simply ludicrous for NYSDEC to believe and imply to the public that spills will be cleaned up. Drill pads are composed of six to twelve feet of crushed stone specifically because spills on drill pads are anticipated. Thus the fluids seep into the stone pad, never to be recovered. Objective 1.7: Enhance Wildlife Habitat -Natural gas exploration destroys habitat for birds of prey through numerous pathways, including but not limited to, habitat fragmentation, air contamination and ingestion of small rodents and other prey that has died as a result of drinking contaminated water from fluid impoundments. Objective 2.1: Maintain Existing Recreation Facilities -It simply ludicrous for NYSDEC to believe and imply to the public that trail aesthetics can be maintained in a heavy industrial area by implementing a 250 foot surface disturbance buffer.	with respect to oil and gas well operations in the state have been addressed in detail in the GEIS which is the mechanism to address impacts to the environment associated with a project under SEQRA. The UMP process does not serve as the mechanism to address impacts to the environment associated with oil and gas well operations. Wetlands will be avoided by buffers and forest fragmentation will be addressed and avoided if leasing is proposed. This comment appears to be in reference to the 408 acres of wetlands identified to occupy lands in the Unit covered by this UMP. Wetlands are only a small part of the area in the Unit determined through the state land leasing process and tract assessments to be sensitive and protected from oil and gas development. Around each wetland, pond, seep and vernal pool there would a buffer of 250 ft. There are proposed buffers of 250 ft. from streams and trails as well as exclusions for slopes that exceed 15%. There are numerous other sensitive resources within the Unit that would need to be considered prior to allowing any surface disturbance in areas of the Unit. Until this assessment is performed, the exact amount of acreage available in the Unit for oil and gas development is unknown. Wetlands will not be disturbed and will have 250 ft. buffers around them. Spills that occur at well sites would be treated as any other spills that occur on our highways, during construction, and at commercial and industrial sites. Many well's pads are lined with plastic and containment areas are built around fuel tanks. Areas where soils may be impacted due to spills or incidental releases are lined with plastic. Impacts to wildlife associated with oil and gas well operations have been addressed in detail in accordance with SEQRA in the 1992 GEIS, Chapter VIII, Section J. The UMP process is not the mechanism to address impacts to wildlife associated with oil and gas well operations. The types of drilling activities allowed on UMP lands are consistent with the 1992 GEIS and minimal surface disturbance and equipment would be required for the

	producing well pad. There would be no heavy industrial area adjacent to the 250 trail buffer.
I urge the DEC to prohibit hydrofracking on and under state land. If subsurface mining can be prohibited, then hydraulic fracturing should be able to be prohibited. It is our responsibility to make sure that hydrofracking does not happen to ensure our children have the same opportunities that we currently have on state forests. All the positive proposals in the plan such as forest management, habitat creation, water protection and recreational opportunities will all be ruined if hydraulic fracturing is allowed. Do not allow hydraulic fracturing. Since most state forest and wildlife management areas were established to protect groundwater supplies and aquifers, it is a violation of both the letter and spirit of the state constitution and state law to lease gas exploitation rights underneath state lands. Drilling, specifically hydrofracking would put the State land in danger of spills, smog from truck traffic, water degradation, introduction of toxic chemicals and radioactive materials into the environment, clearcutting, habitat destruction, and noise and light pollution. It is unacceptable to risk the land, air, wetlands, water, and human health by allowing hydraulic fracturing in this Unit Management Area. Industrialization is incompatible with many of the objectives of the state forests such as maintaining and improving air and water quality, preserving wildlife habitat, reducing invasive plant and animal species, preventing storm-water runoff and soil erosion and preserving cultural resources. The forests provide recreational, timber, hunting, fishing and wildlife viewing that would be degraded by industrialization. I am concerned with the deforestation that comes with gas drilling. These trees hold water. If deforested, the risk of flooding would increase.	The Revised Draft of the Supplemental Generic Environmental Impact Statement (SGEIS) on the Oil, Gas and Solution Mining Regulatory Program, completed in September, 2011, has studied hydraulic fracturing extensively and will be used to make decisions regarding high volume hydraulic fracturing for the unit. The revised draft SGEIS is available at: http://www.dec.ny.gov/energy/75370.html Section 1.7.14 of the revised draft SGEIS states that surface disturbance associated with high-volume hydraulic fracturing will not be allowed on State Forests because it is inconsistent with the suite of purposes for which those lands were acquired. This surface disturbance prohibition does not include accessing subsurface resources located within these areas from adjacent private lands. With the surface disturbance restriction in place, the Department concludes that impacts to the specified state-owned lands from high-volume hydraulic fracturing would be minimized and accessing mineral resources underneath State lands from adjacent private lands is consistent with the purposes for which these State lands were acquired.

High-volume hydraulic fracturing on or adjacent to NYS land/forests is totally incompatible w/ recreational use of the forests and with good forest management practices. Allowing subsurface drilling simply enables pollution and land disturbance nearby, which will equally devalue the quality of the forest and its uses. Think: truck traffic; noise, dust, and light pollution, diesel exhaust, spills, erosion, fragmentation, etc… I am very upset to see the wiggle room for high-volume hydraulic fracturing put into this document. State Forests should be off the table for both surface and subsurface disturbance, but at least for surface disturbance as promised at SGEIS meetings.	
If the DEC leases mineral rights under these state forests the network of infrastructure in the vicinity of the designated foot trails will undoubtedly increase the likelihood of motorized trespass on these trails which will diminish the resource greatly for other recreationist. How is it possible that the DEC believes that it can permit natural gas drilling, enforce the regulations they have imposed for this practice while also having adequate enforcement to prevent the increased risk of motorized trespass on recreation trails?	Tract assessments performed by the surface managers of the state forest will ensure appropriate buffers between trails and oil and gas activity. Access roads will be gated and locked. There would be no reason to assume an increase in the likelihood of motorized trespass. DEC experience with existing wells drilled on state land supports this assumption. The Divisions of Mineral Resources and Lands and Forests are responsible for enforcement of oil and gas activities and lease conditions. There is no reason to assume any increased risk of motorized trespass and enforcement of this restriction is delegated to the Forest Rangers and ECOs which will not detract from the responsibilities of the programs overseeing oil and gas activity.
Visual impacts of natural gas drilling are neither minor nor short term. Many small towns and businesses rely on seasonal tourists who visit state forests and support local economies. Disruption of these areas is extremely undesirable in lands that are revered for their natural character and outdoor recreation opportunities. Hunting, fishing and tourism will all be at risk if gas drilling is allowed on these forests.	Visual impacts associated with oil and gas well drilling operations that are consistent with the 1992 GEIS were evaluated in accordance with SEQRA and are minor and short term as detailed in Chapter VIII, pages 8-6 and 8-7 of the GEIS. The 2011 revised draft SGEIS assess visual impacts associated with HVHF in Chapter 6, section 6.9. However, this activity will not be permitted on state land. SEQR requirements for drilling individual gas have been fulfilled by 1992 GEIS. There are no significant impacts from these operations identified with respect to hunting, fishing and tourism. In accordance with the "New York State Leasing of State Lands for Oil and Gas Development 2011 Report" (http://www.dec.ny.gov/energy/1579.html), there are 242 oil and gas wells located on or unitized with state

	lands. We are unaware of any long-term negative impacts to hunting, fishing or tourism associated with drilling operations that have occurred on or near state lands.
Health concerns from air pollution from ground level ozone and noxious chemical can have serious health impacts. Methane, the principal component of natural gas is as much as 25 times as potent as CO2. Experts say that during the transport 3-5% of the methane escapes from pipelines and compressor as fugitive emissions.	The potential impacts to air from high-volume hydraulic fracturing have been described in detail in the 2011 revised draft SGEIS and impacts from other drilling operations have been addressed in the 1992 GEIS in accordance with SEQRA. This comment is related to general impacts associated with gas well drilling and natural gas transportation which are not being addressed through the UMP process and are not specifically related to this UMP.
Increases in Traffic - the DEC estimates between 3850 and 8905 truck trips for each well pad. Increases in traffic lead to more traffic accidents, noise, congestion and chemical spills. People wanting to enjoy the scenic beauty, wineries, fishing, hunting, will not want to drive on busy country roads following diesel frack rigs to vacation in our state forests.	Truck traffic estimations from DEC are related to high-volume hydraulic fracturing which will not be allowed on these state forests. This appears to be a general comment regarding high-volume hydraulic fracturing and the UMP process is not the mechanism to address these comments.
Will the gas leases allow for hunting on leased land? Is it safe to fire a gun in a gas field? – What happens if there's a lease and a gun is fired? What happens if a bullet hits a well-head or pipeline? Will drilling put all people involved at risk? Will gas well drillers wear hunter orange and will they remain in a designated area during deer season for protection? How vulnerable is game to the pollution that inevitably comes with this heavy industry - spills, blow-outs, mechanical failures, human error, waste pits, air pollution? How will animals, particularly deer, be protected from consuming poisonous materials at the drill site? Will it be safe to consume the meat from any wild game if the animal drinks from waste pits or spills? Will testing for pollutants of venison be required to be done? And paid for by whom? Who will decide if hunter-harvested game can be consumed if the game	Leasing has no requirements or restrictions with respect to hunting on state lands. There is no risk from stray bullets to the integrity of the well or well head. There have been more than 75,000 wells drilled in NY and we are not aware of any incidents that have been associated with bullets impacting a gas well or other well head equipment. Many wells currently exist on state lands with no disruption to hunting. Impacts to wildlife are addressed in Chapter 6, section 6.4 of the 2011 revised draft SGEIS, Chapter VIII, section J of the GEIS which fulfill the SEQR requirements for oil and gas well operations and potential impact to wildlife. Special conditions to each lease agreement allows for limited surface disturbance during certain times of the year when there may be high recreation use which would include hunting. Limitations and consideration with respect to hunting would be enforced through conditions on the Temporary Revocable Permit that an operator is required to obtain from the DEC prior to any work commencing on state land to drill a gas well.

is exposed to hydro-fracking operations? The DEC? The Department of Health? The Individual?	
Drilling for gas is contrary to the State's goal of reducing greenhouse gas emissions and slowing down the warming of the planet. Natural gas emits methane into the atmosphere, something that is far worse than CO^2 as a greenhouse gas. Methane escapes at every stage from drilling to consumption.	The State also has a goal with respect to drilling for natural gas is detailed in ECL Article 23, Title 3, § 23-0301 which allows for the environmentally sound development, production, and utilization of oil and gas in the state . Drilling for natural gas would not be contrary to the state's goal to reduce greenhouse gas emissions since it would require evaluation of impacts associated with greenhouse gas emissions and the need to reduce them as part of the regulatory process. The state's goals also include preventing the waste of natural gas which would ensure regulation to reduce natural gas emissions to the greatest extent possible.
If it is too risky in the New York City and Skaneateles watersheds, why is hydraulic fracturing not risky just 30 miles to the east on these state lands?	Setbacks are proposed to the watersheds containing the New York City and Syracuse (Skaneateles Lake) unfiltered surface drinking water supplies that have a USEPA Filtration Avoidance determination. Justification as to why these setbacks are being imposed are described in detail in Chapter 6, section 6.1.5.1 and Chapter 7, section 7.1.5 of the revised draft SGEIS. These setbacks only apply to proposed high-volume hydraulic fracturing in the watersheds. Wells consistent with the 1992 GEIS have been drilled in the Skaneateles Lake watershed.
I am not only concerned with the short term negative impacts of hydraulic fracturing, I am concerned with after these wells stop producing and the industry moves on. These well casings rot away along with improper concrete work creating entry points for all kinds of problems.	The DEC Division of Mineral Resources regulatory program ensures that wells are properly constructed in accordance with the regulatory requirements and that any wells that develop problems in the future are repaired or plugged.
I am concerned that pressure associated with hydraulic fracturing could increase the already high levels of radon in the area.	Naturally occurring radioactivity in the Marcellus Shale and other formations that exist in the subsurface in the state and potential for release and exposure to the public is addressed in detail in the revised draft SGEIS in Chapter 6, section 6.7
Hydraulic fracturing should not be allowed, it will cause the value of adjacent property to be diminished.	Economic impacts associated with high-volume hydraulic fracturing are addressed in detail in the revised draft SGEIS in Chapter 6 with property values specifically addressed in section 6.8.3.4.
I am against hydraulic fracturing, which is an industrial process. I am also concerned that the gas industry would not follow water withdrawal protocols (has been done in other states) and would completely drain ponds and streams. The major concern is gas activities draw heavily on fresh water reserves- consuming, diminishing and	Protection of surface water bodies is addressed in detail in the revised draft SGEIS on high-volume hydraulic fracturing in Chapter 7, section 7.1. DEC Division of Water requires permits for withdrawals of water that exceed specific thresholds detailed at: http://www.dec.ny.gov/lands/313.html. Additionally, in both of the UMP areas, the Susquehanna River Basin

spoiling aquifers. Reduced oxygen levels, high levels of dissolved solids and pollutants negatively affect aquatic life, including fish.	Commission has authority to regulate water withdrawals and consumptive use for industries in the basin which includes water withdrawals associated with oil and gas operations.
The economics of gas drilling do not make sense. Over the last two years, unemployment has risen in every county except two in Pennsylvania.	Economic impacts associated with high-volume hydraulic fracturing are addressed in detail in the revised draft SGEIS in Chapter 6 and employment is specifically detailed in section 6.8.1. State land leasing reports from 2005 through 2011 detail the economics associated with drilling on state land that can be accessed at: http://www.dec.ny.gov/energy/1579.html .
Please prohibit gas pipeline networks, access roads associated with oil and gas development and compressor stations on state lands. Low frequency noise can be heard for several miles. Leasing the state-owned gas rights may encourage the routing of pipelines over state lands and promote more intensive gas drilling on adjacent private land. State lands were not purchased for the purpose of industrial drilling, compressor stations, or pipelines. All must be excluded; they fragment the forest, pollute the water and air and devalue the property of neighbors. Although I am opposed to gas drilling on these state lands. If the need for pipelines is absolutely necessary, they should be located on existing right of ways instead of creating new openings in the forest. While we would hope that no new gas drilling takes place in this Unit, we feel that 250 feet is not a sufficient buffer between well pads and trails and that 250 feet should be the *minimum* buffer between access roads & utility development and trails.	For wells proposed to be drilled consistent with the 1992 GEIS, impacts associated with pipelines and access roads will be evaluated. Assessments and decisions regarding the leasing of oil and gas resources other than high-volume hydraulic fracturing would be based on the most current technologies, public policies, regulations, public feedback and the potential for environmental impacts. Assessments and decisions would not be made until the Unit is nominated. Possible future outcomes include: no leasing, non-surface occupancy leasing or surface occupancy leasing with significant safeguards and restrictions. Siting of pipelines that are greater than 1000 feet in length and have operating pressures exceeding 125 pounds per square inch are regulated by the New York State Public Service Commission (PSC). Under Public Service Law Article VII, the PSC would review on a case-by-case basis the potential environmental impacts associated with creating and maintaining a gas pipeline right-of-way. The PSC has the authority to dictate the location of a right-of-way, and to condition how construction, site closure and right-of-way maintenance are conducted to ensure the least practical adverse impacts to the environment. This includes potential adverse impacts that may cause forest fragmentation and loss of grassland and forest habitat. These must necessarily be addressed on a case-by-case basis because the PSC has jurisdiction over where a pipeline would be located and, thus, the environmental resources that are affected.
We should be drilling for gas like other states. Upstate is losing population due to loss of economic viability. There is room to develop our resources and	Comments noted.

