Division of Lands & Forests | Bureau of State Land Management

ROCKEFELLER

UNIT MANAGEMENT PLAN

FINAL

Towns of Harford, LaPeer, Lisle & Richford,
Counties of Cortland, Broome & Tioga

May 2018

NYS Department of Environmental Conservation
Region 7

Division of Lands & Forests
1285 Fisher Avenue
Cortland, New York 13045
(607) 753- 3095

OFFICE OF THE COMMISSIONER

New York State Department of Environmental Conservation
625 Broadway, 14th Floor, Albany, New York 12233-1010
P: (518) 402-8545 | F: (518) 402-8541
www.dec.ny.gov

MEMORANDUM

TO: The Record

FROM: Basil Seggos, Commissioner BS

SUBJECT: Rockefeller UMP

The Rockefeller Unit Management Plan 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.

Rockefeller
Unit Management Plan

A planning unit consisting of four State Forests, in Broome, Cortland and Tioga Counties

May 2018

Prepared by the Rockefeller Unit Management Planning Team:

Henry C. Dedrick Jr., Senior Forester
Mark Zubal, Senior Forester (Retired)

Acknowledgments
The Rockefeller Unit Management Planning Team would like to gratefully acknowledge the efforts of all those who contributed to this plan. We particularly would like to thank the following people for information and review they provided:

Tom Bell, Diversity Biologist
Lance Clark, Wildlife Biologist
John Clancy, Supervising Forester
Linda Collart, Mineral Resource Supervisor
Tim Day, Forestry Technician
Paul Giachetti, Mineral Resource Specialist
William Giraud, Forest Ranger
Patricia Hazard, Secretary (Retired)
Jesse LaRose, Forestry Technician
Dan Little, Forestry Technician
Brendan Murphy, Forestry Technician
Joan Oldroyd, Forest Ranger
Richard Pancoe, Supervising Forester (Retired)
Dave Sinclair, Regional Forester (Retired)
William Schara, Fish & Wildlife Technician
Christine Thomas, Real Property Analyst
Glenn Wolford, Real Property Supervisor (Retired)
Emily Zollweg-Horan, Aquatic Biologist

New York State Department of Environmental Conservation
Division of Lands and Forests
Region 7
1285 Fisher Avenue
Cortland, New York 13045
(607) 753- 3095

www.dec.ny.gov

DEC'S MISSION

"The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its 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." - Environmental Conservation Law 1-0101(1)

VISION STATEMENT

State Forests on the Rockefeller Unit will be managed in a sustainable manner by promoting **ecosystem** health, enhancing **landscape biological diversity (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.

The Rockefeller Unit derives its name from the fact that about twelve percent of the land area (712-acres), of the unit was previously owned by the Rockefeller family. In fact the childhood home of John D. Rockefeller Sr. was located on what is now Michigan Hill State Forest. The stone foundation still remains on Rockefeller Road and is pictured above.

TABLE OF CONTENTS

DEC'S MISSION iv
VISION STATEMENT iv
TABLE OF CONTENTS v
PREFACE 1
State Forest Overview 1
Legal Considerations 1
Management Planning Overview 1
Public Participation 2
Strategic Plan for State Forest Management 2
DEC's Management Approach and Goals 2
Sustainability and Forest Certification 2
Ecosystem Management Approach 3
Ecosystem Management Strategies 4
State Forest Management Goals 4
LOCATION MAP OF THE UNIT 7
I. INFORMATION ON UNIT 8
A. Geography 8
B. Soils 9
C. Water Resources 9
Wetlands 10
Streams 10
Ponds 11
D. Vegetative Types and Stages 11
State Forest Assessment 11
Landscape assessments 12
E. Forest Resources 14
Cover Types 14
Age Structure 15
F. Wildlife Resources 15
Birds 16
Amphibians & Reptiles 16
Mammals 16

Fishes 17
Game Species 17
Important Habitat Features 19
G. Significant Plants, Wildlife and Ecological Communities 21
H. Visual Resources 22
I. Historic and Cultural Resources 22
History of the unit 22
Inventory of Resources 24
Archaeological Site Protection 25
Archaeological Research 25
J. Real Property..... 25
Boundary Lines 25
Exceptions and Deeded Restrictions 27
Land Acquisition 30
K. Infrastructure..... 30
Roads 30
Other Infrastructure 31
L. Formal and Informal Partnerships and Agreements 32
M. Recreational Resources 32
Public Use Surveys 32
Wildlife-related Recreation 33
Camping 34
Water-based Recreation 34
Trail-based Recreation 34
Other Recreational Activities 34
Overall Assessment of the Level of Recreational Development 34
N. Universal Access 35
O. Mineral Resources 36
Oil, Gas and Solution Exploration and Development 36
Mining of Gravel & Hard Rock 38
P. Supporting Local Communities 39
Tourism 39
Taxes Paid 39

Q. Forest Products 40
Timber 40
Non-Timber Forest Products 40
R. Forest Health..... 40
Invasive Species 41
Interfering Vegetation 43
Deer Impacts 44
Fire 44
Carbon Sequestration 44
II. MANAGEMENT OBJECTIVES AND ACTIONS 45
A. Ecosystem Management 45
1. Maintain or Enhance Diversity of Habitats 46
B. Resources Protection 50
1. Protect Soil and Water Quality 50
2. Protect At-Risk Species and Natural Communities 54
3. Protect Visual Resources and Aesthetics 55
4. Protect Historic and Cultural Resources 56
C. Infrastructure and Real Property 56
1. Boundary Line Maintenance 56
2. Infrastructure 56
D. Public/Permitted Use 58
1. Universal Access 58
2. Formal and Informal Partnerships and Agreements 58
3. Recreation 59
4. Off-Highway and All-Terrain Vehicle Use 61
5. Mineral Resources 62
6. Supporting Local Communities 63
E. Forest Management and Health 64
1. Forest Products 64
2. Plantation Management 64
3. Forest Health 65
4. Managing Deer Impacts 66
5. Fire Management 67
6. Carbon Sequestration 67

III. MANAGEMENT ACTION SCHEDULES 68
A. Land Management Actions 68
1. Table of Land Management Actions by State Forest 73
2. Table of Land Management Actions by Project Completion Interval 83
B. Mowing Actions 91
C. Pond Maintenance Actions 92
D. Public Forest Access Road (PFARs) Maintenance 92
E. New Project Action Schedule 92
F. Boundary Line Action Schedule 93
G. Forest Inventory Data Collection Schedule 93
IV. GLOSSARY 94
V. PLAN REFERENCES 106
VII. APPENDICES 109
APPENDIX I Initial Public Information Meeting - Public Comment Summary 109
APPENDIX II Real Property Taxes Based on 2014 Assessments 113
APPENDIX III Classified Wetlands on the Unit 113
APPENDIX IV Classified Streams on the Unit 114
APPENDIX V Definitions for Protective Status of Wildlife on the Unit 115
APPENDIX VI Breeding Species of Birds In The Vicinity of the Unit 116
APPENDIX VII Reptiles and Amphibians of the Unit and Vicinity 119
APPENDIX VIII Mammals of the Unit and Vicinity 120
APPENDIX IX Deer Harvest Records for Towns within the Unit 122
APPENDIX X Reported Turkey Harvest 2003-2012 for Counties within the Unit 122
APPENDIX XI Roads on the Unit 123
APPENDIX XII Facilities on the Unit That Require Maintenance 124
APPENDIX XIII Generic Environmental Impact Statement for State Forest Management 126
APPENDIX XIV Summary of Public Comments with Department Response 127
APPENDIX XV Index for the Maps of the Unit 136

PREFACE

State Forest Overview

The public lands comprising this unit play a unique role in the landscape. Generally, the State Forests of the unit are described as follows:

- large, publicly owned land areas;
- managed by professional Department of Environmental Conservation (DEC) foresters;
- green certified jointly by the Forest Stewardship Council (FSC) & Sustainable Forestry Initiative (SFI);
- set aside for the sustainable use of natural resources, and;
- open to recreational use.

Management will ensure the **sustainability**, biological diversity, and protection of functional ecosystems and optimize the ecological benefits that these State lands provide, including the following:

- maintenance/increase of local and regional biodiversity
- response to shifting land use trends that affect **habitat** availability
- mitigation of impacts from **invasive species**
- response to climate change through carbon sequestration and habitat, soil and water protection

Legal Considerations

Article 9, Titles 5 and 7, of the Environmental Conservation Law (ECL) authorize DEC to manage lands acquired outside the Adirondack and Catskill Parks. This management includes **watershed** protection, 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.

Management Planning Overview

The Rockefeller Unit Management Plan (UMP) is based on a long range vision for the management of Beaver Dam, Grigg's Gulf, Michigan Hill and Turkey Hill State Forests balancing long-term ecosystem health with current and future demands. This plan addresses management activities on this unit for the next twenty years, with an update due in ten. Factors such as budget constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Public Participation

One of the most valuable and influential aspects of UMP development is public participation. Public meetings are held to solicit input and written and verbal comments are encouraged while management plans are in draft form. Mass mailings, press releases and other methods for soliciting input are often also used to obtain input from adjoining landowners, interest groups and the general public.

Strategic Plan for State Forest Management

This 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.

DEC's Management Approach and Goals

Sustainability and Forest Certification

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.

FSC
www.fsc.org

The mark of responsible forestry

FSC® C002027

SUSTAINABLE FORESTRY INITIATIVE
SFI-00102

Ecosystem Management Approach

State Forests on this unit will be managed using an ecosystem management approach which will holistically integrate principles of landscape ecology and multiple use management to promote habitat biodiversity, while enhancing the overall health and resiliency of the State Forests.

Ecosystem management is a process that considers the total environment - including all non-living and living components; from soil micro-organisms to large mammals, their complex interrelationships and habitat requirements and all social, cultural, and economic factors. For more information on ecosystem management, see SPSFM page 39 at http://www.dec.ny.gov/lands/64567.html.

Multiple-use Management

DEC will seek to simultaneously provide many resource values on the unit such as, fish and wildlife, wood products, recreation, **aesthetics**, minerals, watershed protection, and historic or scientific values.