provide jobs up here. The Marcellus Shale could help save upstate.	
If the DEC were to lease its mineral rights it could force adjoining landowners, even unwillingly, into natural gas leases as well. The surface destruction done just outside of state forests will not only have a negative impact on air and water quality, tourism will decline, and the value of that ecosystem will be greatly diminished.	Natural gas leases are private agreements between a company and mineral rights owners. No government entity has jurisdiction regarding these leases. A landowner cannot be forced to enter into a lease agreement. Adjacent landowners may undergo compulsory integration in accordance with state Environmental Conservation Law (ECL) Article 23, Title 9. Impacts associated with oil and gas well drilling operations that can be conducted on state lands are addressed in detail in the "Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program" (GEIS) finalized in 1992 and the findings concluded that there would be no significant impact to the environment from drilling individual gas wells with the mitigation measures defined in the GEIS. The GEIS may be accessed at: http://www.dec.ny.gov/energy/45912.html . Impacts associated with high-volume hydraulic fracturing are addressed in the September 2011 revised draft SGEIS; however, these activities will not be permitted on state land.
I am opposed to oil and gas drilling on state land and the compulsory integration laws that could force me to frack my property if these lands are leased. I am very concerned with the possibility of being compulsory integrated. This is not fair. We have done our homework and decided that leasing was not for us, now we are in danger of having our mineral rights seized. This would be an extreme conflict of interest since the DEC would be the landowner to force the integration and also would be the agency to explain the three choices, none of which are no, to an integrated landowner. Drilling on State Forest land along with compulsory integration would reduce my property value and my quality of life.	Compulsory integration law in ECL Article 23, Title 9, cannot be addressed as part of the UMP process. To change the laws would require an act of the New York State Legislature. The New York State Legislature expressly declared in ECL Article 23 that: "It is hereby declared to be in the public interest to regulate the development, production and utilization of natural resources of oil and gas in this state in such a manner as will prevent waste; to authorize and to provide for the operation and development of oil and gas properties in such a manner that a greater ultimate recovery of oil and gas may be had, and that the correlative rights of all owners and the rights of all persons including landowners and the general public may be fully protected. . ." ECL 23-0301. The compulsory integration process is the means by which the Department protects correlative rights. The revised draft SGEIS in Section 6.8 describes the general impacts of mineral rights on property values and the impact of well development on adjacent properties.
Surprised by the over the top exaggerated fracking	Comment noted.

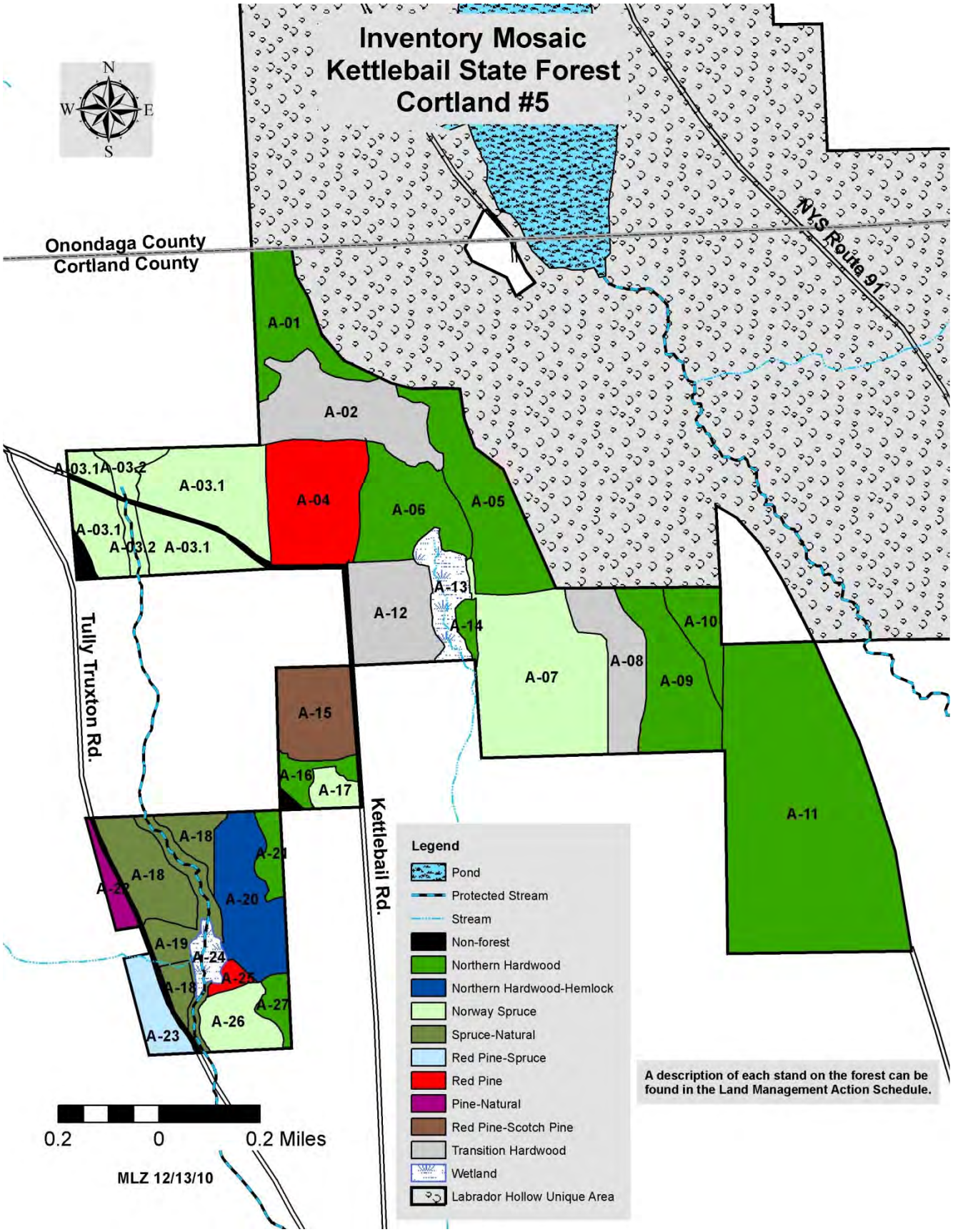
comments.	
Recreation	
I am opposed to new trail development because it will limit trapping opportunities. You are not allowed to set traps within 100 feet of a public trail. I concerned with the plans to expand "established" hiking trails and other trails. I do not begrudge outdoor enthusiasts, but as a trapper these trails remove large tracts of land from the area allowing trapping. We are not allowed to set traps within 300 feet of an established trail, as a license purchasing and trained trapper it feels like I am losing an opportunity to peruse game on a considerable amount of state land. Could these trails be closed during open trapping season, or could the hiking, biking, dog walking etc. public be required to purchase a use stamp and respect my right trap?	The New York State Trapping Regulations only restrict the use of body gripping traps in proximity to public trails. Body gripping traps cannot legally be set on land within 100 feet of a public trail. There is no restriction on the distance that foot-encapsulating, foothold and cage or box traps must be set from public trails. There is also no restriction for body gripping traps that are set in water. The recreational trails will remain open during trapping season. There are regulations in place to ensure that trapper's rights are respected. These include the following: No one may disturb a trap lawfully set by another person; No one may remove a lawfully trapped animal from another person's trap; and No one may harass a trapper while he or she is trapping.
Trapping should be outlawed. It is inhumane.	Recreational trapping is a legal and valuable tool in nuisance wildlife population control. It will continue to be allowed on the unit to control beaver populations as well as other species of wildlife.
Minimize use of ATVs and other motorized devises.	Upon evaluation of past efforts to accommodate ATV use on Morgan Hill State Forest and in other areas of the State and the many impacts and constraints associated with off road vehicles, within the context of ecosystem management, the DEC has made a final determination to prohibit ATV use on the unit; except for those specific routes designated for use by DEC-issued Motorized Access Permit for People with Disabilities (MAPPWD).
Reduce drive up campsites.	DEC will designate 6 to 8 campsites on Morgan Hill State Forest that are located away from the Spruce Pond campsites. These sites will provide a more remote camping experience and can provide campsites for hunters in the fall. There are several informal campsites that are currently being used by the public located outside of the designated Spruce Pond camping zone. Most of these campsites require a permit in order to legally camp at the site. A few of these informal campsites are in areas that can sustainably support camping while others are in environmentally sensitive areas. Those informal campsites that are in environmentally sensitive areas will be closed.
Limit hunting to a minimum necessary.	Recreational hunting is a legal and valuable tool in controlling wildlife populations.
Open the no hunting area on Labrador Hollow Unique	The original Labrador Hollow Unique Area management

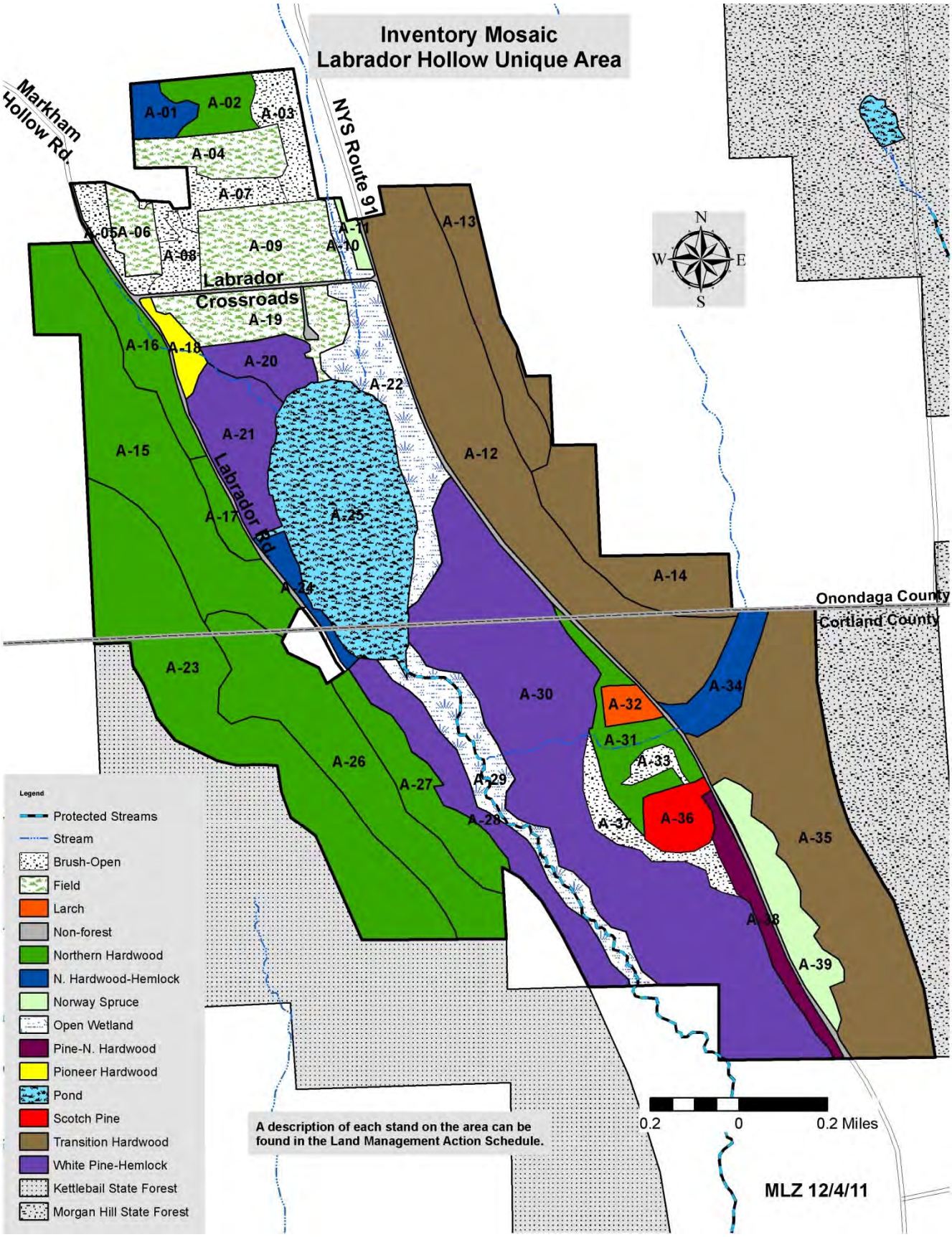
Area to allow hunting and trapping.	plan sought to limit development and recreational uses in order to protect the unique character of the area. The no hunting zone helps protect several unique habitats and is only 556 acres in size which is only 8% of the Hill and Hollow Unit.
Protect trail corridors during timber harvests. 250 feet is not a sufficient buffer between well pads and recreational trails. 250 feet should be minimum buffer between access roads and utility development and recreational trails.	DEC has developed Special Management Zone Guidelines that consider aesthetics along recreational trail corridors during management activities.
Enjoy hiking, horseback riding, hunting and wildlife viewing on the state lands.	DEC is glad that the public can enjoy these activities on the Unit.
I suggest that trail usage signage be installed on the Finger Lakes Trail ASAP to inform and educate all recreational users and assist ranger enforcement.	Comment noted.
I support the AANR program and its replacement stewardship program that permits volunteers to maintain the trail, relocate it when necessary and obtain TRPs for major projects like bridges, puncheons, lean-tos etc.	The DEC would be unable to accomplish many of the goals in this UMP without the tireless effort of the many volunteers who maintain recreational facilities, pick up trash and improve habitat through the AANR/ VSP program. DEC will continue to seek assistance in management of this unit from volunteers through volunteer programs.
It should be noted on UMP trail and facility maps that the FLT Main Trail is concurrently the 4600 mile North Country National Scenic Trail. Map should indicate FLT as well as NCNST on map legend**.**	Maps have been changed to include the North Country National Scenic Trail designation.
The FLTC commends the NYS DEC's recognition of the Finger Lakes Trail's status in these public lands as a single use foot trail in their Statewide Strategic Plan for State Forest Management and applauds its very same designation as set forth in the Plan for this Unit. Foot paths should provide a wilderness kind of experience, which this UMP is giving us by providing pedestrian only trails. Commend the DEC for designating the North Country National Scenic Trail and Trails in Labrador Hollow Unique Area as foot trail only. Pedestrians and bikers can share trails. Do not restrict trail use to hikers only. It is best to combine the volunteer trail maintenance efforts for both important groups. Support other trail users on separate trails ie	Public input gathered during development of this UMP, other UMPs, the Region 7 Draft Recreation Master Plan and the Strategic Plan for State Forest Management indicates that people using foot trails prefer trails be restricted to pedestrian use only because they have a variety of conflicts with other recreationists, especially with motorized use, mountain bikers and horse riders. The original Labrador Hollow Unique Area management plan sought to limit development and recreational uses in order to protect the unique character of the area. In keeping with this management philosophy, all trails on the Unique Area will be limited to foot travel only. This will include cross country skiing, hiking and snowshoeing.

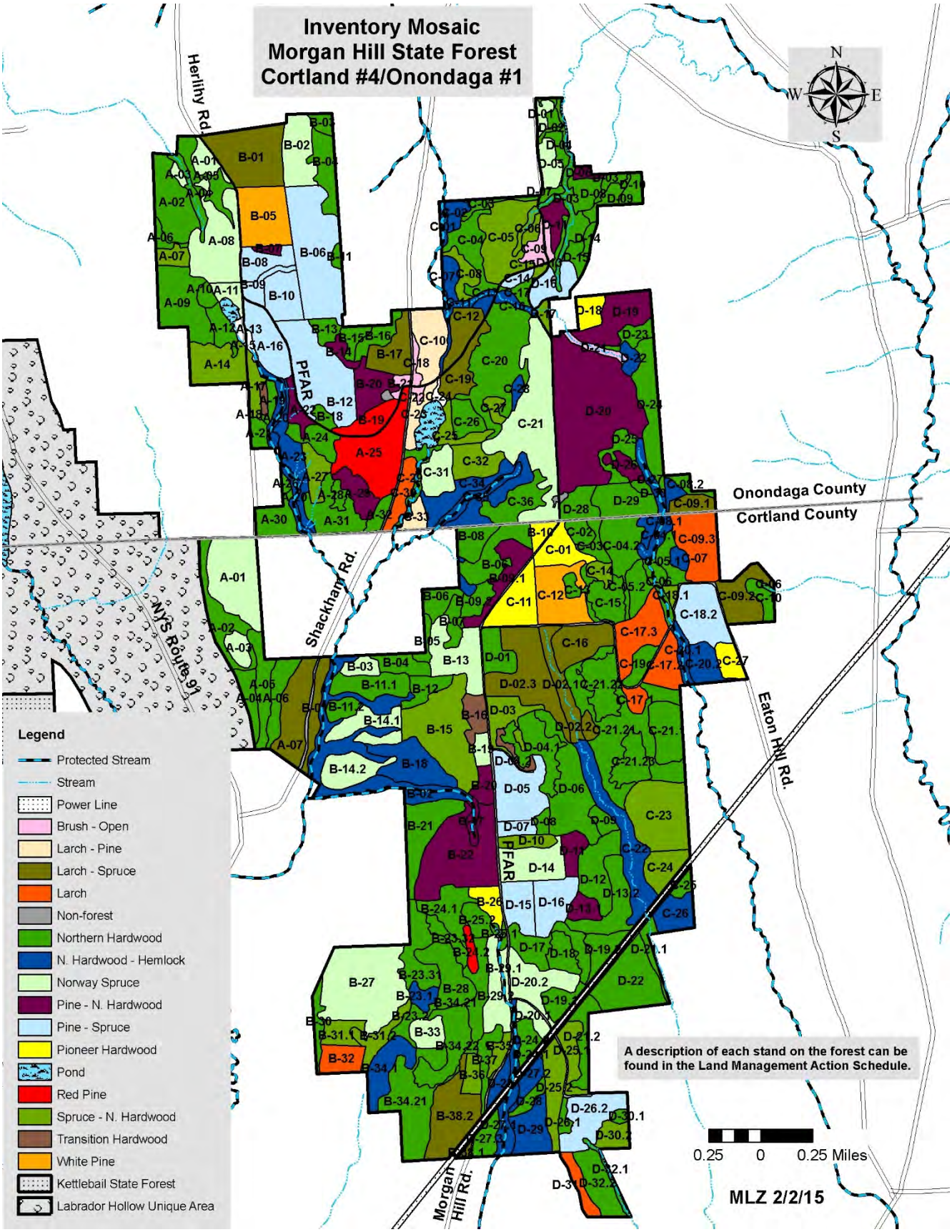
snowmobiles and mountain bikes. This should reduce the trespass and abuse of hiking trails by others. Remove the restriction of no mountain biking in Labrador Hollow Unique Area. All trails should be open for biking, cross country skiing and hiking.	
Support creation of 10 to 15 miles of single track multiple use trails designed for mountain biking.	DEC will begin development of a 10 to 15 mile single track multiple use trail system on Morgan Hill State Forest. The trail system will be designed to provide a quality single track mountain biking experience. Other uses that will be allowed on the trails are cross country skiing, hiking and snowshoeing. The project will be a cooperative effort between Department staff and members of CNY DIRT.
Consider allowing short sections of hiking trail as multiple use trail.	DEC would consider using a short section of hiking trail as multiple use trail but only if there is no other alternative, meaning it is the best option from an environmental stand point.
Create a Fellows Hill Loop trail on Morgan Hill State Forest.	As with all proposed new recreational trails, the DEC will consider them on case by case basis.
I support the use of horses on these lands provided they do not walk on foot paths.	Horses are currently allowed on all areas within the unit except Labrador Hollow Unique Area, designated foot paths, snow covered snowmobile trails and areas specifically posted for no horses.
Need additional parking areas and kiosks. Need winter parking.	There are two parking areas scheduled to be constructed with one that will improve winter access. One will be on the Cross Road PFAR and serve as a trailhead for the single track multiple use trail system. The other will be at the intersection of Shackham Road and Cross Road PFAR and will improve winter access. Additionally two existing parking areas will be improved.
Consider Eagle Scouts for creation of kiosks.	Development of State Land kiosks is a lengthy process that involves multiple internal reviews and therefore would not be a viable Eagle Scout project.
Ecosystem Management/Wildlife Habitat	
Please emphasize early successional forest management – this in support of small game birds, threatened and endangered birds and other valuable wildlife. Create early successional habitat at a minimal cost to the state by using logging operations and AANR agreements with conservation groups. I also feel that the money from hunting and fishing license sales should go back into wildlife habitat projects on these state lands.	The DEC recognizes that early successional habitat is lacking on the Unit and the surrounding landscape. Therefore the plan outlines an increase in early successional habitat from 5% of the Unit to 12% through sustainable forest management. Hunting and fishing license fees go into the State's Conservation Fund, which is the Division of Fish, Wildlife and Marine Resources primary funding sources. The State lands within this unit are managed by the Division of Lands & Forests, which does not receive money from

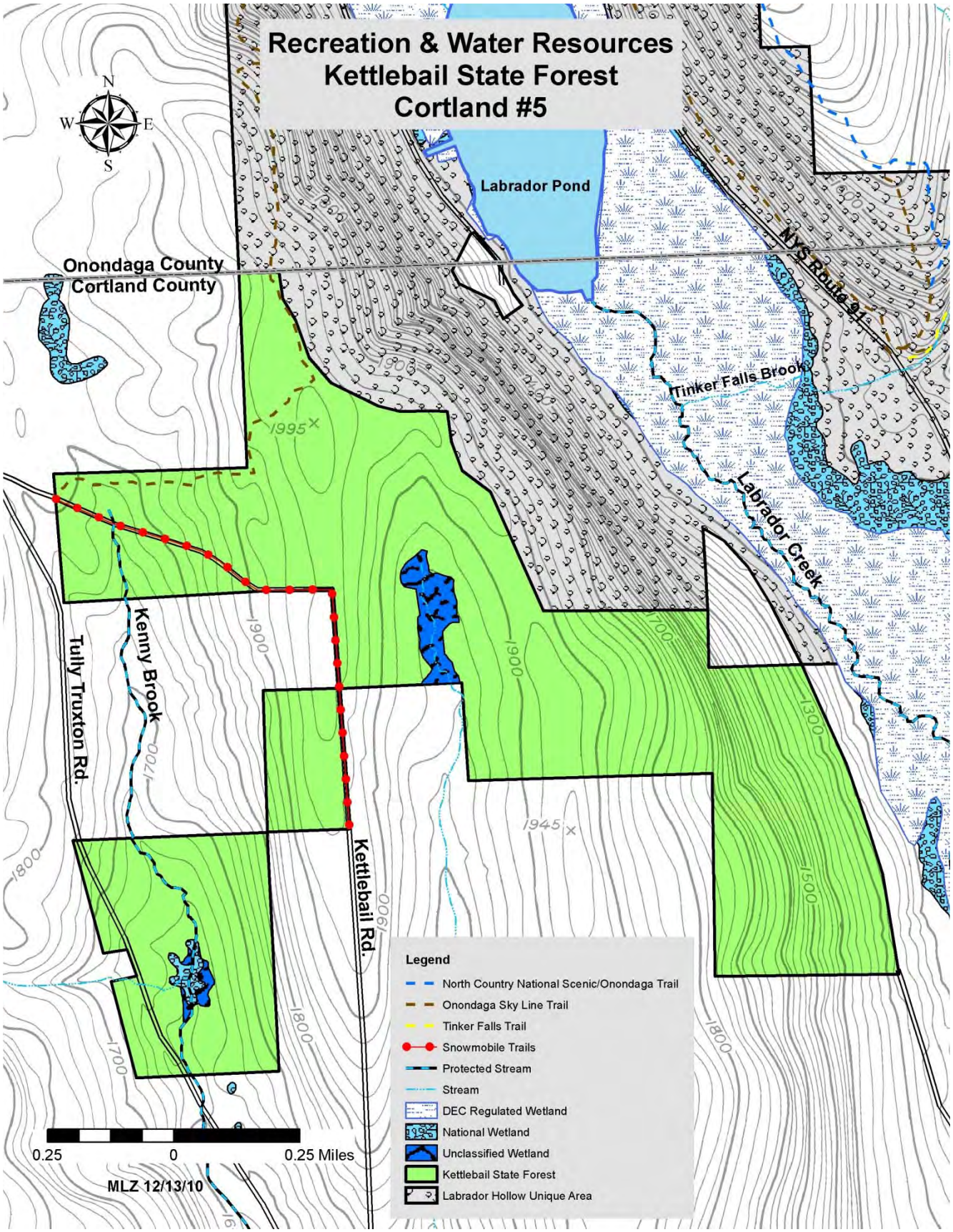
	the Conservation Fund.
I recommend aggressively creating a diverse age structure within the forests to ensure healthy forested ecosystems. Create various stages of succession to provide diverse habitat for wildlife through logging.	Through active and passive management strategies, the plan looks to create a diverse age structure by using even and uneven-aged management systems to increase early and late successional habitat while reducing the mid successional habitat on the unit.
Keep Labrador Pond navigable and maintain it as a diverse fishery, weed control is sorely needed.	Boating and fishing will continue to be allowed on Labrador Pond. Fishing is permitted only from a boat on the pond or creek or from the fishing pier. To protect the shoreline vegetation, fishing from the shoreline is prohibited. Boat launching is permitted only from the designated boat launch on the west side of the pond and motorized boating is prohibited. DEC will survey to determine if it is native or Eurasian milfoil in the pond. If it is native milfoil no control measures will be taken. However if it is Eurasian milfoil appropriate control measures will be considered.
Forest Products/Economy	
These state forests are very important to the local economy. I am a logger that harvests trees from state forests. They support my family including to help send my children to college. The state forests provide logs to local mills, which provide over a thousand local jobs. Jobs in these rural communities are hard to come by. These forests provide a sustainable heat source (firewood) to local families at a much lower cost than fossil fuels.	One of the goals of this plan is to provide economic benefits to local communities and the State of New York by providing forest resources through the Forest Product Sales Program. Forest products sales provide income to the State, supply raw materials to the forest product industry, create local jobs and supply local families with fuelwood.

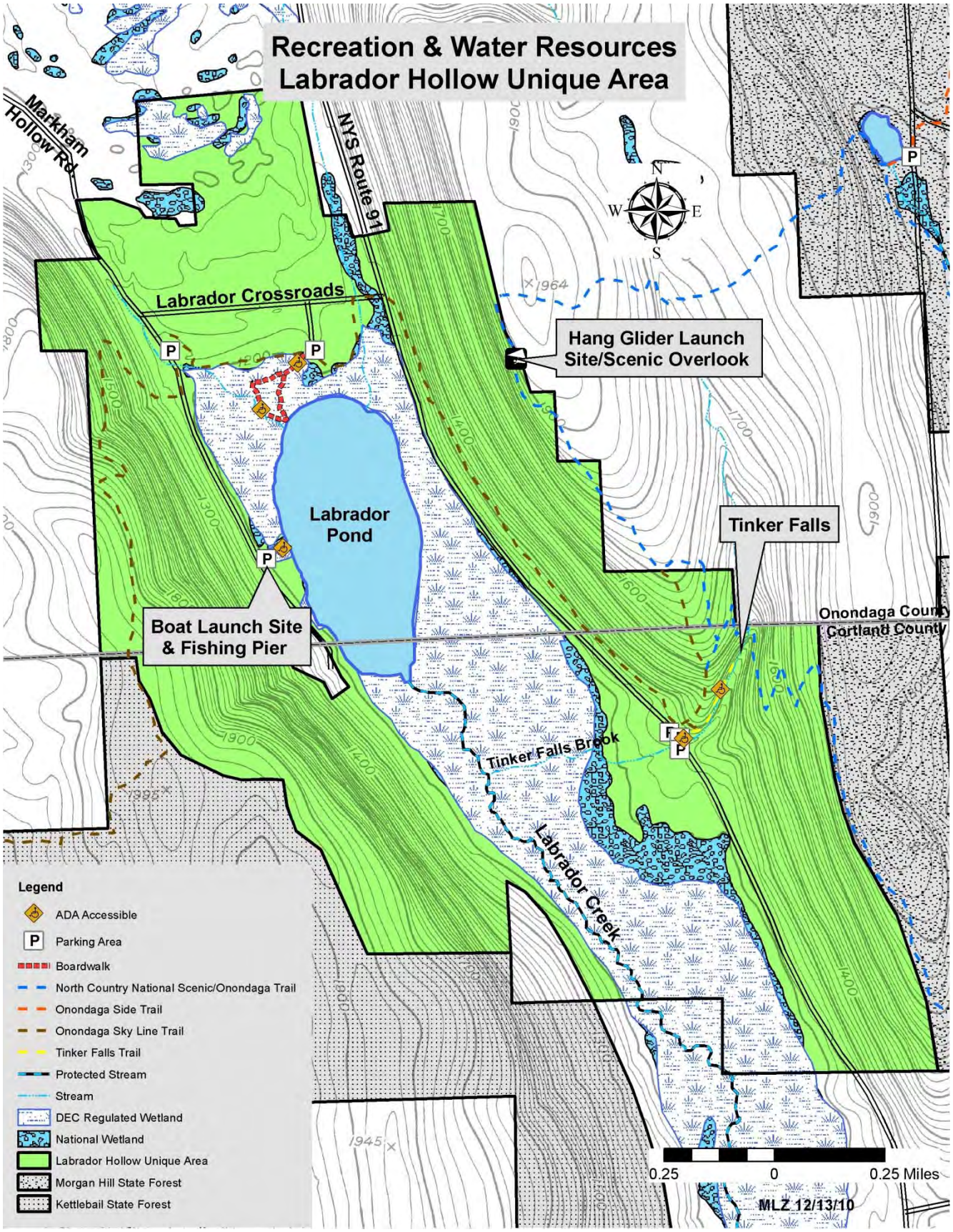
Appendix XIV - MAPS - (Pages 151 - 171)**.**