Landscape Ecology

The guiding principle of multiple use management on the unit will be to provide a wide diversity of habitats that naturally occur within New York, while ensuring the protection of rare, endangered and **threatened species** and perpetuation of highly ranked unique natural communities. The actions included in this plan have been developed following an analysis of habitat needs and overall landscape conditions within the planning unit (i.e. the geographical area surrounding and including the State Forests) the larger ecoregion and New York State.

Ecosystem Management Strategies

The following strategies are the tools at DEC's disposal, which will be carefully employed to practice landscape ecology and multiple-use management on the unit. The management strategy will affect **species** composition and habitat in both the short and long term. For more information on these management strategies, please see SPSFM page 81 at http://www.dec.ny.gov/lands/64567.html.

Passive Management

DEC foresters will employ passive management strategies through the designation of **natural** and **protection areas**, and **buffers** around those areas, such as along streams, ponds and other **wetlands**, where activity is limited.

Silviculture (Active Management)

DEC foresters will practice **silviculture**; the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands, in an effort to promote biodiversity and produce sustainable forest products. There are two fundamental silvicultural systems which can mimic the tree canopy openings and **disturbances** that occur naturally in all forests; **even-aged** management and uneven aged management. Each system favors a different set of tree species. In general, even-aged management includes creating wide openings for large groups of trees that require full sunlight to regenerate and grow together as a cohort, while **uneven-aged** management includes creating smaller patch openings for individual trees or small groups of trees that develop in the shade but need extra room to grow to their full potential.

State Forest Management Goals

Goal 1 – Provide Healthy and Biologically Diverse Ecosystems

Ecosystem health is measured in numerous ways. One is by the degree to which natural processes are able to take place. Another is by the amount of naturally occurring species that are present, and the absence of non-native species. No single measure can reveal the overall health of an ecosystem, but each is an important part of the larger picture. The Department will manage State Forests so that they demonstrate a high degree of health as measured by multiple criteria, including the biodiversity that they support.

Goal 2 – Maintain Man-made State Forest Assets

Man-made assets on State Forests include structures, boundary lines, trails, roads and any other object or infrastructure that exists because it was put there by people. Many of these items need no more than a periodic check to make sure they are still in working order. Others need regular maintenance to counteract the wear of regular use. It is the Department's intent to ensure that all man-made items on State Forests are adequately maintained to safely perform their intended function.

Goal 3 – Provide Recreational Opportunities for People of all Ages and Abilities

State Forests are suitable for a wide variety of outdoor recreational pursuits. Some of these activities are entirely compatible with one another, while others are best kept apart from each other. Equally varied are the people who undertake these activities, as well as their abilities, and their desire to challenge themselves. While not all people will be able to have the experience they desire on the same State Forest, the Department will endeavor to provide recreational opportunities to all those who wish to experience the outdoors in a relatively undeveloped setting.

Goal 4 – Provide Economic Benefits to the People of the State

ECL §1-0101(1) provides in relevant part that "It is hereby declared to be the policy of the State of New York to conserve, improve and protect its 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." (Emphasis added) In considering all proposed actions, the Department will attempt to balance environmental protection with realizing potential economic benefit.

Goal 5 – Provide a Legal Framework for Forest Conservation and Sustainable Management of State Forests

Staff must have clear and sound guidance to direct their decisions and actions. Likewise, the public must have clear information regarding what they are and are not allowed to do on State Forests. Both of these are provided by well-written laws, regulations and policies. The Department will work to improve existing legal guidance that has proved to be inadequate, and create new guidance that is needed but does not yet exist.

The following are select photographs of the unit.

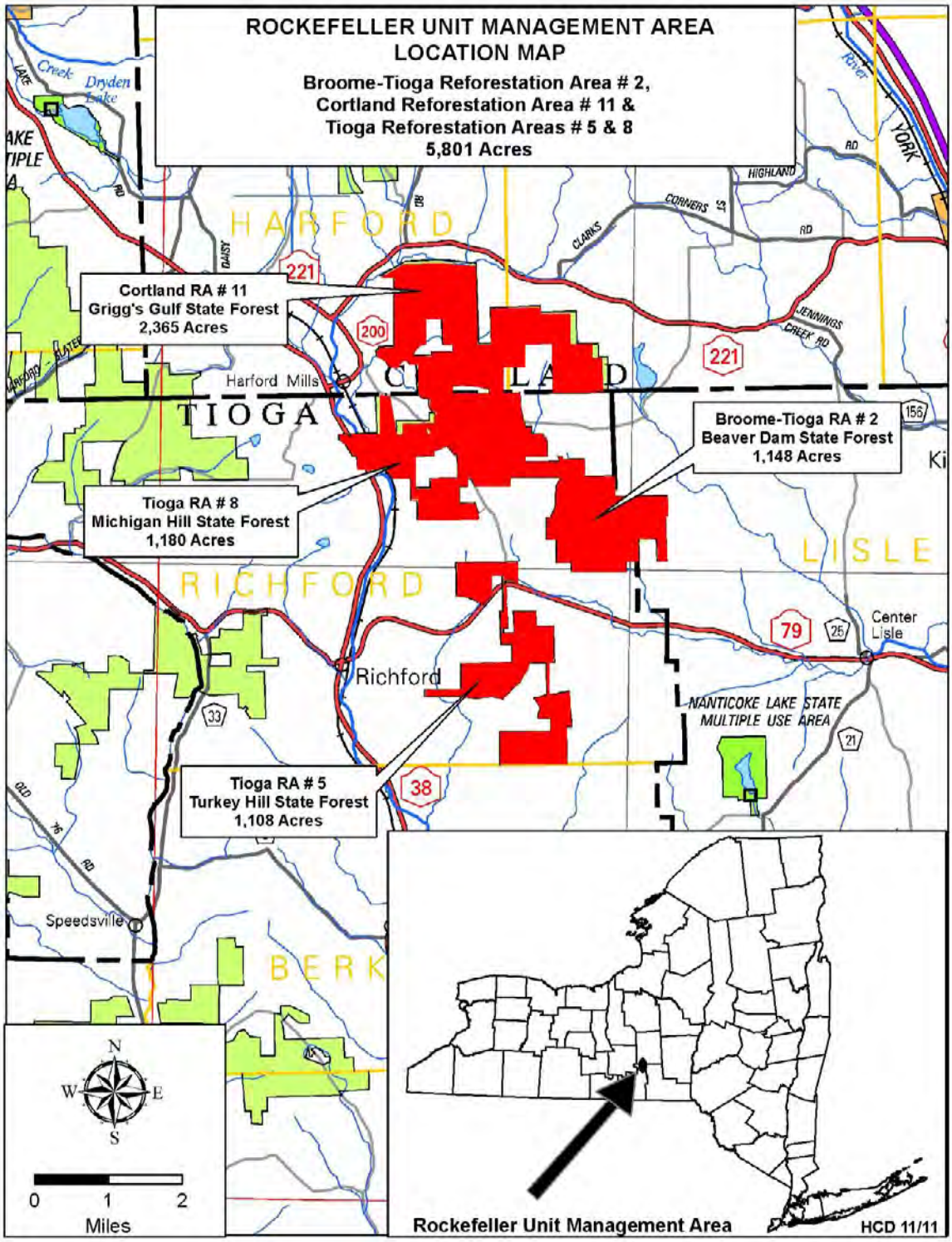
A view of the East Branch of Owego Creek - Michigan Hill State Forest

A recently thinned Norway spruce plantation - Beaver Dam State Forest

Early successional habitat - Grigg's Gulf State Forest

Oak seedlings planted after a recent regeneration harvest Turkey Hill State Forest

LOCATION MAP OF THE UNIT



I. INFORMATION ON UNIT

A. Geography

The Rockefeller Unit consists of four State Forests in the Broome County town of Lisle, Cortland County towns of Harford and Lapeer and the Tioga County town of Richford.

Table 1. State Forests within the unit.

State Land	Reforestation Area	Acres[1]	Town
Beaver Dam SF	Broome-Tioga RA#2	1,148	Lisle & Richford
Grigg's Gulf SF	Cortland RA#11	2,365	Harford, Lapeer & Richford
Turkey Hill SF	Tioga RA#5	1,108	Richford
Michigan Hill SF	Tioga RA#8	1,180	Richford
Total		**5,801**	

[1] State Forest acres within this plan are based on survey/deed acres. There is a slight discrepancy (0.3%) between survey/deed acres and digitized acres as drawn using Geographic Information Systems.

This area is part of the Central Allegheny Plateau section of south central New York State (Keyes, Jr. 1995). Elevations in the unit range from 1,100 to 1,800 feet. The highest point on the unit is Michigan Hill which has an elevation of 1,893 feet. The lowest point on the unit is on Michigan Hill State Forest along the East Branch of Owego Creek, this point has an elevation of 1,120 feet. Topography on the unit varies from flat to steep.

Sixty-five percent of the unit is in Tioga County, 31% is in Cortland County and 4% in Broome County. The unit is in the Susquehanna River watershed.

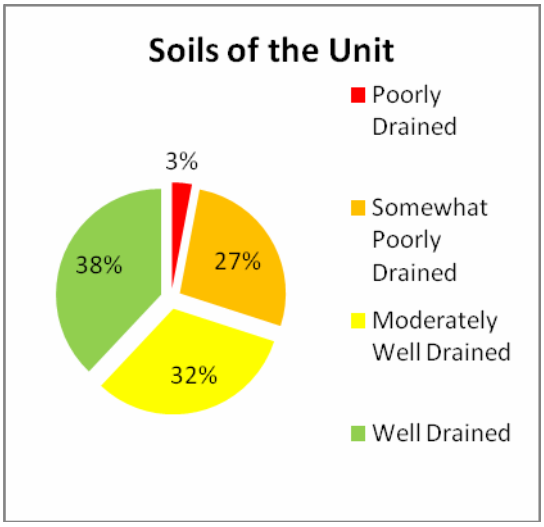
Table 2: Breakdown of the Rockefeller Unit by county.

State Forest	Acres Broome Co.	Acres Cortland Co.	Acres Tioga Co.	Total Acres
Beaver Dam	224	0	924	1,148
Grigg's Gulf	0	1,777	588	2,365
Turkey Hill	0	0	1,108	1,108
Michigan Hill	0	0	1,180	1,180
Total	**224**	**1,777**	**3,800**	**5,801**

Average annual rainfall for the area ranges from 35 to 38 inches. Average annual temperature is about 47 degrees Fahrenheit. Annual growing season is about 155 days, (Soil Survey of Tioga County, New York 1953).

B. Soils

Soils provide the foundation, both figuratively and literally, of forested ecosystems. They support an immense number of microorganisms, fungi, mosses, insects, herpetofauna and small mammals which form the base of the food chain. They filter and store water and also provide and recycle nutrients essential for all plant life. For information on DEC's policies for the protection of forest soils, as well as water resources please see SPSFM page 107 at http://www.dec.ny.gov/lands/64567.html.



The unit consists of thirteen different soil types. The soil types found on the unit consist of poorly drained Alluvial, Chippewa and Holly types; somewhat poorly drained Volusia; moderately well-drained Canfield, Mardin and Middlebury types; and well-drained Arnot, Bath-Chenango, Chenango, Howard, Lordstown and Woostern types. Of the previously mentioned soil types, Lordstown, Mardin and Volusia are the three predominate types. Together these three types are found on over ninety percent of the unit. These soils were formed in glacial till derived from sandstone, siltstone and coarse textured shale. Lordstown soils generally have a depth to bedrock of 30 to 36 inches and occupy steep areas and ridge tops. Mardin soils generally have a **fragipan** layer beginning at depths between 15 and 20 inches and occupies sloping to rolling areas of uplands. Volusia soils generally have a fragipan layer beginning at depths of 8 to 14 inches and occupies gently sloping to sloping areas in the uplands (Soil Survey of Tioga County, New York 1953).

The unit consists of 38% well drained, 32% moderately well drained, 27% somewhat poorly drained and 3% poorly drained soils. See Appendix XVI to view a map of the unit that shows the locations of soils.

C. Water Resources

The unit lies within the Upper Susquehanna River drainage basin with tributary streams feeding the Tioughnioga River and Owego Creek. The Tioughnioga River flows into the Chenango River and eventually into the Susquehanna River in Binghamton. Owego Creek flows south to Owego where it flows into the Susquehanna River. The Susquehanna River meanders in a southern direction through Pennsylvania and Maryland before discharging into the Chesapeake Bay.

Wetlands

Wetlands vary widely across the landscape because of differences in characteristics such as: hydrology (temporarily/seasonally flooded to permanently flooded), soils, topography, and vegetation (submergent aquatic plants to forested tree cover). Common freshwater wetlands include marshes, bogs, fens, swamps, vernal pools, and spring seeps. Wetlands perform many functions that provide numerous benefits to people, fish, and wildlife. Wetlands provide flood protection and abatement; control erosion and sedimentation; maintain water quality; recharge groundwater supplies; maintain surface water flows; provide fish and wildlife habitat; produce and recycle nutrients; provide recreation; provide open space; provide biological diversity.

There are regulations in place to protect wetlands and the numerous functions and benefits that they provide. Wetlands are protected pursuant section 404 of the Federal Clean Water Act. The Army Corps of Engineers regulates activities that may impact wetlands, such as placement of fill, by a permit review process. Most designated wetlands have been classified by the U.S. Fish & Wildlife Service and are listed in the National Wetlands Inventory. In New York State, all freshwater wetlands are protected pursuant to the New York State Freshwater Wetlands Act, if they are at least 12.4-acres in size and meet criteria specified in section 24-0107 of the Act. Certain wetlands that are smaller than 12.4-acres may also be protected by the Act. Title 6, Part 664, of the New York State Environmental Conservation Rules and Regulations establishes a classification system of freshwater wetlands. This system creates four classifications for freshwater wetlands (class I, class II, class III, and class IV). The classification of a freshwater wetland, regulated under the New York State Freshwater Wetland Act, is based on the ability of the wetland to perform functions and provide benefits. Class I wetlands perform the most functions, while Class IV wetlands perform the least amount of functions.

There are about 127-acres of wetlands on the unit. Over 84-acres of the wetlands on the unit are classified as either federal, State or both. See Appendix III for additional information about classified wetlands found on the unit. The remaining 43-acres of wetlands on the Rockefeller Management Unit are not classified under Federal or State Laws. These non-classified wetlands include spring seeps, riparian wetlands, and other types of wetlands.

Streams

There are about 29-miles of streams on the unit. There are about 13-miles of **intermittent streams** and about 16-miles of **perennial streams** within the Rockefeller Unit. About seven miles of the perennial streams have one or more of the following **water quality classifications:** C(ts), C(t), or C. Class C, class C(t), class C(ts) streams are capable of supporting fisheries, more specifically, class C(t) and C(ts) streams are capable of supporting a trout population. The remaining 10-miles of perennial streams on the unit are not classified.

Appendix IV provides information about the classified perennial streams on the unit. This information includes: location by State Forest; stream name; stream classification; and length of stream.

Ponds

Ponds on the unit include two manmade ponds with impoundments (1.9 -acres and 0.3-acres) located on Grigg's Gulf State Forest and numerous beaver ponds located throughout the unit. Both manmade ponds were constructed prior to State ownership. The largest manmade pond is called Huckleberry Pond. During a fisheries survey in 1972, it was determined that the 20 foot high impoundment was leaking.

Fulkenham Pond on Grigg's Gulf State Forest.

D. Vegetative Types and Stages

State Forest Assessment

A detailed forest inventory was conducted for the unit during the winters of 2009 and 2010. The inventory was conducted at the **stand** level. There are over 500 stands within the unit. Some of the information collected for each stand includes:

- Species Type
- Forest Density
- Tree Diameter
- Tree Height
- Soil Drainage
- Topography/Slope
- Management Class
- Year Last Managed
- Forest Type
- Stand Age Structure
- Treatment Recommendations
- Treatment Interval/Priority
- Hydrologic Resources
- Wildlife Observations
- Herbaceous Plant Observations
- Forest Health Observations
- Existing Recreation Use
- **Regeneration** Observations
- Interfering Vegetation Observations
- Archeological Resources

Analysis of the collected data shows that about 95% of the unit is in a forested condition of which nearly 3% is in a **seedling/sapling** stage, 43% is in a **poletimber** stage, and 54% is in a **sawtimber** stage. The remaining 5% of the unit consists of shrubland/**grassland** (3%), open wetlands/ ponds (1%), and developed areas (1%) which include roads, shale pits, intensive recreation areas, and some utility Rights Of Way (ROW). Table 3 summarizes the land classification distribution within the unit.

Table 3. Land Classification within the unit

Land Class[1]	Total Acres	Water	Herb	Shrub	Acres by Diameter Class (inches)						% of Total
					1 to 5	6 to 8	9 to 11	12 to 14	15 to 17		
W	126	11	20	46	0	0	39	10	0	0	2%
ES	275		47	29	185	14					5%
NH	3012						1288	1619	105	0	52%
NC	10						7	3	0	0	<1%
CP	641						351	290	0	0	11%
CP/NH	454						291	163	0	0	8%
NH/NC	1204						443	761	0	0	21%
DA	79										1%
Total	5801	11	67	75	185	14	2419	2846	105	0	100%

[1]Land Class symbols are as follows:

W = Wetland (open water, emergent herbaceous, shrub, & forested)
ES = **Early Successional** (grasslands, shrub land, apple orchards, & seedling/sapling forests)
CP = Conifer **Plantation**
CP/NH = Conifer Plantation with a significant Native Hardwood component
NH/NC = Native **Hardwoods** and Native Conifer mixed
HP = Hardwood Plantation
NH = Native Hardwoods
DA = Developed Areas (Roads, shale pits, recreation areas, etc…)

Landscape assessments

To practice ecosystem management, foresters, must assess the natural landscape in and around the management unit.

Local Watershed

To assess the land classification of the landscape surrounding the unit, a landscape analysis was conducted using the 2001 National Land Cover Database (NLCD). The analysis, of the NLCD, was conducted at the watershed level (twelve-digit Hydrologic Unit Coverage) and included the following watersheds: Headwaters East Branch Owego Creek, Upper East Branch Owego Creek, Middle East Branch Owego Creek, Culver Creek-Dudley Creek and Wilson Creek. There are approximately 71,000-acres located within the previously listed watersheds. The watersheds are about 62% forested, 31% agriculture, less than 1% water, 3% shrubland/grassland and about 3% developed. Table 4 shows a more specific land classification breakdown of the local landscape. See Appendix XVI for a map showing the land classification at the local landscape level.

Table 4. Land Classification of the Surrounding Landscape

Land Classification	Acres	Percent
Open Water	187	<1%
Forested Wetlands	2,430	3%
Emergent Herbaceous Wetlands	124	0%
Deciduous Forest	30,742	43%
Conifer Forest	3,567	5%
Deciduous/Conifer Mixed Forest	8,069	11%
Shrub/Scrub (includes seedling/sapling areas)	1,523	2%
Grassland/Herbaceous	532	1%
Pasture Hay	13,375	19%
Cultivated Crops	8,254	12%
Developed Areas	2,421	3%
Total	**71,224**	**100%**

The State Forests within the unit cover approximately 8% of the land area within the watersheds listed above. The State Forests account for about 13% of landscape's forests. The State Forests account for about 10% of the landscape's **deciduous** forest, 18% of the evergreen forests, and 20% of the mixed forests. The State Forests, within the Rockefeller Management Unit, account for less than 1% of the landscape's shrubland/grassland type. The State Forests account for about 2% of the woody wetlands within the landscape, about 16% of the emergent herbaceous wetlands, and about 5% of the open water.

Eco-Region

Summary

The Rockefeller Unit falls within the High Allegheny Plateau Ecoregion. The High Allegheny Plateau (HAP) Ecoregion (Zaremba and Anderson et. al. 2003) is located along the southern tier of New York and the northern tier of Pennsylvania. It includes a small portion of New Jersey. Well known features in HAP include the Catskills, The Shawangunks, The Kittatinny Ridge, The Poconos, Allegany State Park, Allegheny National Forest, and a large mass of Pennsylvania State-owned land.

The HAP ecoregion is defined by high elevation features at the northern end of the Appalachian Plateau. Most of the ecoregion is above 1,200 feet. The general land form of the area is mid-elevation hills separated by numerous narrow stream-cut valleys.