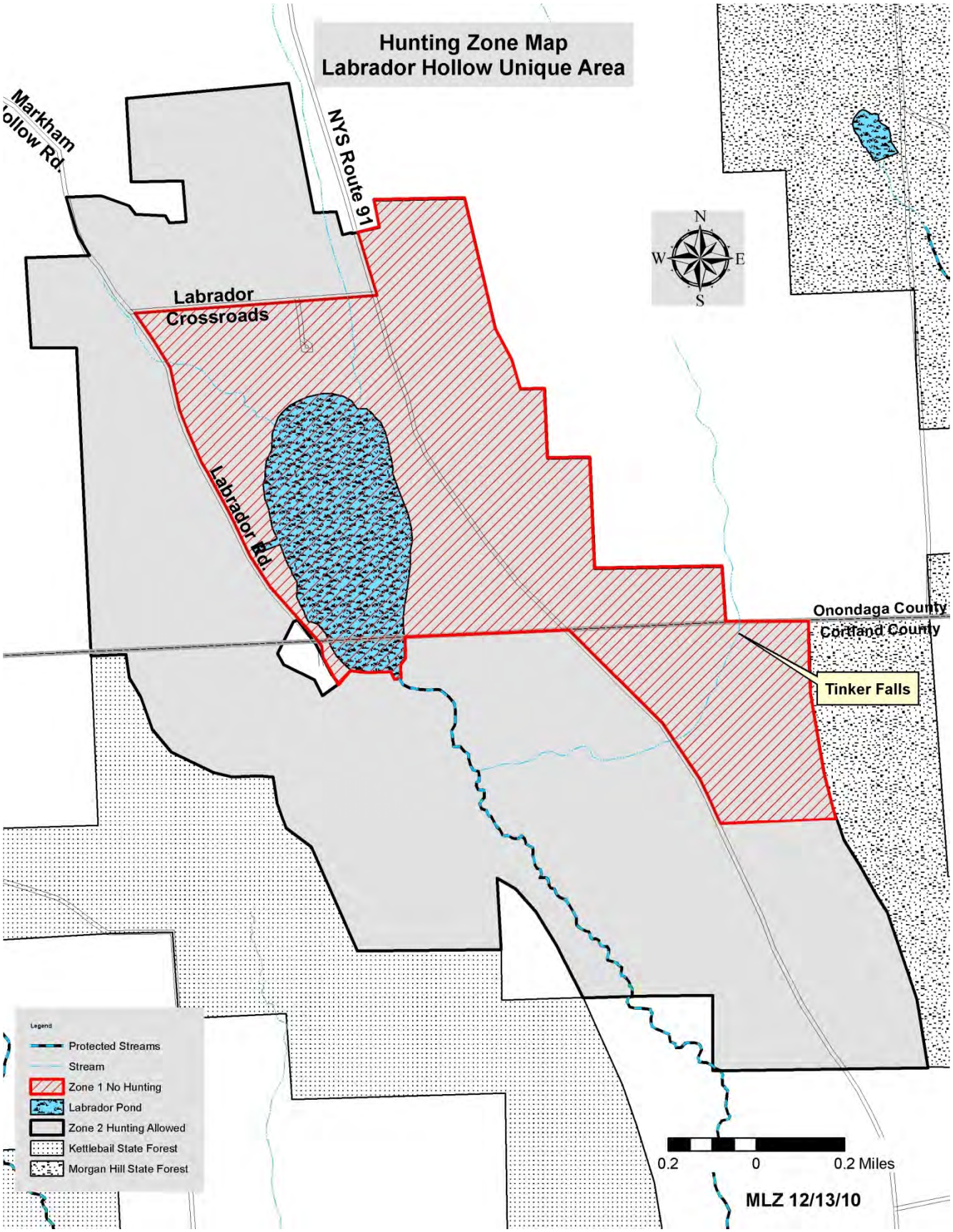

Inventory Mosaic
Kettlebail State Forest
Cortland #5
N
W
E
S
Onondaga County
Cortland County
NYS Route 91
A-01
A-02
A-03.1
A-03.2
A-03.1
A-03.1
A-03.2
A-03.1
A-04
A-06
A-05
A-13
A-12
A-14
A-07
A-08
A-09
A-10
A-11
A-15
A-16
A-17
A-18
A-18
A-20
A-19
A-24
A-25
A-26
A-27
A-23
Tully Truxton Rd.
Kettlebail Rd.
Legend
Pond
Protected Stream
Stream
Non-forest
Northern Hardwood
Northern Hardwood-Hemlock
Norway Spruce
Spruce-Natural
Red Pine-Spruce
Red Pine
Pine-Natural
Red Pine-Scotch Pine
Transition Hardwood
Wetland
Labrador Hollow Unique Area
A description of each stand on the forest can be found in the Land Management Action Schedule.
0.2
0
0.2 Miles
MLZ 12/13/10

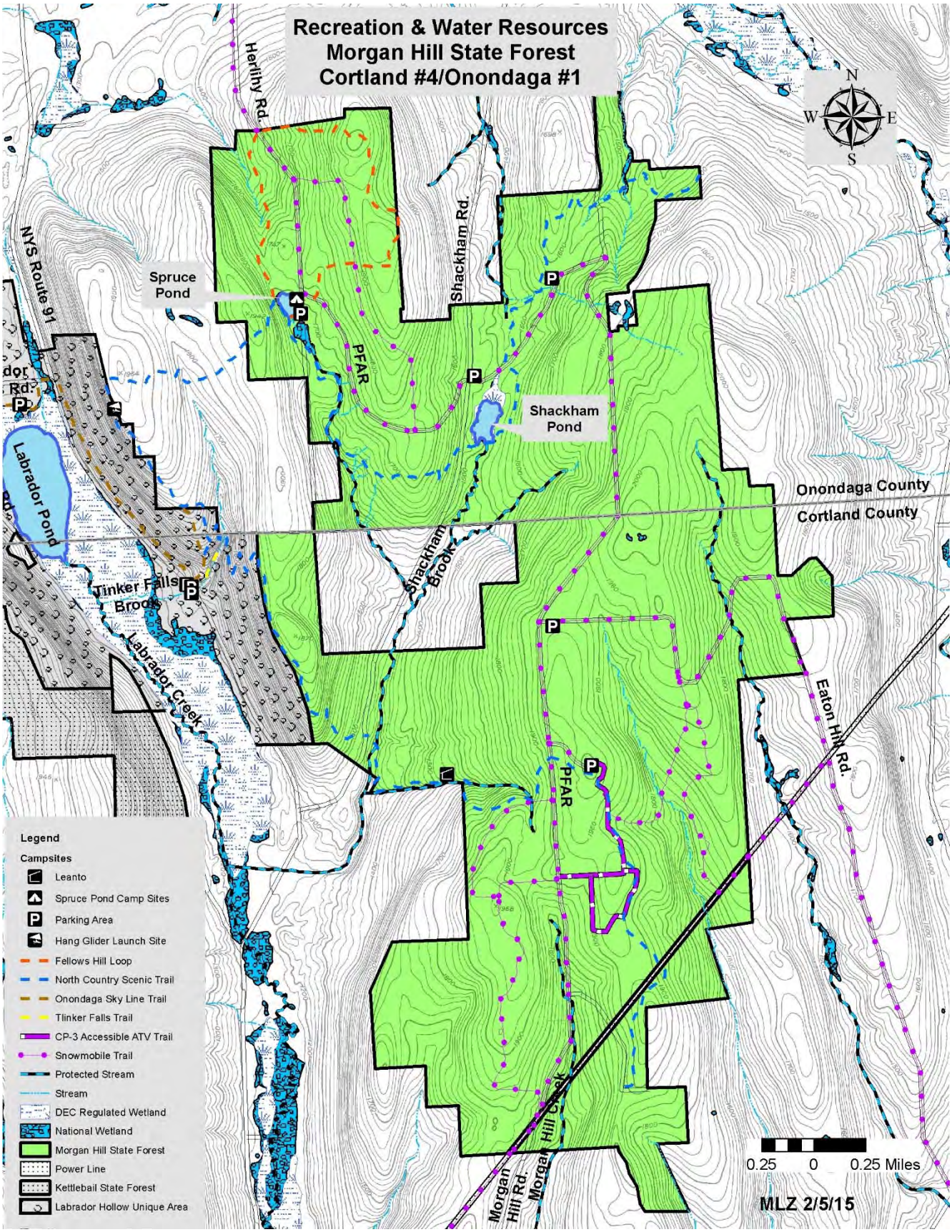

Inventory Mosaic
Labrador Hollow Unique Area
Markham Hollow Rd.
NYS Route 91
Labrador Crossroads
Labrador Rd
Onondaga County
Cortland County
A-01
A-02
A-03
A-04
A-05
A-06
A-07
A-08
A-09
A-10
A-11
A-12
A-13
A-14
A-15
A-16
A-17
A-18
A-19
A-20
A-21
A-22
A-23
A-24
A-25
A-26
A-27
A-28
A-29
A-30
A-31
A-32
A-33
A-34
A-35
A-36
A-37
A-38
A-39
N
W
E
S
Legend
Protected Streams
Stream
Brush-Open
Field
Larch
Non-forest
Northern Hardwood
N. Hardwood-Hemlock
Norway Spruce
Open Wetland
Pine-N. Hardwood
Pioneer Hardwood
Pond
Scotch Pine
Transition Hardwood
White Pine-Hemlock
Kettlebail State Forest
Morgan Hill State Forest
A description of each stand on the area can be found in the Land Management Action Schedule.
0.2
0
0.2 Miles
MLZ 12/4/11

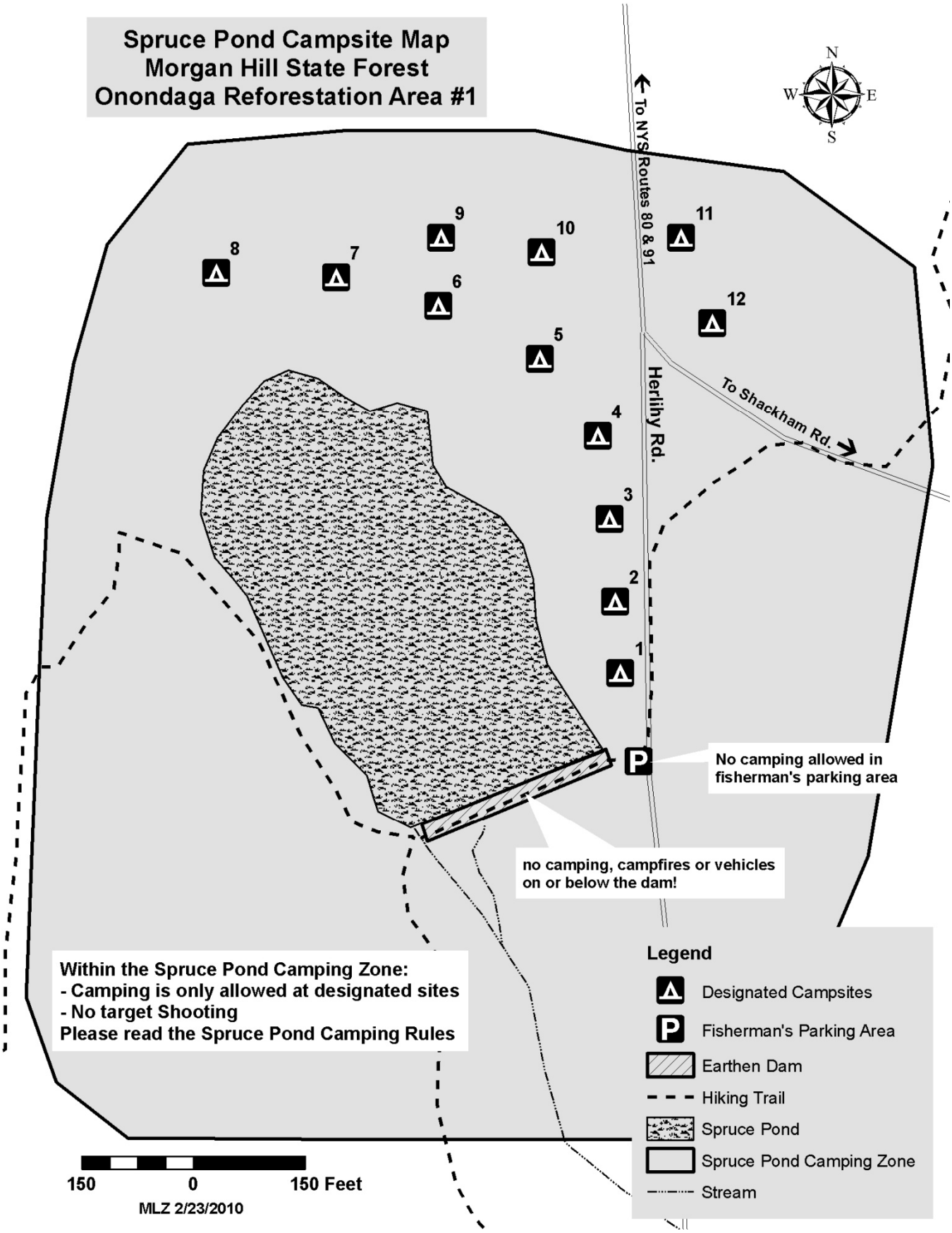

Inventory Mosaic
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
Onondaga County
Cortland County
Shackham Rd.
NYS Route 91
Eaton Hill Rd.
Morgan Hill Rd.
PFAR
Legend
Protected Stream
Stream
Power Line
Brush - Open
Larch - Pine
Larch - Spruce
Larch
Non-forest
Northern Hardwood
N. Hardwood - Hemlock
Norway Spruce
Pine - N. Hardwood
Pine - Spruce
Pioneer Hardwood
Pond
Red Pine
Spruce - N. Hardwood
Transition Hardwood
White Pine
Kettlebail State Forest
Labrador Hollow Unique Area
A description of each stand on the forest can be found in the Land Management Action Schedule.
0.25 0 0.25 Miles
MLZ 2/2/15