One of the main features of the ecoregion is an abundance of rivers and streams. The Delaware, Susquehanna, and Allegheny Rivers and their many tributaries cover the entire ecoregion. The Delaware River drains into Delaware Bay; the Susquehanna flows into the Chesapeake Bay; the Allegheny flows into the Ohio and eventually into the Mississippi. These three different drainages contribute to the high overall aquatic diversity in the ecoregion.

The northern and eastern portions of the ecoregion were glaciated; the southwest portion was not. Many northern species and communities reach their southern limit in HAP, while many southern species extend into the ecoregion but not beyond. Species and communities associated with glaciated landforms occur in the north and east; biodiversity associated with older substrate and deeper erosional soils occurs in the southwest.

Another prominent feature of the ecoregion is its currently low population density, although major population centers are nearby. There are 1.7 million people living in the 16.9 million acres of HAP (2000 census data). The largest city is Binghamton, New York at 47,000. Only 250,000 people in HAP live in cities over 10,000. The overall population trend in HAP indicates that people are moving out of the ecoregion with the notable exception of the areas within reach of New York City by major highways.

There are large and significant managed areas in HAP, including three large intact forested areas: the Catskills, the Allegheny National Forest/Allegany State Park complex, and the Pennsylvania state land in central PA.

Assessment

For detailed information about the eco-region assessment please see SPSFM page 65 at http://www.dec.ny.gov/lands/64567.html . The eco-region assessment reveals very similar results as the previously mentioned Local Watershed Assessment

E. Forest Resources

Cover Types

The forested portions of the unit are dominated by three broad **cover types**; **northern hardwoods**, northern hardwood-native **conifer** and conifer plantations. The previously mentioned cover types occupy the following area within the unit:

- Northern hardwoods occupy 3,228-acres or 58% of the area in a forested condition (includes **forested wetlands** dominated by northern hardwoods and wild apple/hawthorn cover types).
- Northern hardwood-native conifer occupies 1,252-acres or 22% of the area in a forested condition (includes forested wetlands that are dominated by conifers).
- Conifer plantations occupy 1,108-acres or 20% of the area in a forested condition (includes 455-acres of the cover type conifer plantations-northern hardwoods, which are conifer plantations with a high component of northern hardwoods).

The broad **northern hardwood** cover type contains more specific cover types such as sugar maple, sugar maple-beech-yellow birch, sugar maple-basswood, black cherry-maple, beech-sugar maple, and red maple (Eyre, ed., 1980). All of the specific northern hardwood cover types can be found to some degree within the unit although the sugar maple-beech-yellow birch type is most abundant. The specific cover types are named after the most abundant tree species (based on density).Trees within the unit that are associated with the northern hardwood cover type include: sugar maple, American beech, yellow birch, red maple, eastern hemlock, white

ash, black cherry, basswood, sweet birch, northern red oak, white pine, American elm, butternut, bitternut hickory, pin cherry, quaking aspen, and big-tooth aspen. Some common **understory** trees, shrubs, groundcovers, and vines associated with northern hardwoods include: striped maple, American hornbeam, eastern hop hornbeam, serviceberry, spicebush, flowering dogwood, witch-hazel, hobblebush, hawthorn, elderberries, blueberries, black berries, raspberries, viburnums, and grapes (Eyre, ed., 1980).

The northern hardwood-native conifer cover type on the unit consists of mostly northern hardwood-hemlock types although there are a few scattered northern hardwood-white pine stands. The northern hardwood-native conifer type consists of at least 10% northern hardwoods and at least a 10% conifer component.

Conifer plantations were established after the State acquired the properties within the unit. Conifer plantations were located on former agricultural lands to help stabilize soils, improve water quality, and provide timber for future generations. About 97% of the 1.4 million tree seedlings planted on the unit are conifer species. The following conifer species were planted on the unit (listed in order of abundance): Norway spruce, red pine, white spruce, Scots pine, white cedar, Japanese larch, Douglas fir, European larch, white pine, Jack pine, Dunkeld larch, Chihuahua pine and other pines. Norway spruce and red pine account for nearly 65 percent of the conifer plantings. Many plantations were planted with only one species while others were planted with two or more species.

Age Structure

The forested stands within the unit are currently dominated by an age-structure known as even-aged. Trees within an even-aged forest are about the same age and are established at about the same time usually after a disturbance (natural or silvicultural) or through **succession** an open field that has reverted to forest). Other age structures present within forested stands of the unit include uneven-aged (three or more distinct **age classes**) and two-aged (two distinct age-classes). The current age structures of stands within the unit, in a forested condition are as follows:

- Even-aged stands make-up about 80% or 4,496-acres of the forested area within the unit.
- Two-aged stands make-up about 19% or 1,054-acres of the forested area within the unit.
- Uneven-aged stands make-up about 1% or 83-acres of the forested area within the unit.

F. Wildlife Resources

The Rockefeller Management Unit and the landscape surrounding the unit contain a variety of wildlife including many species of mammals, birds, amphibians, reptiles, fishes, and invertebrates such as snails, mussels, insects, spiders and worms. Many resources were consulted to assess the variety of wildlife and wildlife habitat in and around the unit.

Birds

The 2007 New York State Breeding Bird Atlas is a comprehensive, statewide survey that reveals the distribution and protective status of breeding birds in New York State. The most recent data, for the Breeding Bird Atlas, was collected from 2000 to 2005. Six Breeding Bird Atlas blocks (3968B, 3969B, 3969D, 4068A, 4069A, & 4069C) were assessed to determine the possible, probable, and confirmed breeding bird species found on the unit and surrounding vicinity. The Breeding Bird Atlas confirmed or predicted that there are 108 bird species breeding on the unit or the surrounding vicinity. Appendix VI shows these species by common name, scientific name, breeding status, and protective status.

Most of the 108 bird species are protected by the New York State Environmental Conservation Law. One species was identified as threatened in New York State and four species of birds were identified as a species of special concern. The threatened species is the Northern harrier. The bird species of special concern contain three birds of prey and a grassland bird. The birds of prey include: Cooper's hawk, red-shouldered hawk and sharp-shinned hawk. The grasshopper sparrow is the grassland bird that is a species of special concern.

Amphibians & Reptiles

The Amphibian and Reptile Atlas Project was a ten-year survey, conducted by the DEC that was designed to document the geographic distribution of New York's amphibians and reptiles. The survey was conducted from 1990 to 1998. The project predicts 24 species of amphibians and reptiles on or in the vicinity of the Rockefeller Unit. A complete list of the 24 species by common name, scientific name, and protective status is found in Appendix VII.

Mammals

The New York **GAP** Mammal Hexagon Database was used to determine the distribution of mammals on or in the vicinity of the unit. Other sources were used to determine the protective status of these species. The sources include: the NYS DEC public website, the U.S. Fish and Wildlife Service website, and the New York Natural Heritage Program (NYNHP) website.

The New York State GAP confirmed or predicted 52 mammalian species on or in the vicinity of the unit. A complete list of mammals that were confirmed or predicted, on the unit or surrounding area, can be found in Appendix VIII.

The analysis revealed one bat species that is endangered. The Indiana Myotis or Indiana bat is predicted on or in the vicinity of the unit and is listed as endangered by both the State and the Federal government. This bat hibernates in caves or mines and forages near water. While in their summer range, the Indiana bat prefers to roost under the bark of living or dead trees.

Other mammals on or around the unit are considered unprotected or game species. Information on some of the more popular game species can be found below.

Fishes

Huckleberry Pond, previously stocked with brook trout, was last surveyed in 1972. At that time the dam was found to be leaking, and the recommendation was made to cease stocking trout due to warm temperatures and lack of depth. Huckleberry Pond was proposed to be stocked with largemouth bass and golden shiners. It is highly unlikely that the ponds on the unit support trout at this time; however, if they do support fish, the species present are probably warm water species such as bullhead, largemouth bass, golden shiners and sunfish.

Although some of the larger streams have had formal fisheries assessments since the 1930s, relatively little is known about the current status of the fish communities of most of the streams.

Fishing for wild brook trout on the small headwaters streams of the unit is likely limited due to the seasonal nature of the streams and warm water temperatures. Historically, protected status was given to streams where trout had been collected or were considered to be suitable for trout at the time the DEC Protection of Water Program began. Protected status can be attained for unprotected streams now supporting trout following an evaluation of the stream by DEC Bureau of Fisheries staff.

The East Branch of Owego Creek (C(ts)) borders the north side of the Griggs Gulf State Forest, before turning south (C(t)) into the Michigan Hill State Forest, where there is an angler parking area and a stocking location. A survey conducted in 1995 found brown trout, brook trout, central stoneroller, cutlips minnow, common shiner, spotfin shiner, bluntnose minnow, eastern blacknose dace, longnose dace, creek chub, fallfish, pearl dace, white sucker, northern hog sucker, margined madtom, rock bass, redbreast sunfish, smallmouth bass, tesselated darter, banded darter, shield darter, and mottled sculpin. The stream is stocked with about 5000 yearling brown trout and approximately 400 two year old brown trout.

The east side of Turkey Hill State Forest is drained by Dudley Creek (C(t)), which joins the Tioghnioga River in Lisle. Dudley Creek is stocked downstream of the unit with approximately 400 yearling brown trout. Two unnamed tributaries to Dudley Creek on the unit were surveyed in 2007, when brook trout, eastern blacknose dace, mottled sculpin, longnose dace, and creek chub were sampled.

Game Species

There are many game species located on or in the vicinity of the Rockefeller Management Unit. Game species are protected by regulated hunting/trapping seasons. Game species on or in the vicinity of the unit include amphibians, birds, and mammals. Game species contribute to the local economy and provide outdoor recreation. More details about some of the major game species can be found below.

White-tailed Deer

The Department manages deer populations in Wildlife Management Units (WMUs). The Rockefeller Unit falls within WMU number 7R. A Citizen Task Force (CTF), made-up of local

interest groups such as farmers, foresters, hunters, motorists, and the tourism industry, recommend a desired deer population to the Department. Deer populations are controlled with regulated hunting through the use of Deer Management Permits (DMP). DMPs are permits to harvest antlerless deer. Using the recommendations, of the CTF, Department biologists determine the number of DMPs to issue within a WMU.