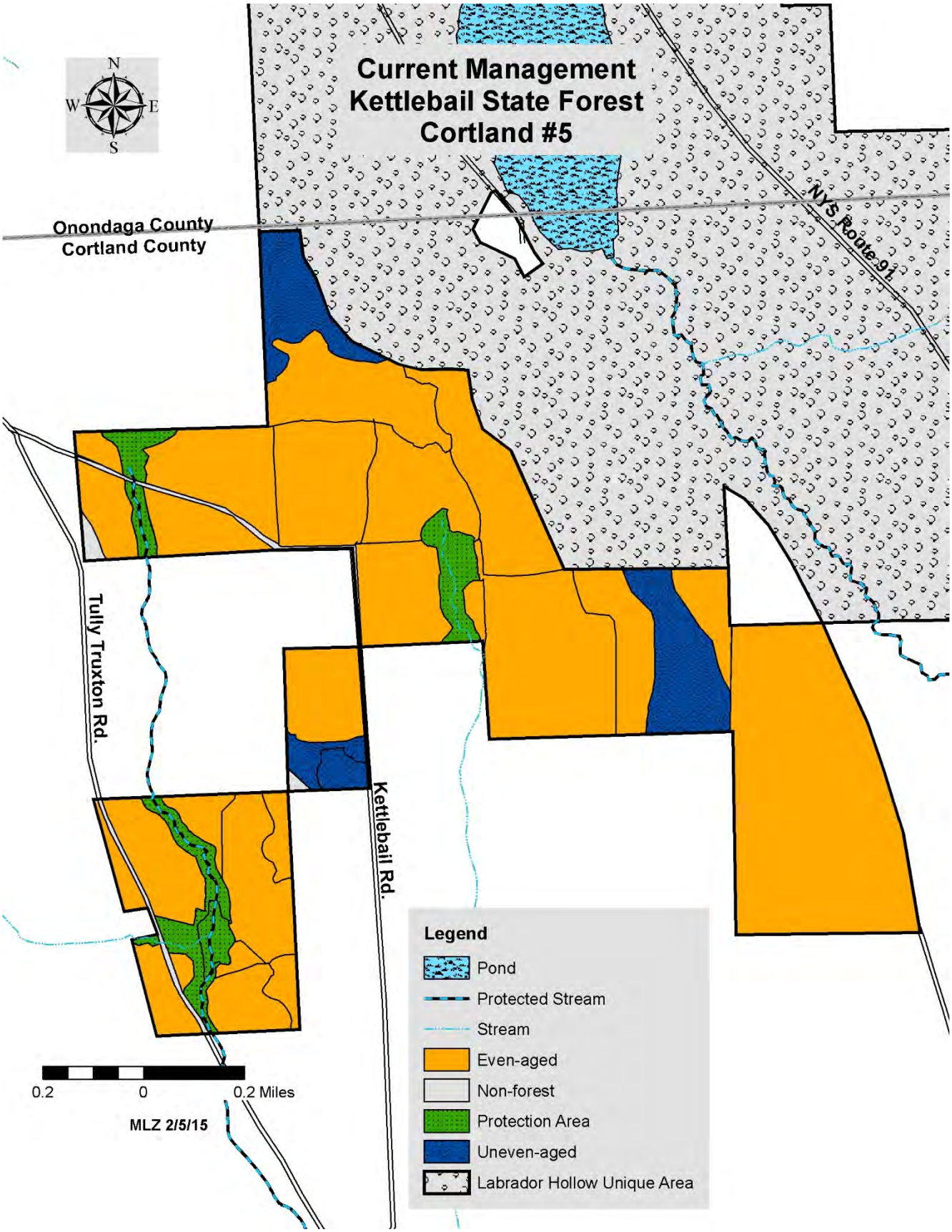

Recreation & Water Resources
Kettlebail State Forest
Cortland #5
N
W
E
S
Labrador Pond
Onondaga County
Cortland County
NYS Route 91
Tinker Falls Brook
Labrador Creek
Kenny Brook
Tully Truxton Rd.
Kettlebail Rd.
1995
1945
1900
1800
1700
1500
1300
Legend
North Country National Scenic/Onondaga Trail
Onondaga Sky Line Trail
Tinker Falls Trail
Snowmobile Trails
Protected Stream
Stream
DEC Regulated Wetland
National Wetland
Unclassified Wetland
Kettlebail State Forest
Labrador Hollow Unique Area
0.25
0
0.25 Miles
MLZ 12/13/10

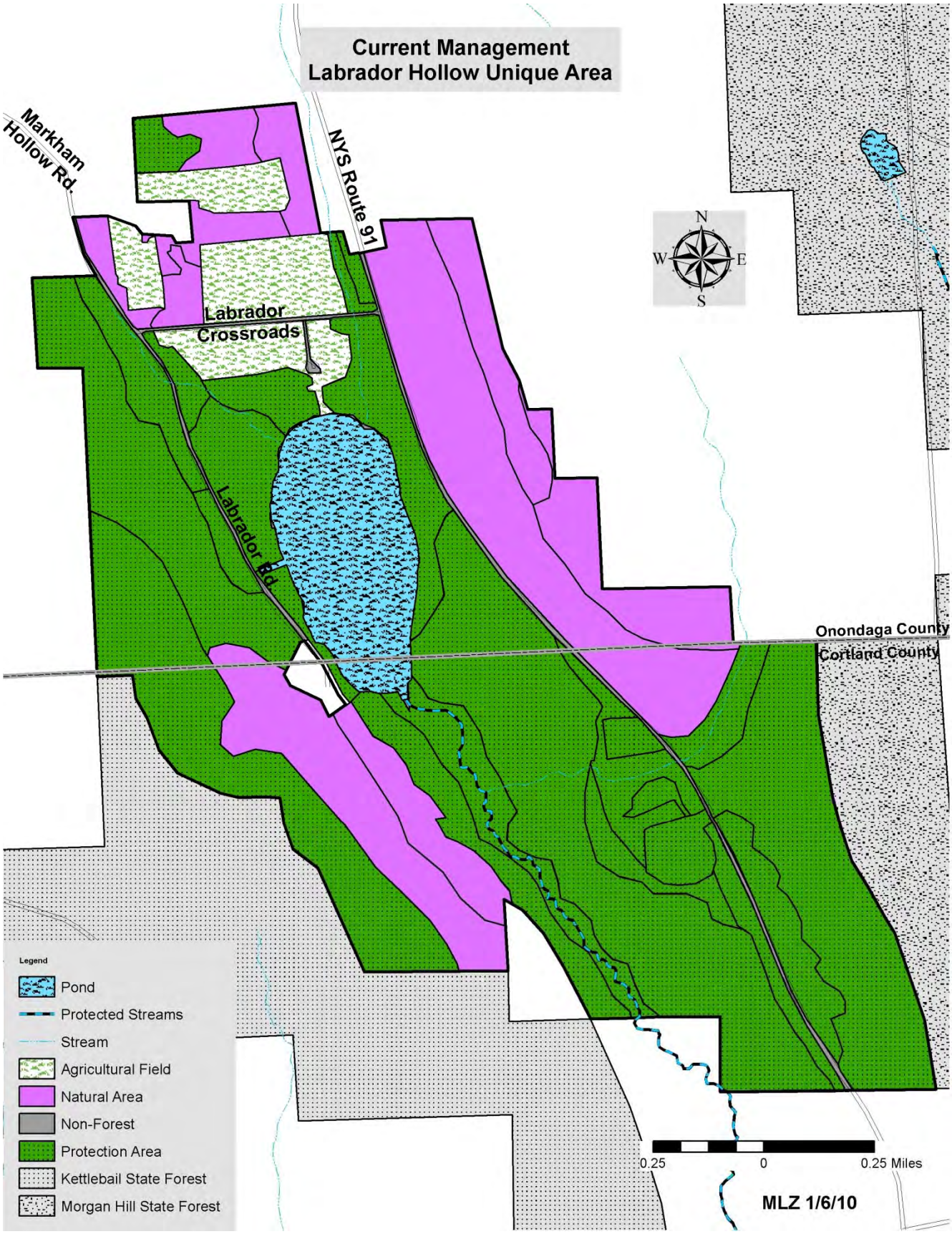

Recreation & Water Resources
Labrador Hollow Unique Area
Markham Hollow Rd
NYS Route 91
Labrador Crossroads
Hang Glider Launch Site/Scenic Overlook
Labrador Pond
Tinker Falls
Boat Launch Site & Fishing Pier
Onondaga County
Cortland County
Tinker Falls Brook
Labrador Creek
N
S
E
W
Legend
ADA Accessible
Parking Area
Boardwalk
North Country National Scenic/Onondaga Trail
Onondaga Side Trail
Onondaga Sky Line Trail
Tinker Falls Trail
Protected Stream
Stream
DEC Regulated Wetland
National Wetland
Labrador Hollow Unique Area
Morgan Hill State Forest
Kettlebail State Forest
0.25
0
0.25 Miles
MLZ 12/13/10

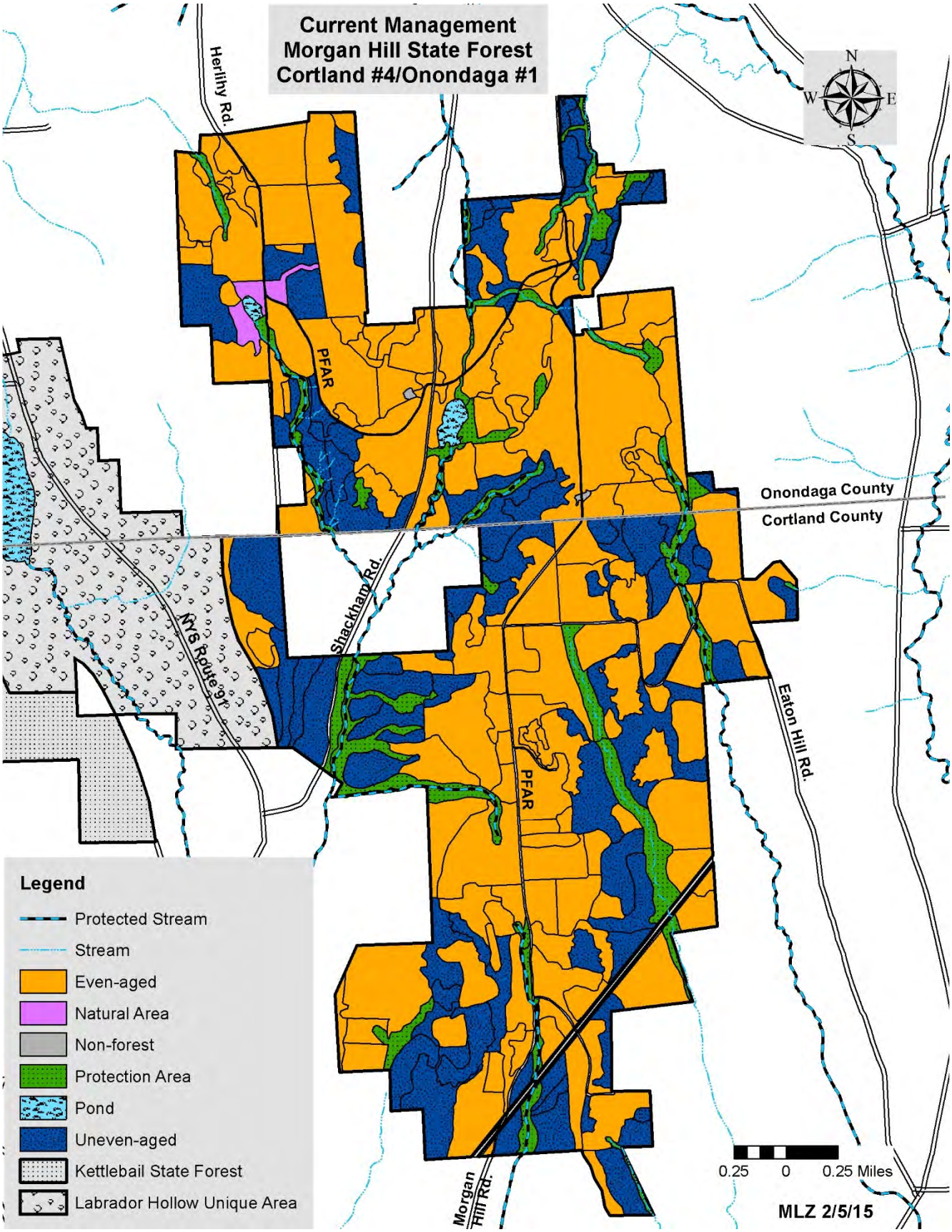

Hunting Zone Map
Labrador Hollow Unique Area
Markham Hollow Rd.
NYS Route 91
Labrador Crossroads
Labrador Rd.
N
W
E
S
Onondaga County
Cortland County
Tinker Falls
Legend
Protected Streams
Stream
Zone 1 No Hunting
Labrador Pond
Zone 2 Hunting Allowed
Kettlebail State Forest
Morgan Hill State Forest
0.2
0
0.2 Miles
MLZ 12/13/10