Excessive deer populations can be detrimental to forested ecosystems. Deer can alter the forest **understory** by over-browsing. Over-browsing can completely eliminate certain tree, shrub, and herbaceous species. Over-browsing may eliminate the forest understory layer, which can cause increased nest predation to ground-nesting and shrub-nesting birds, alters food sources for a variety of wildlife, and can impact the future forest composition and **stand structure**.

A deer harvest assessment can be found in Appendix IX. This assessment contains deer harvest numbers by towns within the Rockefeller Unit.

Turkey

Once extirpated from New York State as a result of over-hunting and habitat loss, the wild turkey currently has a secure population throughout the State. Wild turkeys are protected as a game species and can be hunted during two seasons (Spring and Fall). Turkey harvest records can be found in Appendix X.

Pheasants

Pheasants have been released every year since about 2000, on Michigan Hill State Forest. There are about 47-acres that have been maintained in a grassland cover type on the forest. Mowing of this area was historically accomplished through hay sales and more recently accomplished through a cooperative effort between the Department of Environmental Conservation, Natural Resource Conservation Service, and the Southern Tier Chapter of Pheasants Forever. Mowing accomplished by the Pheasants Forever organization was conducted by mowing one third of the area every year.

The Southern Tier Chapter of Pheasants Forever has disbanded and the agreement with the Natural Resource Conservation Service has expired. The area has not been mowed in several years.

Furbearers

There are many species, on or in the vicinity of the Rockefeller Management Unit, that are considered furbearers. Furbearers, on or in the vicinity of the Rockefeller Management Unit that can be hunted and/or trapped include: American beaver, mink, common muskrat, short-tailed weasel, long-tailed weasel, red fox, gray fox, common raccoon, coyote, Virginia opossum, and the striped skunk. Appendix XI shows harvest records for the American beaver.

Important Habitat Features

The Rockefeller Management Unit and the surrounding landscape provide diverse habitats for a variety of wildlife species. The assessments conducted above, along with forest inventories, revealed important habitat features on the unit. The following habitat features must be considered to ensure a healthy diverse wildlife population:

Coniferous Forest Cover Type

As stated above, the coniferous (evergreen) forests, within the unit, account for about 18-percent of the coniferous forests and 20% of the Northern hardwood-conifer mixed forests in the landscape. Some birds require a conifer component as part of their habitat. Some of the conifer dependent birds, which are confirmed or predicted to be on or near the unit, include: purple finch, hermit thrush, yellow-rumped warbler, blackburnian warbler, magnolia warbler, black-throated green warbler, dark-eyed junco, golden-crowned kinglet, winter wren, and the blue-headed vireo.

There are also mammals that require and/or benefit from coniferous forests. Mammals that require and/or benefit from the coniferous forests, on the unit, include: the red squirrel, snowshoe hare, deer mouse, Southern red-backed vole, white-tailed deer, and Hoary bat.

Late Successional Forest Habitat

Late successional forest habitat is lacking within the unit and across the landscape. The following are late successional forest habitat characteristics that are being considered to ensure a healthy diverse wildlife population:

Continuous Mature Forest Canopy

The Cooper's hawk, red-shouldered hawk, and sharp-shinned hawk do have variations in their habitat requirements although they all require a continuous **mature** forest canopy. Other bird species found on or near the unit that requires a continuous mature forest canopy are, pileated woodpecker, common raven, and broad-winged hawk.

Mammals that require a continuous mature forest canopy include: black bear, bobcat, fisher, and Northern flying squirrel.

Multi-Layered Forest Canopy Structure

There are many bird species on or near the unit that require a multi-layered forest canopy structure as a habitat requirement. Some of the birds that require a multi-layered forest canopy structure are: the golden-crowned kinglet, hermit thrush, black-throated green warbler, yellow-rumped warbler, ovenbird, red-eyed vireo, warbling vireo, black-and-white warbler, least flycatcher, scarlet tanager, yellow-throated vireo, black-throated blue warbler, Canada warbler, American redstart, veery, and common yellowthroat.

Forest Landscape Connectivity

With the continued threat of forest **fragmentation** (breaking the forest up into islands across the landscape), it important to secure connections between large unfragmented forested landscapes (forest matrix block) to minimize the effect of non-contiguous forest cover on connectivity and the

movement and dispersal of animals in the landscape as described in the *Strategic Plan for State Forest Management* . The *Strategic Plan for State Forest Management* can be accessed by using the following link: http://www.dec.ny.gov/lands/64567.html . Least Cost Path (LCP) **corridor** locations were predicted and identified in the *Strategic Plan for State Forest Management*, beginning on page 88. LCP corridors are two miles wide, connect large unfragmented forests and represent the most favorable dispersal path for forested species. About 72 percent of the unit falls within an identified LCP corridor.

Cavity Trees/Snags/Course Woody Material

Many wildlife species use **cavity trees**, **snags,** or **Coarse Woody Material (CWM)** for perching, feeding, nesting, and/or roosting. Some wildlife use live cavity trees while others use dead cavity trees.

Some of the bird species, on or near the unit, that use cavity trees include: red-breasted nuthatch, brown creeper, Eastern bluebird, house wren, tree swallow, American kestrel, barred owl, black-capped chickadee, pileated woodpecker, tufted titmouse, downy woodpecker, great-crested flycatcher, Northern flicker, white-breasted nuthatch, hairy woodpecker, winter wren and wood duck.

Mammals in or around the unit that use cavity trees include: Indiana bat, little brown bat, silver-haired bat, big brown bat, Virginia opossum, gray squirrel, Northern flying squirrel, porcupine, gray fox, raccoon, fisher, short-tailed weasel, and long-tailed weasel.

Snags may have cavities or they may not. Snags without cavities are used mostly as perches or foraging sites. Birds on or near the unit that utilize snags include: sharp-shinned hawk, Cooper's hawk, broad-winged hawk, red-tailed hawk, turkey vulture, American kestrel, brown creeper, great blue heron, green heron, great-horned owl, pileated woodpecker, and barred owl.

Mammalian species that may den in CWM include: the Virginia opossum, Eastern chipmunk, Southern red-backed vole, gray fox, black bear, fisher, short-tailed weasel, and long-tailed weasel, mink, striped skunk, and bobcat. CWM is home to many wood-decaying insects that are used as a food source for many birds, mammals, amphibians, and reptiles. Many species of amphibians and reptiles live in or under the moist, soft, rotting wood of CWM.

Wetlands/Riparian Areas

Although all wildlife needs water to survive, there are many wildlife species that use water as their primary habitat. Wildlife uses all types of wetlands or **riparian areas** including spring seeps, vernal pools, swamps, bogs, ponds, and streams. The birds on or near the unit that utilize water as their primary habitat include: the Canada goose, great blue heron, green heron, mallard, wood duck, belted kingfisher, swamp sparrow, alder flycatcher, willow flycatcher, Northern waterthrush and common yellowthroat.

Mammals on or in the vicinity of the unit that use water as part of their primary habitat include: the American beaver, common muskrat, Southern bog lemming, big brown bat, little brown bat, Northern myotis, Indiana myotis, silver-haired bat, star-nosed mole, raccoon, mink, long-tailed weasel, and river otter.

Nearly all the amphibians and reptiles, on or near the unit, require water for at least part of their life cycles.

Early Successional Habitat
Early successional habitat includes grasslands, shrublands, and seedling/sapling sized forested stands. Early successional habitat, in the area is in decline as a result of change in the amount of agriculture lands and development. Many farms are no longer operating and the open land associated with the farms is reverting to forests and being developed.

Birds on or in the vicinity of the unit that require a grassland type habitat are: the savannah sparrow, grasshopper sparrow, Northern harrier, Eastern meadowlark and bobolink.

If grasslands are not maintained (mowed) as grasslands, they will revert to forest through a process known as succession. Shrubs and **pioneer** tree species will be the first woody residents to become established--these shrubs and seedling/sapling sized trees provide habitat to a variety of wildlife species. This early successional habitat is used by a number of bird species found in and around the unit. The bird species include: the ruffed grouse, Northern cardinal, yellow-rumped warbler, Nashville warbler, blue-winged warbler, mourning warbler, yellow warbler, prairie warbler, American crow, field sparrow, song sparrow, chipping sparrow, indigo bunting, Eastern bluebird, mourning dove, red-tailed hawk, turkey vulture, American goldfinch, American robin, American woodcock, cedar waxwing, common grackle, Eastern towhee, gray catbird, house wren, Baltimore oriole, and Eastern phoebe.

Many mammals also depend on early successional habitat for food and cover. Mammals on or in the vicinity of the unit that utilize early successional habitat include the red fox, gray fox, white-tailed deer, Eastern cottontail, woodland vole, Eastern chipmunk, woodchuck, Southern bog lemming, and meadow jumping mouse.

G. Significant Plants, Wildlife and Ecological Communities

The presence of at-risk species and communities on the Rockefeller Unit and in the surrounding landscape has been investigated to inform appropriate management actions and protections. This investigation was conducted in development of this UMP and the associated inventory of State Forest resources. A more focused assessment will be conducted before undertaking specific management activities in sensitive **sites.** Appropriate protections may include reserving areas from management activity or mitigating impacts of activity. For more information on protection of at-risk species, please see SPSFM page 115 at http://www.dec.ny.gov/lands/64567.html.

According to the New York Natural Heritage Program there are no known element occurrences or documented, observed locations of rare plants, rare animals, rare or significant ecological communities, and multi-species animal concentration areas on the unit.

Block Data from the New York State Breeding Bird Atlas database indicate that one threatened species and four species of Special Concern have been observed within the area covered by the six Breeding Bird Atlas Blocks that cover the unit. The threatened species is the Northern Harrier, which is a possible breeder. The four species of Special Concern and their breeding status are: the grasshopper sparrow, which is a possible breeder; the Cooper's hawk is a probable breeder; and sharp-shinned hawks and red-shouldered hawks are confirmed breeders. Special Concern Species are those **native species** which are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in New York State (NYSDEC, 2007).

According to the New York State Comprehensive Wildlife Conservation Strategy (CWCS), twenty-three species on or in the vicinity of the unit are classified as **Species of Greatest Conservation Need (SGCN)**. The SGCN on or in the vicinity of the unit include: birds, reptiles, amphibians, and mammals.