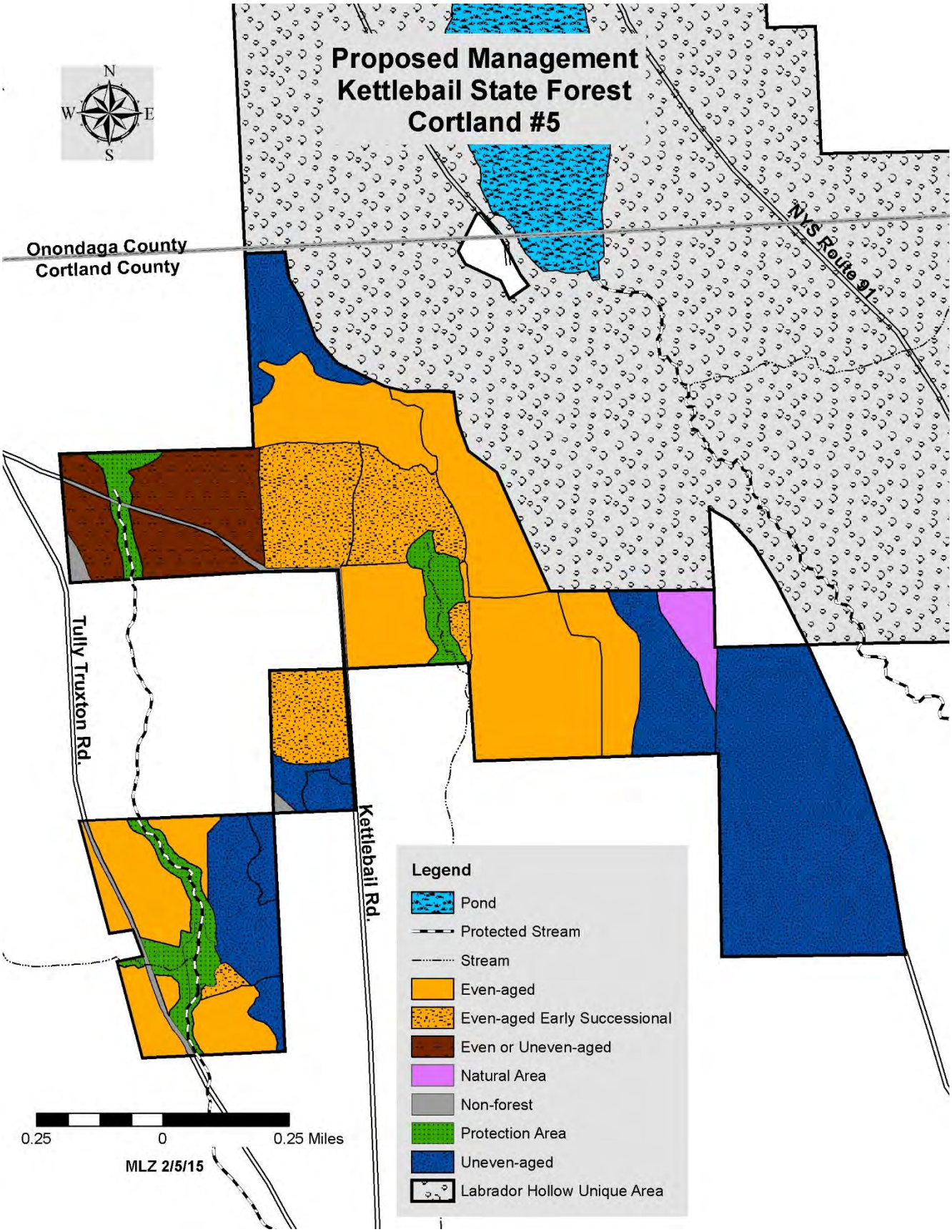

Recreation & Water Resources
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
Shackham Rd.
NYS Route 91
Spruce Pond
PFAR
Shackham Pond
Labrador Pond
Onondaga County
Cortland County
Shackham Brook
Tinker Falls Brook
Labrador Creek
Eaton Hill Rd.
PFAR
Morgan Hill Rd.
Morgan Hill Creek
Legend
Campsites
Leanto
Spruce Pond Camp Sites
Parking Area
Hang Glider Launch Site
Fellows Hill Loop
North Country Scenic Trail
Onondaga Sky Line Trail
Tlinker Falls Trail
CP-3 Accessible ATV Trail
Snowmobile Trail
Protected Stream
Stream
DEC Regulated Wetland
National Wetland
Morgan Hill State Forest
Power Line
Kettlebail State Forest
Labrador Hollow Unique Area
0.25 0 0.25 Miles
MLZ 2/5/15

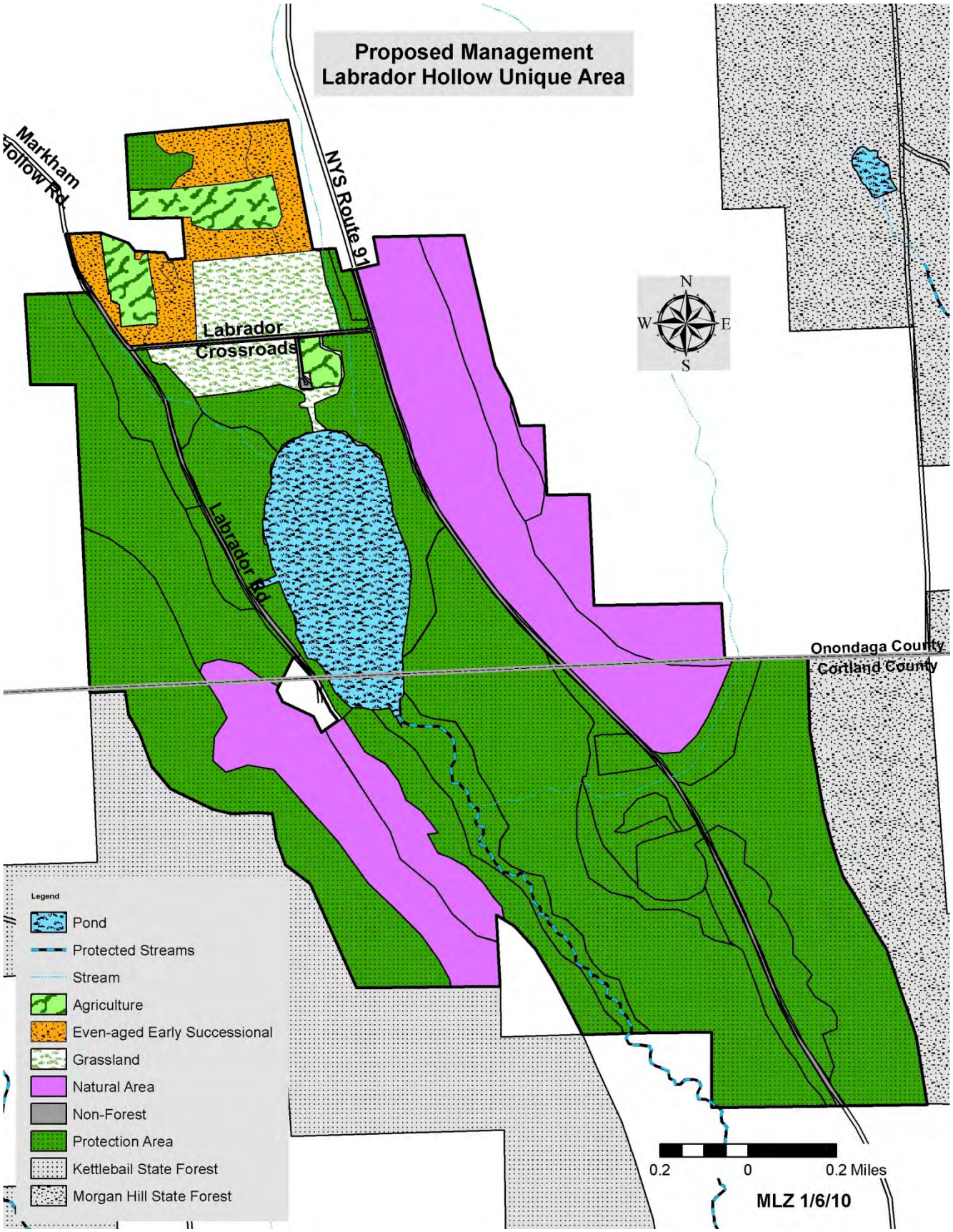

Spruce Pond Campsite Map
Morgan Hill State Forest
Onondaga Reforestation Area #1
N
W
E
S
To NYS Routes 80 & 91
Herlihy Rd.
To Shackham Rd.
1
2
3
4
5
6
7
8
9
10
11
12
P
No camping allowed in fisherman's parking area
no camping, campfires or vehicles on or below the dam!
Within the Spruce Pond Camping Zone:
- Camping is only allowed at designated sites
- No target Shooting
Please read the Spruce Pond Camping Rules
Legend
Designated Campsites
Fisherman's Parking Area
Earthen Dam
Hiking Trail
Spruce Pond
Spruce Pond Camping Zone
Stream
150
0
150 Feet
MLZ 2/23/2010

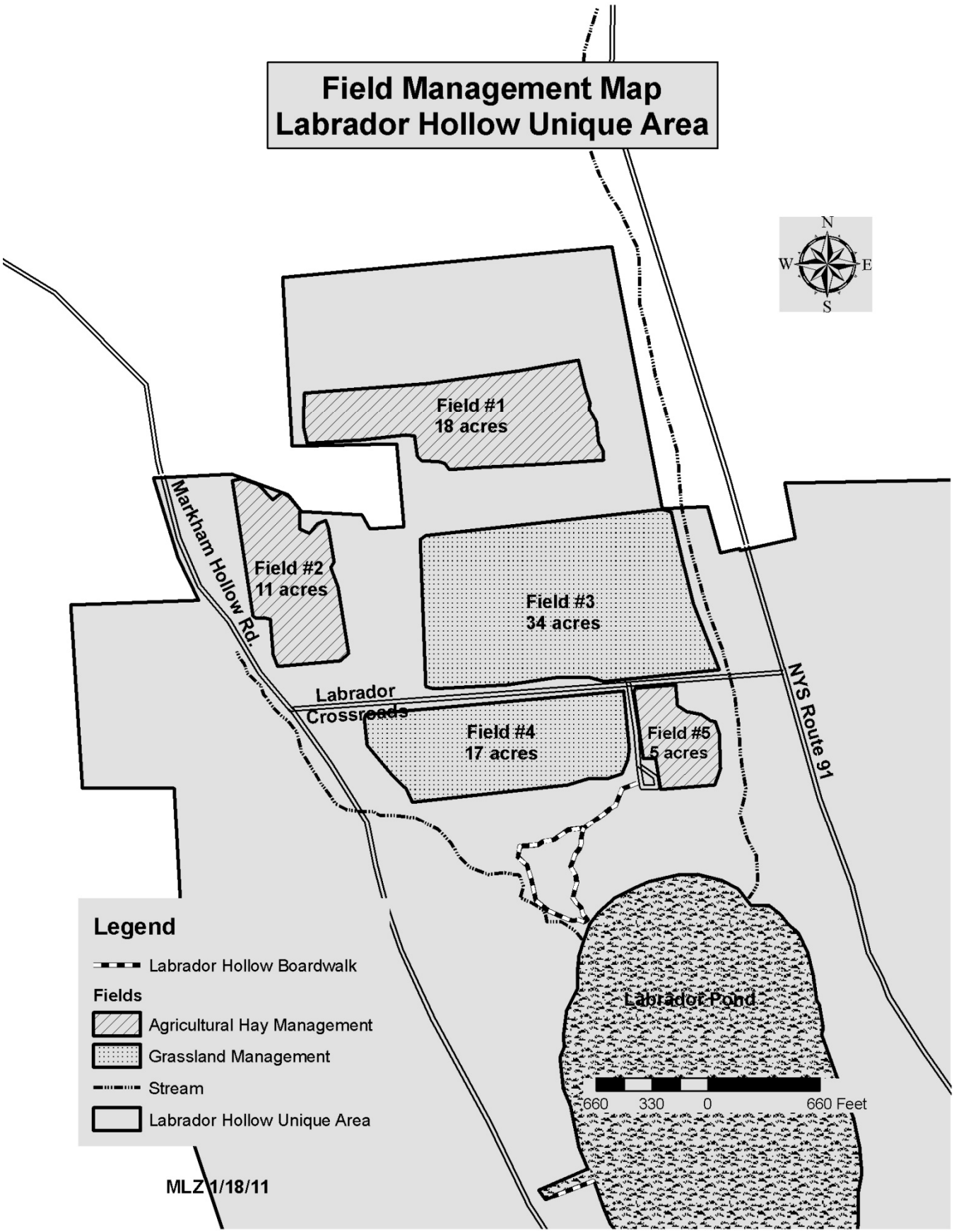

Current Management
Kettlebail State Forest
Cortland #5
N
W
E
S
Onondaga County
Cortland County
NYS Route 91
Tully Truxton Rd.
Kettleball Rd.
Legend
Pond
Protected Stream
Stream
Even-aged
Non-forest
Protection Area
Uneven-aged
Labrador Hollow Unique Area
0.2
0
0.2 Miles
MLZ 2/5/15

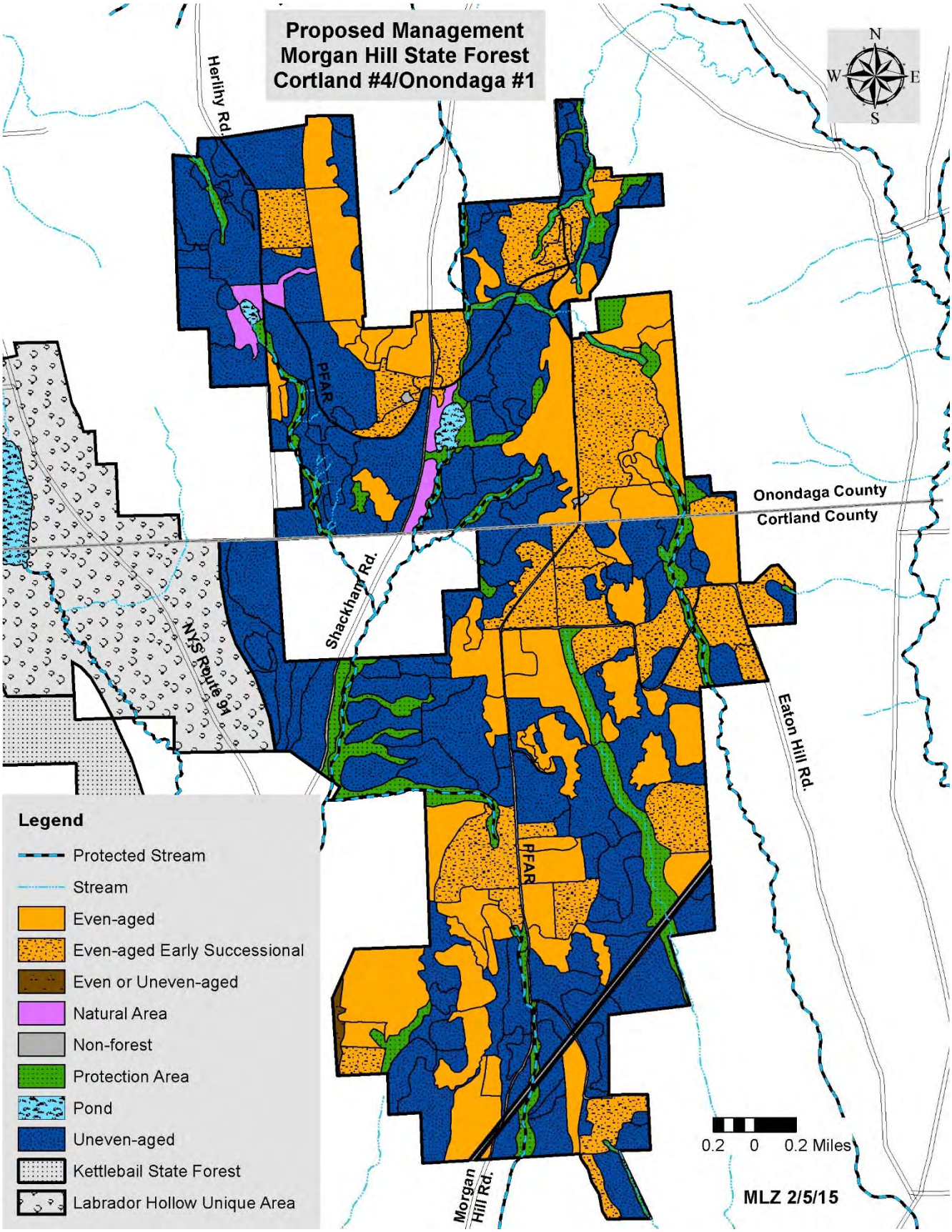

Current Management
Labrador Hollow Unique Area
Markham Hollow Rd.
NYS Route 91
Labrador Crossroads
Labrador Rd
Onondaga County
Cortland County
N
W
E
S
Legend
Pond
Protected Streams
Stream
Agricultural Field
Natural Area
Non-Forest
Protection Area
Kettlebail State Forest
Morgan Hill State Forest
0.25
0
0.25 Miles
MLZ 1/6/10