See Appendices V through VIII for complete list of birds, reptiles, amphibians, and mammals on the unit. These appendices provide the common and scientific names, breeding status (birds), whether the mammals are confirmed or predicted on the unit, protective status, and whether or not the species are a SGCN.

H. Visual Resources

The aesthetic quality of State Forests is considered in management activity across the unit. For information on the protection of visual resources, please see SPSFM page 127 at http://www.dec.ny.gov/lands/64567.html.

I. Historic and Cultural Resources

History of the unit

Before, European settlement, the region was part of the Six Nations Iroquois Confederacy. Tioga County was once home to the Cayuga and Onondaga tribes of the Iroquois confederacy. In 1779, General John Sullivan led a successful campaign against the Iroquois and British loyalists in the Tioga county area. After returning home, the men of Sullivan's army told of the wonderful farmlands that the Indians farmed in the Tioga county area. Many of the soldiers returned to the region with their families and friends to work the land. European settlement in the region began in the late eighteen century.

Most of the unit is in the town of Richford, which got its name is from an early settler Ezekiel Rich. The town was formed from Berkshire, first as the town of Arlington in 1831. Its name was changed by an act of legislature in 1832, the same year the town was officially organized. In the

beginning, most of the businesses located in Richford dealt with lumber. Other businesses included gristmills and an assortment of shops that made everything from harnesses to hats, but most of the people were farmers.

The name of the unit was derived from the fact that nearly 12% of the unit, 712-acres was previously owned by the Rockefeller family. In 1941, 199-acres of the John D. Rockefeller Jr. property were acquired by the State and added to Grigg's Gulf State Forest. Then in 1980, 513-acres of the Nelson A. Rockefeller Estate was gifted to the State and added to Michigan Hill State Forest. This estate included the birth place of John D. Rockefeller Sr. who was a wealthy businessman and philanthropist.

John D. Rockefeller was born on July 8, 1839 in a small cabin on Rockefeller road in the Town of Richford. The family lived there until moving to Owego in 1851 and then to Cleveland, Ohio in 1853. As a student Rockefeller was average, however he excelled at mental arithmetic and was able to solve difficult arithmetic problems in his head, a talent that would be very useful to him throughout his business career. He started his career in 1855 as an assistant bookkeeper with a merchant and produce shipping company. In 1859 he and a partner started a business as commission merchants in grain, hay, meats and miscellaneous goods. In 1865 he bought an oil refining business and proceeded to grow his oil business until it was the largest refinery in the world. Shortly before he retired in 1897, Rockefeller was one of the richest men in the world. Upon his retirement, his son John D. Rockefeller Jr., also a businessman and philanthropist, helped to manage the family fortune. Additionally, his grandson, Nelson A. Rockefeller became the 49th Governor of New York State and the 41st Vice president of the United States under President Gerald Ford.

In addition to acquiring the Rockefeller properties, New York State purchased Beaver Dam State Forest (Broome-Tioga RA #2) between 1939 and 1942, totaling 1,058-acres. Additional purchases in 1965 and 1980 brought the forest to 1,148-acres.

Grigg's Gulf State Forest (Cortland RA #11) was purchased between 1933 and 1962 and totaled 2,263-acres. Additional purchases in 1983 and 1988 brought the forest to 2,365-acres.

Turkey Hill State Forest (Tioga RA #5) was purchased between 1938 and 1962 and totaled 1,092-acres. An additional purchase in 1985 brought the forest to 1,108-acres.

Michigan Hill State Forest (Tioga RA #8) was purchased in 1963 and 1964 and totaled 667-acres. The 513-acre Rockefeller gift in 1980 brought the forest to its current size of 1,180-acres.

Soil erosion was a serious problem on these 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-125 was established in Slaterville Springs and planted trees on the State Forests in the area.

Table 5: Summary of Tree Planting in the Rockefeller Unit.

State Forest	Planting Years	Acres Planted	# Trees Planted
Beaver Dam	1940-1985	264	213,650
Grigg's Gulf	1935-1953	662	527,475
Michigan Hill	1964-1993	186	159,735
Turkey Hill	1939-1962	576	502,180
Unit Total		**1,688**	**1,403,040**

CCC Camp S-125 planted 810,405 of the trees in the unit. This was a monumental task since each tree was planted by hand. 102,535 trees were planted by hand by young men from either Camp MacCormick or Camp Pharsalia correctional facilities. The remaining trees were planted by DEC work crews some by hand and some by tractor with slit attachment.

Inventory of Resources

The term cultural resource encompasses a number of categories of human created assets including structures, archaeological sites and related artifacts. It also may denote areas of significant importance to local and/or tribal communities. For more information on protection of historic and **cultural resources**, please see SPSFM page 139 at http://www.dec.ny.gov/lands/64567.html.

Archaeological sites are, simply put, any location where materials (artifacts, ecofacts) or modifications to the landscape reveal evidence of past human activity. This includes a wide range of resources ranging from pre-contact Native American camps and villages to Euroamerican homesteads and industrial sites. Such sites can be entirely sub-surface, or can contain above ground remains such as foundation walls or earthwork features.
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.

Although no inventoried resources are located within the unit, the birth place of John D. Rockefeller is located on Rockefeller road in the town of Richford. In addition, there are 23 sites

with stone foundations, 3 stacked stone cisterns, 1 large rock pile and other structures and artifacts that provide evidence about 19th and 20th century settlement on the unit.

Archaeological Site Protection

The archaeological sites located within this land 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 and Section 233 of Education Law. No actions that would impact these resources are proposed in this Unit Management Plan. Should any such actions be proposed in the future they will be reviewed in accordance with 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.

Archaeological Research

The archaeological sites located on this land unit as well as additional unrecorded sites that may exist on the property will be made available for appropriate research. All 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 different research questions.

J. Real Property

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 enclosures and proposal maps referenced in this section are on file at both the Syracuse and Cortland DEC Division of Lands and Forests offices.

Boundary Lines

There are over 54-miles of boundary lines on the unit, but because of shared boundary lines between forests, there is less than 49 miles to maintain. The following shows the length of boundary lines for each State Forest in the unit:

- Beaver Dam State Forest 7.93-miles
- Grigg's Gulf State Forest 18.26-miles
- Turkey Hill State Forest 15.46-miles
- Michigan Hill State Forest 12.72-miles

For more information on boundary line maintenance, please see SPSFM page 153 at http://www.dec.ny.gov/lands/64567.html .

Outstanding Survey Requests

Grigg's Gulf State Forest

Survey No. 7-12-543 (1997), a report involving the east line of Proposal O north of Griggs Gulf Road. A field inspection found a probable trespass involving a chicken coop, garden and clothes line. No further work as been done.

Michigan Hill State Forest

Survey No. 7-54-139 (1978, 1982) – Suspected trespass reported on the north line of Pro. A on the east side of NYS Route 38. Some research and a field inspection were done in 1978. No further work has been done.

Boundary Line Information

Beaver Dam State Forest

The state's survey maps and the USGS/NYSDOT quadrangles for the area label the location of the county line between Broome and Tioga Counties as approximate or indefinite.

Pro. A – The state's survey map and deed indicate that Proposal A is located in both Broome and Tioga Counties. A deed for the proposal is on file in Broome County, but no deed has been found on file in Tioga County.

Grigg's Gulf State Forest

Pro. W – The west line of Pro. W is generally mapped and described as following a road (1948) but one course on the southern portion of the line departs from the road leaving a section of road entirely on private land. The road doesn't show on atlas maps.

Harford/Lapeer Town Line – Map 4189 has a note indicating there is a discrepancy between the town line location as taken from deeds and the assessment roll (1933) and the line's description in the laws of NYS. According to map 4189, the deeds place the line about 587 feet west of the description in law.

Turkey Hill State Forest

Pro. A – Bradley and Marie Gormel and the State of New York entered into a boundary line agreement dated 8/26/1969 and recorded in 343/235. The agreed upon boundary is shown on map 6916 and generally moved the east line of Proposal A westerly to follow existing fencing south of NYS Route 79.

Pro. A – Resurveys in 1979 and 1982 found fencing and pasture north of NYS Route 79 encroaching on the east line of Proposal A. A recent inspection shows that the fence is no longer maintained.

Pro. A – In 1966 a 0.19-acre portion of Proposal A on the south side of NYS Route 79 was transferred to the NYSDPW, now NYSDOT. The Transfer of Jurisdiction (TOJ) is shown on DOT Map 38-T as Parcel 48.

Pro. F – The deed for Proposal F excepts 1.09-acres from the surveyed area. The exception was conveyed to Tioga County for highway use and is recorded in 212/103.

Pro. H – A 1968 resurvey marked and monumented the east line of Proposal H, but showed it departing from the lot line, which conflicted with the previous state survey shown on map 4832.

Michigan Hill State Forest

Pro. A – Map 7386 indicates the railroad line passing through Proposal A has a 66 foot wide right-of-way. A 1976 survey of lines west of NYS Route 38 determined the location of one portion of the line to be 183 feet south of where it was located by a previous state survey.

Exceptions and Deeded Restrictions

Beaver Dam State Forest

Pro. D – The abstract contains copies of two oil and gas leases to the Penn-York Natural Gas Corporation, one dated 6/27/1931 and recorded 8/11/1933 in 208/85 and the other dated 6/18/1931 and recorded 8/11/1931 in 208/104. The terms are for 20 years or so long as oil or gas are produced.

Pro. F – The grantor in the deed into the State reserved a right-of-way along the west side of parcel 2 of that deed. The ROW affects the 24.44 acre northwesterly portion of Proposal F and runs along the west boundary line as shown on map 4137.

Pro. G – A letter in our files indicates that the oil and gas lease recorded 10/25/1930 in 200/570 and assigned in 203/392 was terminated by cancellation recorded in 206/564.

Pro. H – The abstract contains a copy of an oil and gas lease to the Penn-York National Gas Corporation dated 7/27/1931 and recorded 8/28/1931 in 208/253. The term was for 20 years or so long as oil or gas are produced.

Pro. K – A note in the abstract indicates that the oil and gas lease recorded 10/25/1930 in 200/570 and assigned in 203/392 was cancelled.