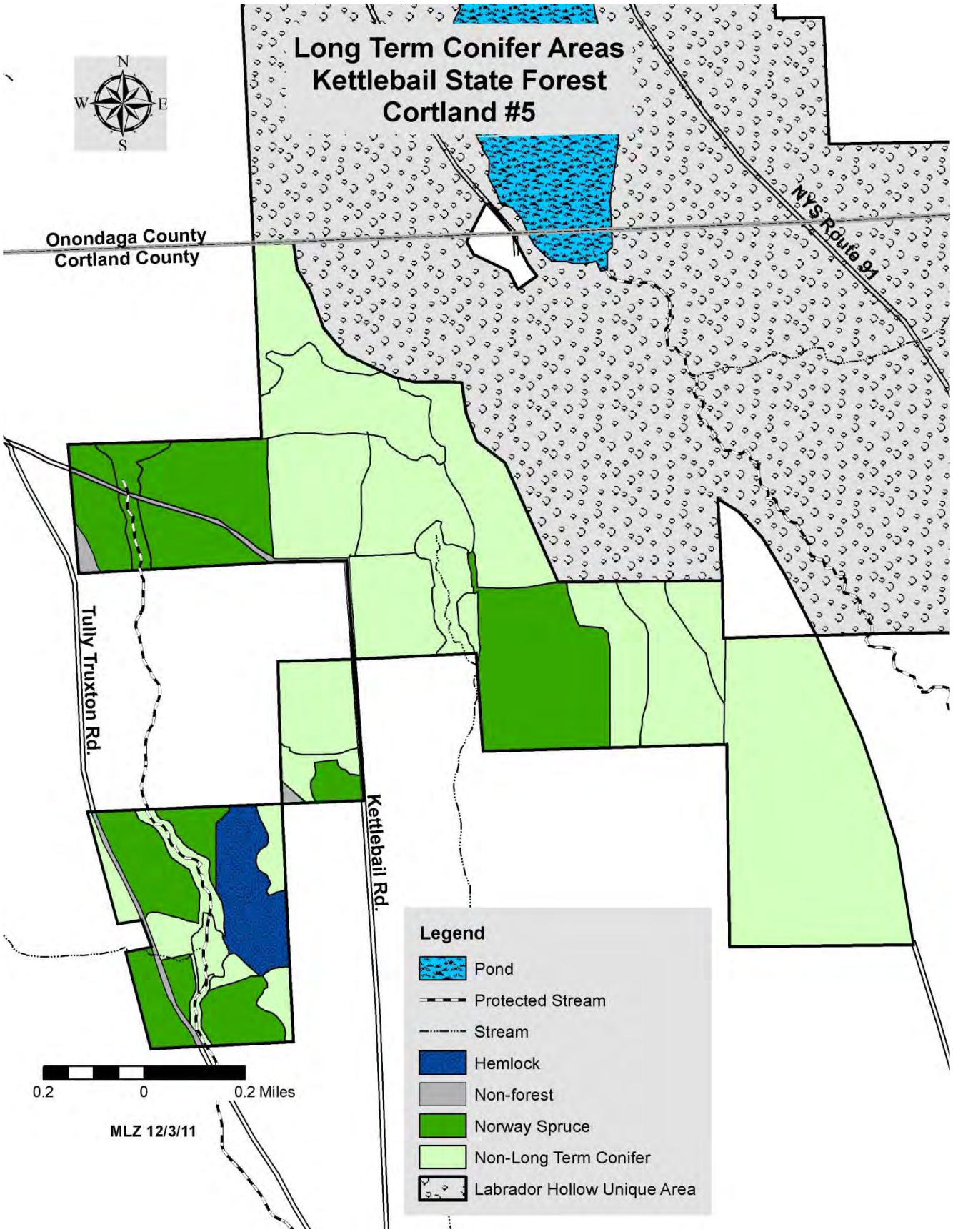

Current Management
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
PFAR
Onondaga County
Cortland County
Shackham Rd.
NYS Route 91
Eaton Hill Rd.
PFAR
Morgan Hill Rd.
Legend
Protected Stream
Stream
Even-aged
Natural Area
Non-forest
Protection Area
Pond
Uneven-aged
Kettlebail State Forest
Labrador Hollow Unique Area
0.25 0 0.25 Miles
MLZ 2/5/15

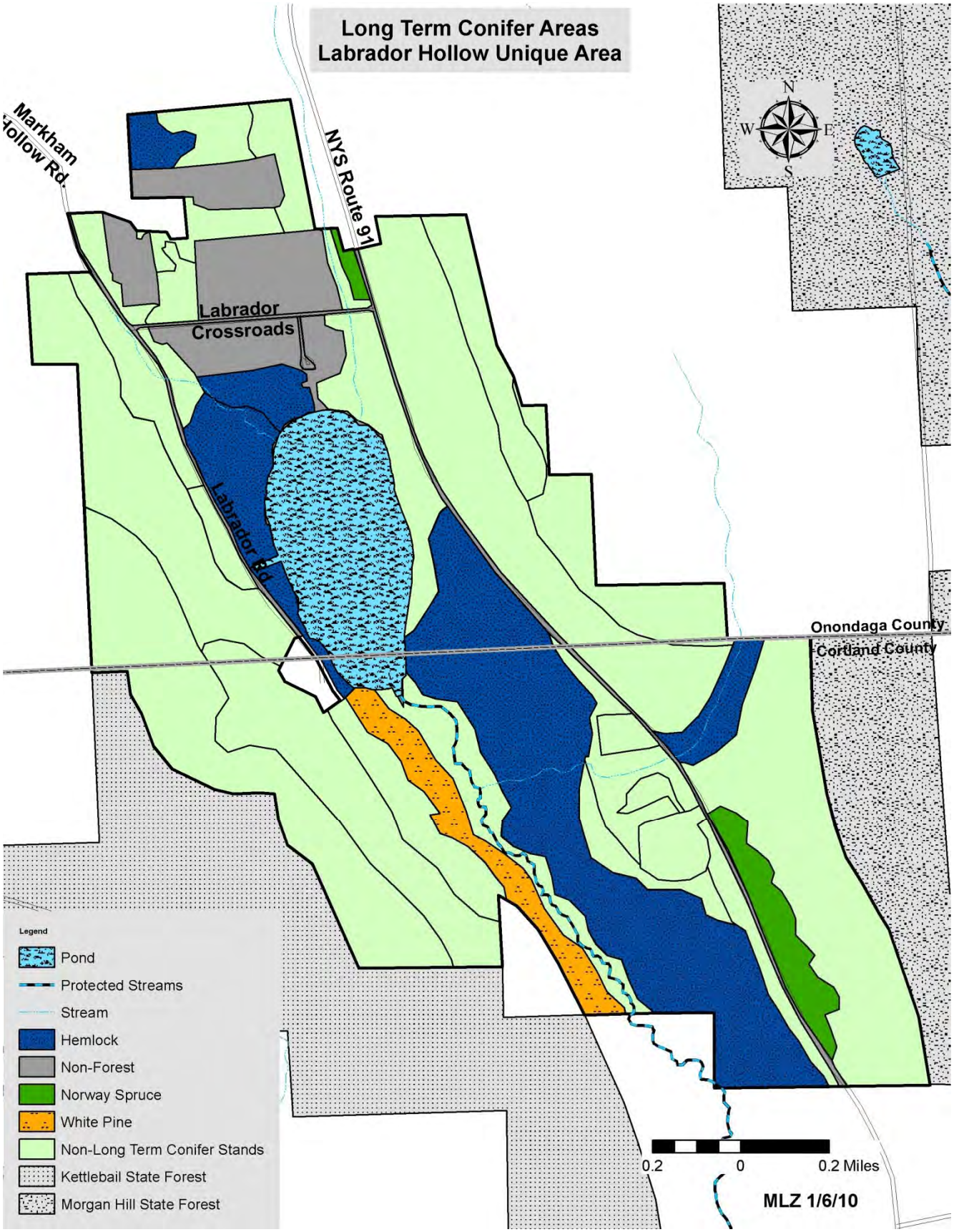

Proposed Management
Kettlebail State Forest
Cortland #5
N
W
E
S
Onondaga County
Cortland County
NYS Route 91
Tully Truxton Rd.
Kettlebail Rd.
Legend
Pond
Protected Stream
Stream
Even-aged
Even-aged Early Successional
Even or Uneven-aged
Natural Area
Non-forest
Protection Area
Uneven-aged
Labrador Hollow Unique Area
0.25
0
0.25 Miles
MLZ 2/5/15

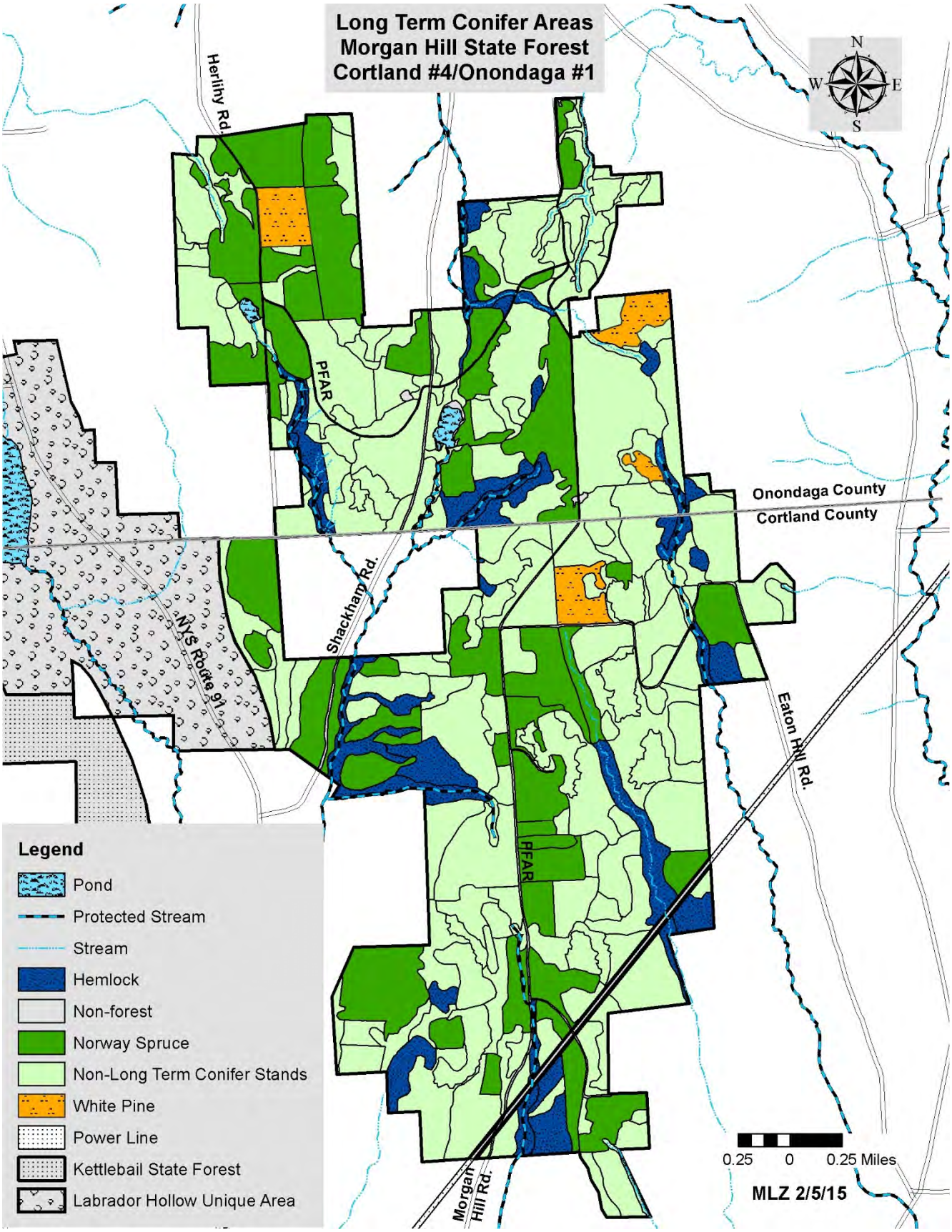

Proposed Management
Labrador Hollow Unique Area
Markham Hollow Rd
NYS Route 91
Labrador Crossroads
Labrador Rd
N
W
E
S
Onondaga County
Cortland County
Legend
Pond
Protected Streams
Stream
Agriculture
Even-aged Early Successional
Grassland
Natural Area
Non-Forest
Protection Area
Kettlebail State Forest
Morgan Hill State Forest
0.2
0
0.2 Miles
MLZ 1/6/10