Pro. L – The abstract contains copies of two easements granted to the Chenango and Unadilla Telephone Corporation for telephone and telegraph lines along the highways or over other property, with rights including trimming and cutting to keep lines clear by 48” and to install guy wires. One easement is dated 9/25/1952 and was recorded on 5/25/1953 in 259/47. The other is dated 3/14/1955 and was recorded on 3/8/1956 in 259/536.

Grigg’s Gulf State Forest

Pro. A, B, M, N, O, Q –In 1963 a **Temporary Revocable Permit (TRP)** was granted to the Texas Eastern Transmission Corporation for the construction and maintenance of a

petroleum products pipeline to follow the route of NYSEG's "power line right-of-way" through these same proposals. That TRP covered lands at nine State Forests. Some terms of the TRP are that a maximum width of 50 feet will be permitted for construction, a maximum width of 30 feet will be permitted for normal operation and maintenance, Texas Eastern shall mow the 30 foot width once each year during July or August and the TRP shall expire if the pipeline is abandoned. The pipeline is currently operated by Enterprise Products Partners L.P.

As a result of a consent order in 2013, the previously mentioned TRP, which was issued to Texas Eastern Transmission Corporation in 1963 was extinguished and the current (Enterprise Products Partners L.P.) and future operators of the pipeline shall conduct mowing and other maintenance under an annual TRP.

Pro. E – The ROW reserved by the grantor in the deed into the State was merged into state title by the acquisition of Proposal V.

Pro. H – The ROW reserved by the grantor in the deed into the State was merged into state title by the acquisition of Proposals CC and FF.

Pro. T – Proposal T was subject to two ROWs at the time of acquisition, but they were merged into state title by the acquisition of Proposals U and HH. At the time of its acquisition in 1941, Proposal T was also subject to the life use of Sarah Tucker.

Pro. W – The abstract indicates the proposal is subject to a NYSEG pole line easement dated 5/2/1946 and recorded 7/25/1946 in 238/111 with rights to trim in order to have the wires clear by 15 feet.

Pro. CC, FF – The deeds into the State say that they are subject to the rights, if any, of the Oneida Indians of Wisconsin, Inc. in the pending (1988) "Indian Land Claims Action."

Old Oil and Gas Leases – The abstracts for Proposals A, C, D, E, F G, H, I, L, N, O, P, R, U and FF contain copies of oil and gas leases granted to the Penn-York Natural Gas Corporation, Republic Light, Heat & Power Company, Inc. or some individuals in 1930-31. The leases were for either 10 or 20 years or so long as oil or gas were produced. The recording information, additional terms, etc. are available from our files.

Turkey Hill State Forest

Pro. D, G, L – The abstracts for Proposals D, G and L contain copies of oil and gas leases granted to the Penn-York Natural Gas Corporation in 1931. The leases were for 20 years or so long as oil or gas were produced. A note in the file for Proposal L states that there were no oil and gas operations present at the time of its acquisition in 1962. The recording information, additional terms, etc. are available from our files.

Pro. L – The proposal may be subject to a pole line easement granted to NYSEG by a previous owner. The easement is dated 5/20/1946 and is recorded at 238/43. No pole line was present on the proposal when it was acquired in 1962.

Michigan Hill State Forest

Pro. A – Proposal A is subject to a 100 foot wide easement conveyed to the Binghamton Light, Heat & Power Company dated 11/1/1926 and recorded in 193/262. NYSEG acquired all property of Binghamton Light, Heat & Power by deed dated 2/28/1930 and recorded in 196/533. NYSEG acquired a tree cutting easement 50 feet each side of the power line centerline established by 193/262 through an additional easement dated 12/28/1959 and recorded in 292/325. A power line is present on Proposal A along the west side of NYS Route 38.

Pro. B – Proposal B may be subject to three easements included in the abstract of title. NYSEG acquired a pole line easement dated 7/23/1947 and recorded 9/17/1947 in 238/513. The New York Transit Company acquired a pipe line easement dated 9/27/1951 and recorded 11/2/1951 in 248/552. The Chenango and Unadilla Telephone Corporation acquired an easement for telephone lines dated 10/13/1952 and recorded 5/25/1958 in 259/51. When Proposal B was acquired in 1962, no utility lines or pipe lines were present and the lines may be located on the remainder of the larger property that Proposal B was divided from.

Pro. D, E – The New York Transit Company, Inc. acquired easements for a pipeline crossing the lands that are now Proposal E by easements dated 9/6/1951 and recorded 11/2/1951 in 248/553, dated 8/22/1951 and recorded 9/19/1951 in 248/539, dated 9/29/1952 and recorded in 10/27/1952 in 256/431, and dated 8/2/1951 and recorded 8/27/1951 in 248/535. The pipeline also crosses Proposal D and was present in 1962 when the parcel was acquired, but our files lack information about the easement affecting that proposal. Our files also lack details about the terms of the easements over Pro. E. Correspondence in our files indicates that the Buckeye Pipeline Company was the operator of the line in 2003 and was following a 3 year cycle for mowing, brushing or **herbicide** use and a 9 year cycle for side trimming of the ROW.

Proposals D and E are also subject to a NYSEG pole line easement and a Chenango and Unadilla Telephone Corporation easement for communication lines. Office records are not sufficient to determine where the lines are located, but the easement rights probably could be exercised on either side of Michigan Hill Road. The NYSEG easements are dated 12/22/1947 and recorded 3/13/1948 in 244/69, dated 6/20/1947 and recorded 9/17/1947 in 238/517, dated 7/15/1947 and recorded 9/24/1947 in 238/522, dated 6/20/1947 and recorded 9/17/1947 in 238/520, dated 12/9/1947 and recorded 2/11/1948 in 244/49, and dated 9/7/1947 and recorded 9/17/1947 in 238/518. The Chenango and Unadilla Telephone Corp. easements are dated 9/19/1973 and recorded 1/2/1974 in 364/719, dated 9/25/1952 and recorded 5/25/1953 in 259/56, date

unknown and recorded 5/25/1953 in 259/49, and dated 10/14/1952 and recorded 5/25/1953 in 259/59. Our files lack details of the easements.

Pro. E – When it was acquired in 1980 Proposal E was subject to life use over a 2/3-acre parcel. The life estate was released in 1985 as recorded in 409/335.

Pro, E – Proposal E was a gift and the deed includes a clause stating that "…the premises shall forever be appropriated to and dedicated exclusively for public park, recreational or similar non-commercial use, or a combination of such uses, including without limitation, any use permitted by section 9-0501(1) of the Environmental Conservation Law."

Pro. E – The abstract includes a copy of an oil and gas lease to Republic Light, Heat & Power Company, Inc. dated 8/14/1930 and recorded 10/25/1930 in 200/582. The lease was assigned to Penn-York Natural Gas Corporation in 1931 as recorded in 203/292. The lease had a term of 10 years or so long as oil or gas was produced. No oil or gas operations were present in 1980 when the lands were acquired.

Land Acquisition

Acquisition of property from willing sellers on the landscape surrounding the unit may be considered in the following priority areas:

- in-holdings and adjoining properties that would reduce management costs and benefit resource protection and public access goals
- the mineral estate wherever it is split from a State Forest tract
- properties within identified matrix forest blocks and connectivity corridors
- forested lands in underserved areas of the state
- forested lands in areas that are in need of watershed protection

For more information on land acquisition, please see SPSFM page 147 at http://www.dec.ny.gov/lands/64567.html.

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.

K. Infrastructure

Roads

The State Forest transportation system provides for both public and administrative access to the unit. Roads are constructed to standards that will provide reasonably safe travel and to keep maintenance costs at a minimum. There are three types of roads providing different levels of access, depending on the standards to which they are constructed.

Public Forest Access Roads (PFAR) are 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. There are 4.4-miles of PFARs on the unit. The PFARs contain 52 culverts ranging in size from 16 to 84 inches in diameter.

Haul Roads are permanent, unpaved roads which are not designed for all weather travel, but may have hardened or improved surfaces with artificial drainage. They are constructed according to **Best Management Practices (BMPs)** 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. There are 1.6-miles of haul roads on the unit.

Access Trails are 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 constructed for the seasonal removal of forest products by skidding to **landings** or other staging areas. They are constructed according to BMPs, these trails may be used to support other management objectives such as recreational access corridors. There are numerous miles of access trails on the unit.

State and town roads also pass through or border State Forests within the unit. There are about 0.8-miles of roads that are maintained by the Department of Transportation. There are about 6-miles of town roads that are plowed during the winter. In addition to the 6-miles of year-round town roads, there are about 1.1-miles of seasonal-use town roads on the unit.

For a complete list of roads on the unit see Appendix XII.

There are six former town roads or portions of town roads on the unit that are confirmed or presumed to be abandoned. The abandonment status of these former roads was determined using a number of methods including comparing various maps, statements by Town Highway Superintendents, and general knowledge of town maintenance and use by the general public.

Roads that were located on old atlas maps, but not on NYSDOT quadrangle maps and/or other highway maps are assumed to be abandoned. These roads have not been recently maintained by the townships and many of them are impassible due to vegetative growth and/or severe erosion.

Other Infrastructure

There are many facilities on the unit that require maintenance. See Appendix XIII for a complete list of facilities that require maintenance. While the DEC maintains most of these facilities, others are maintained by Volunteer Stewardship Program (VSP) groups, timber harvesting contractors, hay/mowing contractors, and **Temporary Revocable Permit (TRP)** holders.

For more information on infrastructure policies, please see SPSFM page 157 at http://www.dec.ny.gov/lands/64567.html.

L. Formal and Informal Partnerships and Agreements

Conservation and stewardship partnerships are increasingly important, especially for public land management agencies. Considering the fact that resources will always be limited, collaboration across political, social, organizational and professional boundaries is necessary for long-term success and sustainability. Encouraging the development of cooperative and collaborative relationships is and can be done through DEC's Volunteer Stewardship Program, which is authorized by Section 9-0113 of the Environmental Conservation Law. Volunteerism is the cornerstone of this program. It is a means for completing work that helps preserve, maintain and enhance natural resources at minimum cost to the state. Individuals and groups interested in providing volunteer services are afforded a formal opportunity to propose activities that meet management needs of state-owned natural resources. Such activities may involve remediating vandalism, picking up litter and trash, establishing or maintaining access or nature trails, providing interpretive services for school groups and other citizens, managing fish and wildlife habitats, and otherwise providing positive benefits to the natural resource.. For more information on these and other partnerships, please see SPSFM page 181 at http://www.dec.ny.gov/lands/64567.html.