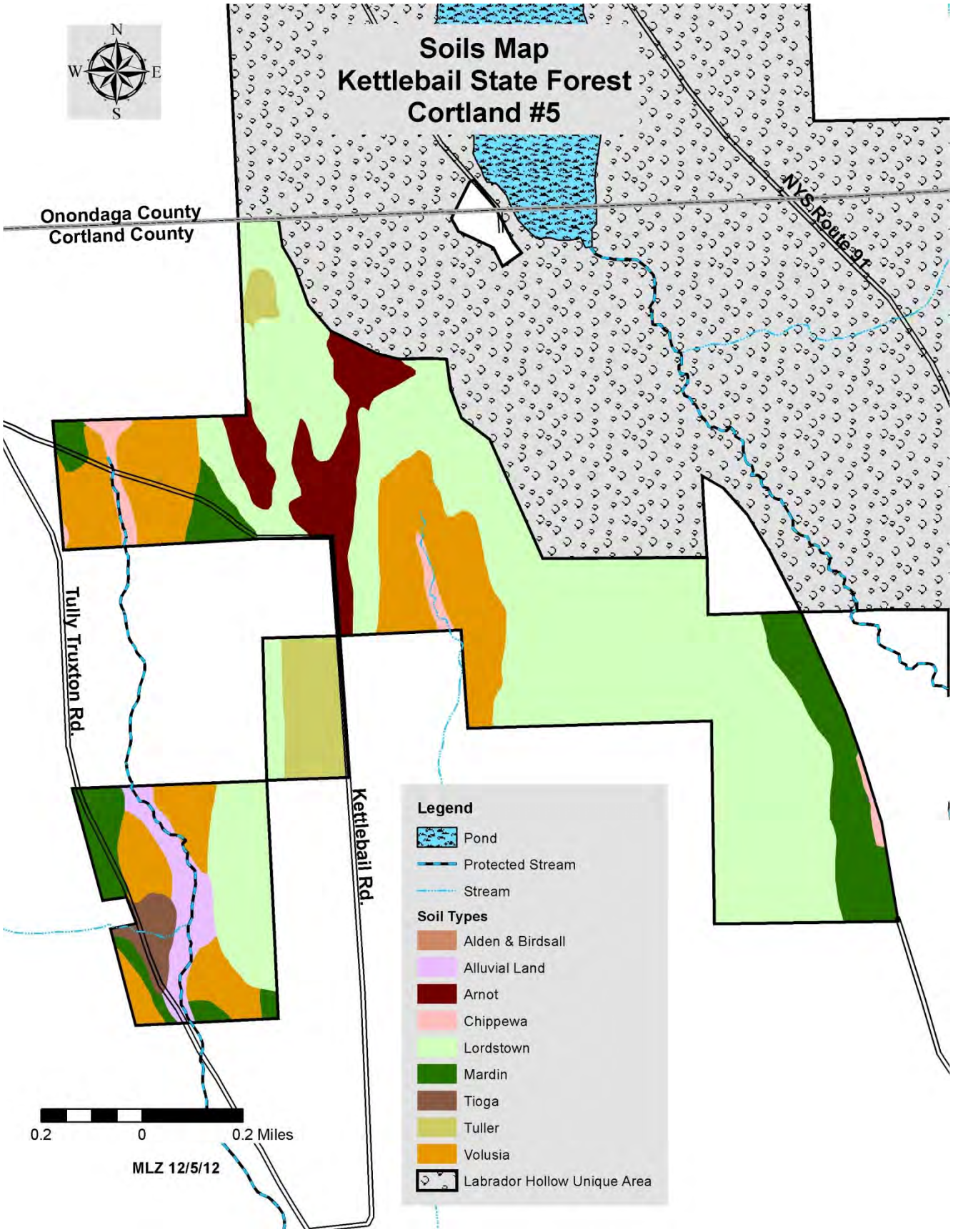

Field Management Map
Labrador Hollow Unique Area
N
W
E
S
Field #1
18 acres
Field #2
11 acres
Field #3
34 acres
Field #4
17 acres
Field #5
5 acres
Markham Hollow Rd.
Labrador
Crossroads
NYS Route 91
Labrador Pond
660 330 0 660 Feet
Legend
Labrador Hollow Boardwalk
Fields
Agricultural Hay Management
Grassland Management
Stream
Labrador Hollow Unique Area
MLZ 1/18/11

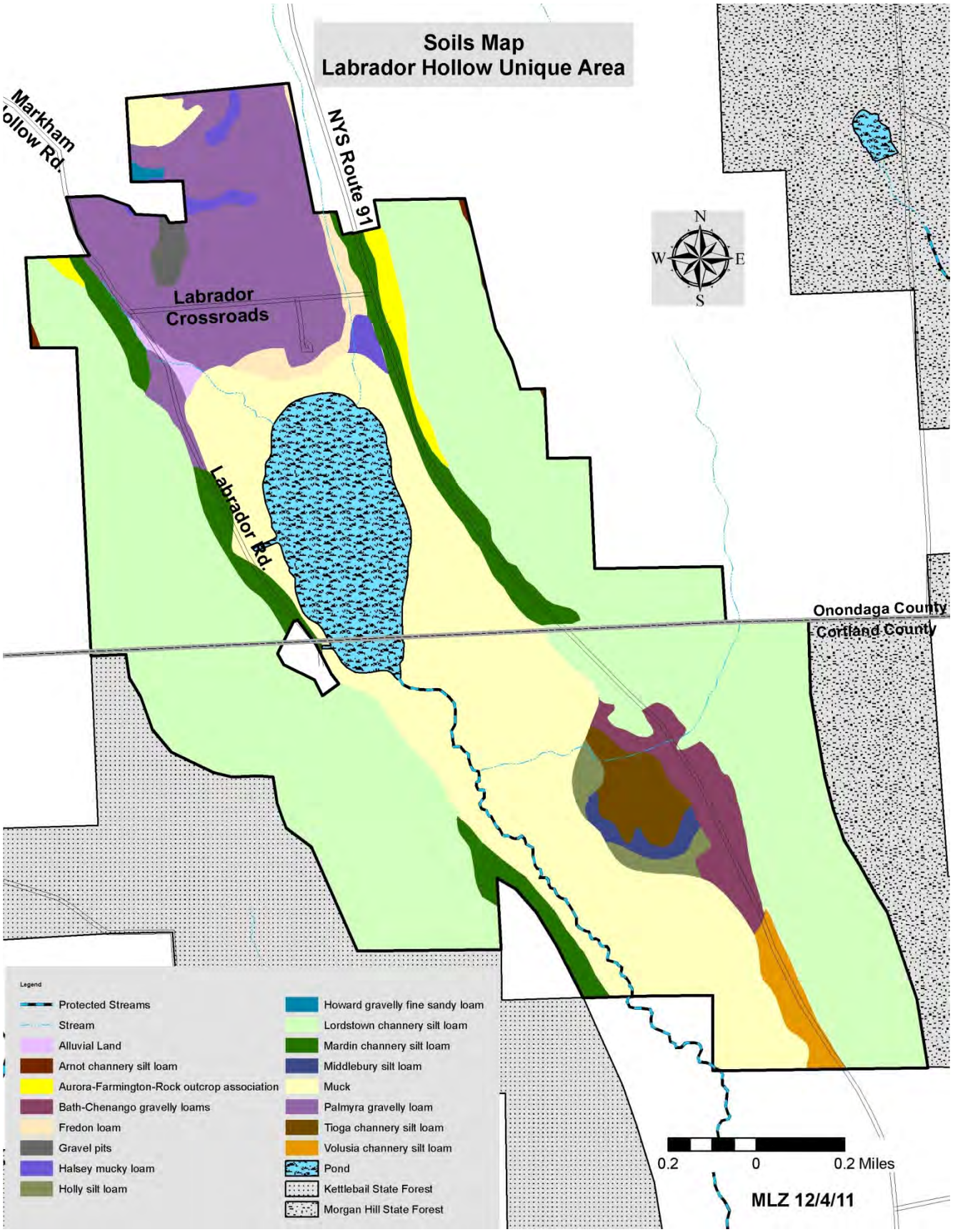

Proposed Management
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
PFAR
Onondaga County
Cortland County
Shackham Rd.
NYS Route 91
Eaton Hill Rd.
PFAR
Morgan Hill Rd.
0.2 0 0.2 Miles
MLZ 2/5/15
Legend
Protected Stream
Stream
Even-aged
Even-aged Early Successional
Even or Uneven-aged
Natural Area
Non-forest
Protection Area
Pond
Uneven-aged
Kettlebail State Forest
Labrador Hollow Unique Area

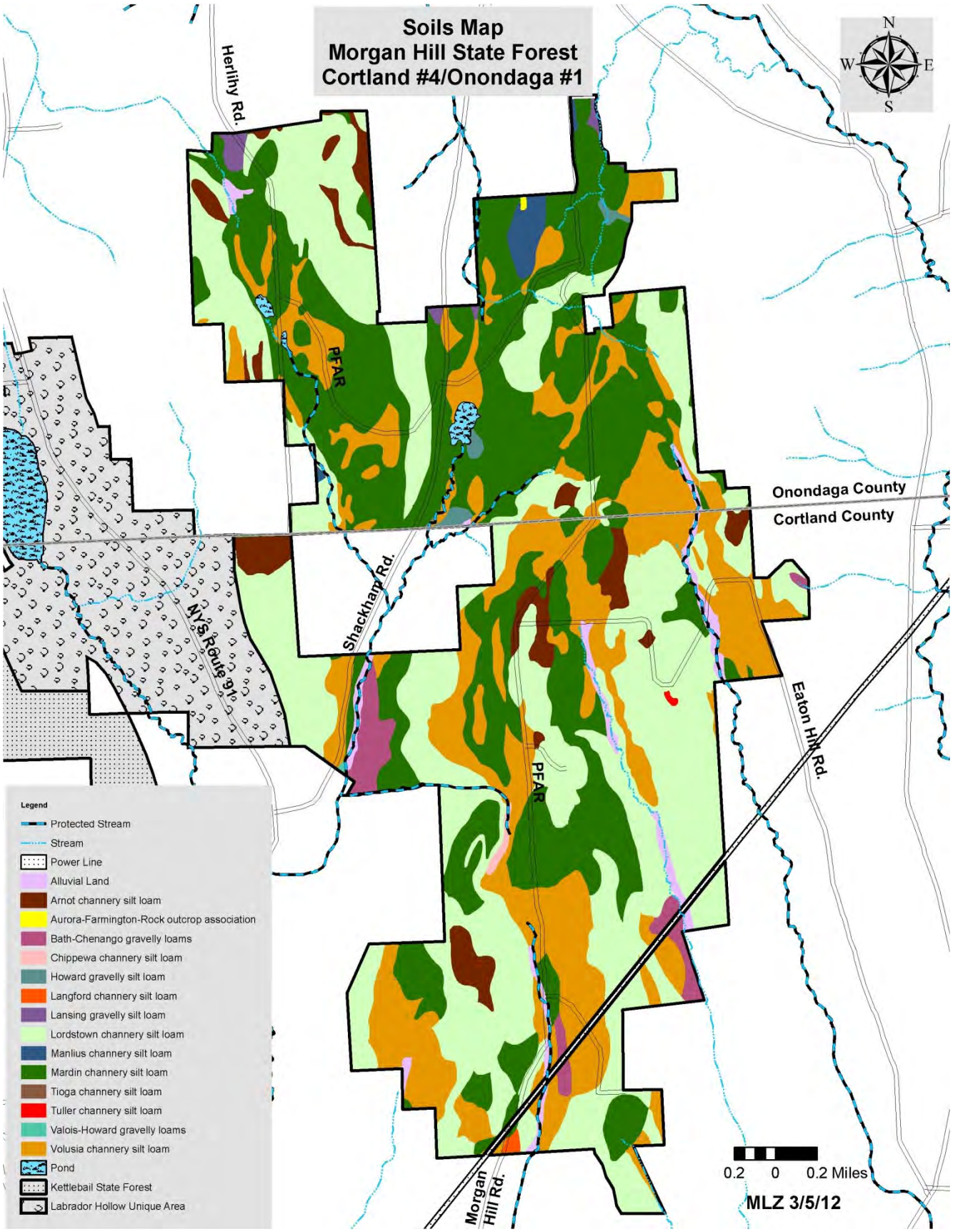

Long Term Conifer Areas
Kettlebail State Forest
Cortland #5
N
W
E
S
Onondaga County
Cortland County
NYS Route 91
Tully Truxton Rd.
Kettlebail Rd.
Legend
Pond
Protected Stream
Stream
Hemlock
Non-forest
Norway Spruce
Non-Long Term Conifer
Labrador Hollow Unique Area
0.2
0
0.2 Miles
MLZ 12/3/11


Long Term Conifer Areas
Labrador Hollow Unique Area
Markham Hollow Rd.
NYS Route 91
Labrador Crossroads
Labrador Rd
Onondaga County
Cortland County
N
W
E
S
Legend
Pond
Protected Streams
Stream
Hemlock
Non-Forest
Norway Spruce
White Pine
Non-Long Term Conifer Stands
Kettlebail State Forest
Morgan Hill State Forest
0.2
0
0.2 Miles
MLZ 1/6/10


Long Term Conifer Areas
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
PFAR
Onondaga County
Cortland County
Shackham Rd.
NYS Route 91
Eaton Hill Rd.
PFAR
Morgan Hill Rd.
Legend
Pond
Protected Stream
Stream
Hemlock
Non-forest
Norway Spruce
Non-Long Term Conifer Stands
White Pine
Power Line
Kettlebail State Forest
Labrador Hollow Unique Area
0.25 0 0.25 Miles
MLZ 2/5/15


Soils Map
Kettlebail State Forest
Cortland #5
N
W
E
S
Onondaga County
Cortland County
NYS Route 91
Tully Truxton Rd.
Kettlebail Rd.
Legend
Pond
Protected Stream
Stream
Soil Types
Alden & Birdsall
Alluvial Land
Arnot
Chippewa
Lordstown
Mardin
Tioga
Tuller
Volusia
Labrador Hollow Unique Area
0.2
0
0.2 Miles
MLZ 12/5/12


Soils Map
Labrador Hollow Unique Area
Markham Hollow Rd.
NYS Route 91
Labrador Crossroads
Labrador Rd.
Onondaga County
Cortland County
N
W
E
S
Legend
Protected Streams
Stream
Alluvial Land
Arnot channery silt loam
Aurora-Farmington-Rock outcrop association
Bath-Chenango gravelly loams
Fredon loam
Gravel pits
Halsey mucky loam
Holly silt loam
Howard gravelly fine sandy loam
Lordstown channery silt loam
Mardin channery silt loam
Middlebury silt loam
Muck
Palmyra gravelly loam
Tioga channery silt loam
Volusia channery silt loam
Pond
Kettlebail State Forest
Morgan Hill State Forest
0.2
0
0.2 Miles
MLZ 12/4/11


Soils Map
Morgan Hill State Forest
Cortland #4/Onondaga #1
N
W
E
S
Herlihy Rd.
PFAR
Onondaga County
Cortland County
Shackham Rd.
NYS Route 91
Eaton Hill Rd.
PFAR
Morgan Hill Rd.
0.2 0 0.2 Miles
MLZ 3/5/12
Legend
Protected Stream
Stream
Power Line
Alluvial Land
Arnot channery silt loam
Aurora-Farmington-Rock outcrop association
Bath-Chenango gravelly loams
Chippewa channery silt loam
Howard gravelly silt loam
Langford channery silt loam
Lansing gravelly silt loam
Lordstown channery silt loam
Manlius channery silt loam
Mardin channery silt loam
Tioga channery silt loam
Tuller channery silt loam
Valois-Howard gravelly loams
Volusia channery silt loam
Pond
Kettlebail State Forest
Labrador Hollow Unique Area