There is currently one VSP agreement between the DEC and a recreation-based group for trails within the unit. The existing agreement is between the DEC and the Ridge Riders Snowmobile Club.

M. Recreational Resources

State Forests offer opportunities for recreational activities that are best enjoyed in remote, relatively undisturbed areas that require minimal facility development or site disturbance (DEC, 2001). Recreation is a major component of planning for the sustainable use of State Forests on this unit. DEC accommodates diverse pursuits such as snowmobiling, horseback riding, hunting, trapping, fishing, picnicking, cross-country skiing, snowshoeing, bird watching, **geocaching**, mountain biking and hiking. Outdoor recreation opportunities are an important factor in quality of life. We often learn to appreciate and understand nature by participating in these activities. However, repeated use of the land for recreational purposes can have significant impacts. For further discussion of recreational issues and policies, please see SPSFM page 187 at http://www.dec.ny.gov/lands/64567.html. The following section includes an inventory of recreational opportunities available on this unit as well as a description of use and demand for each activity. Recreational maps and geographic data are available at DEC's Mapping Gateway http://www.dec.ny.gov/pubs/212.html in Google format or in the State Lands Interactive Mapper.

Public Use Surveys

Appendix I is a summary of public information and comments received at a public scoping meeting held on Thursday, February 23, 2012 at the DEC office in Cortland.

Wildlife-related Recreation

Hunting

Hunting, both big and small game is one of the most popular recreational activities on this unit. As a result of active forest management on the unit, there is good diversity of habitat types for many species of wildlife including game species such as ruffed grouse, white-tailed deer and wild turkey. Many of these game species are present in high numbers resulting in high levels of big and small game hunting on this unit.

Additionally, there are 47-acres of fields that are managed as pheasant habitat by periodic mowing. This area is stocked with pheasants annually from the Reynolds Game Farm. This pheasant management area is one of the few places in the area that provide pheasant hunting on public land. As a result, pheasant hunting occurs at high levels on this unit.

Fishing

The only formal facility for fishing is the fisherman access site off of NYS Route 38 on Michigan Hill State Forest. The site provides access to the East Branch of Owego Creek which is a high quality trout stream that is stocked by the DEC with brown trout every spring.

Several of the tributaries of the East Branch of Owego Creek 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's 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.

There are other streams on the unit that 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's 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.

The 2-acre Huckleberry pond on Grigg's Gulf State Forest receives low to moderate levels of fishing for pan fish and bullheads.

Trapping

The diversity of habitat types provides good opportunities for trapping of beaver, coyote, fox, mink and muskrat. However, frequency of trapping in recent years follows the highs and lows in fur prices. As a result trapping occurs at relatively low levels on the unit.

Viewing Natural Resources

There are excellent opportunities to view natural resources given the diversity of habitat types. However, viewing natural resources occurs at relatively low levels on the unit.

Camping
There are no formal camping areas on the unit. However, camping is a recreational activity that occurs in the unit at low to moderate levels.

Water-based Recreation
There are no formal facilities for swimming, non-motorized boating, canoeing and kayaking and motorized boating. Swimming, non-motorized boating, canoeing and kayaking likely do occur on the unit but at very low levels of use.

Trail-based Recreation
There is very little trail-based recreation on this unit. There are 7-miles of snowmobile trails that run through all four State Forests. During winters with adequate amounts of snow, the snowmobile trail receives moderate to high levels of use.

Additionally, there is a designated ATV route for people with mobility disabilities and an approved DEC permit (CP-3), located on Beaver Dam State Forest (Broome-Tioga RA #2). The route is 0.6-miles in length and offers hunting and nature observation opportunities. The ATV route for people with mobility disabilities receives very little to no use. There is adequate parking available for the ATV route.

Other trail-based recreation such as cross country skiing, hiking and horseback riding do occur on the unit, but at relatively low levels.

Other Recreational Activities
Target Shooting
There are no designated target shooting ranges on the unit. However target shooting does occur at moderate levels on the unit mainly at shale pits, **log landings** and at the end of dead end roads. Breakable targets are prohibited on state lands.

Overall Assessment of the Level of Recreational Development
It is important that recreational use is not allowed to incrementally increase to an unsustainable level. DEC must consider the impact on the unit from increased use on other management goals or other recreational uses. DEC must consider the full range of impacts, including long-term maintenance and the balancing of multiple uses.

The overall level of recreation on the unit is relatively low. Therefore user conflicts as well as environmental impacts are minimal. Illegal ATV and 4X4 off-road vehicle use cause user conflicts and adverse environmental impacts on the unit.

The following is a summary of comments regarding recreation that were expressed at a public scoping session held at NYSDEC Office in Cortland NY on February 23, 2012 and through written correspondence.

- The unit should remain mainly for hunting.
- Develop some through trails for hiking.
- Camping should not be allowed on the unit.

- Camping should be allowed on the unit.
- I support science based recreation.
- ATVs, dirt bikes and other off-highway vehicles should not be allowed on the unit.
- Would like to have ATV trails on the unit.
- Expand the pheasant release program on the unit.
- Provide better access for cross country skiing, hiking, horseback riding, hunting and snowmobiling.
- Consider a Volunteer Stewardship Program agreement for trail maintenance.

N. 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.

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. A federal agency known as the Access Board has issued the ADA Accessibility Guidelines (ADAAG) for this purpose.

An assessment was conducted, in the development of this UMP, to determine appropriate accessibility enhancements which may include developing new or upgrading of existing facilities or assets. The Department is not required to make each of its existing facilities and assets accessible so long as the Department's programs, taken as a whole, are accessible. New

facilities, assets and accessibility improvements to existing facilities or assets proposed in this UMP are identified in the Proposed Management Actions section.

For copies of any of the above mentioned laws or guidelines relating to accessibility, contact Carole Fraser, DEC Universal Access Program Coordinator at 518-402-9437 or carole.fraser@dec.ny.gov

O. Mineral Resources

Oil, Gas and Solution Exploration and Development

Title 11 Section 23-1101 of the Environmental Conservation 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.

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 these areas and creation of open space to 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.

New York State manages the surface estate through the NYS DEC Division of Lands and Forests and the Division of Fish, Wildlife and Marine Resources and the mineral estate through the NYS DEC Division of Mineral Resources and the Office of General Services.

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 evaluates 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.

New York State manages the surface estate through the NYS DEC Division of Lands and Forests and the Division of Fish, Wildlife and Marine Resources and the mineral estate through the NYS DEC Division of Mineral Resources and the Office of General Services.

Historical Drilling & 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.

There have been a total of five wells drilled near the UMP area (however not on properties in the unit) in the town of Harford. These wells are all within 1,400 feet of each other and located

approximately 2,500 feet to the west of Grigg's Gulf State Forest. All five of these wells are located within the footprint of the Enterprise Products LPG storage operation. Storage of liquefied petroleum gas (LPG) started at this facility in the early 1950s. LPG is stored in caverns located in the bedded salt deposits of the Syracuse Formation of the Salina Group. There are currently two active storage caverns and one that was abandoned in the late 1980s. Four of the wells were or are currently associated with the active gas storage field. The other well was drilled as a gas development well. General information regarding these wells is provided in the paragraphs below:

The Woodard #1 well was drilled by Penn-York Natural Gas Company in 1932 targeting the Oriskany Sandstone with a total depth of 2,786 feet with the intention of producing natural gas. The well was a dry hole and subsequently abandoned. In 2004, the operator of the LPG facility, New York LP Gas Storage, Inc. (NYLPG) plugged and abandoned the Woodard #1 in accordance with DEC regulations.

The Overbaugh #1 and the Harford #2 wells were drilled by Suburban Propane Storage Company in 1952 and 1954 respectively for the purpose of LPG storage. In 1989, it was determined that the cavern associated with the Harford #2 well was no longer conducive to storing LPG and this cavern was decommissioned at that time. The Harford #2 well was subsequently plugged and abandoned in 2002 in accordance with DEC regulations. The Overbaugh #1 and its associated cavern are currently used by Enterprise Products to store LPG.

The Harford #3 well was drilled by The Atlantic Richfield Company in 1969 to a total depth of 3,400 feet for LPG storage. This well and its associated cavern are currently used by Enterprise Products to store LPG.

The ARCO Storage D-1 well was drilled by The Atlantic Richfield Company in 1978 to a total depth of 2,886 feet with the intention of injecting excess brine from the LPG storage operation into the Hamilton, Tristates and Helderberg shales, limestones and dolostones. Tests determined that the low permeability in these formations precluded the use of this well for the disposal of brine. The well was subsequently plugged and abandoned in 1989 in accordance with DEC regulations.

Gas wells have been drilled at four locations within five miles of the UMP area. The Harry Pease #1 well was drilled by Central NY Gas Corporation in 1934 targeting the Oriskany Sandstone and drilled to a total depth of 3,250 feet. The other three locations had wells drilled by Phillips Production Company and Columbia Natural Resources in 2003 and 2004 targeting the Trenton and Black River formations with total depths ranging from 8,000 to 9,010 feet. A sidetrack well was permitted at one of these locations where Columbia Natural Resources drilled a second borehole directionally from the existing vertical well bore into the Black River formation.

The closest gas production is from two wells drilled during the late 1960s and early 1970s to the east of the UMP area in Broome County targeting the Queenston Sandstone at approximate depths of 5,800 to 6,000 feet in the Triangle Field. These wells are located approximately 12-

miles east of Beaver Dam State Forest in the town of Triangle. Although these wells were reported to be gas producers, neither of the wells have been produced commercially.

Recent Drilling and Production

The closest natural gas commercial production is approximately 19-miles southwest of Turkey Hill State Forest in the Town of Van Etten, Chemung County where Talisman Energy USA Inc. has been producing wells originally drilled by Fortuna Energy, Inc. which targeted the Black River formation. These wells were drilled beginning in 2006 and have total depths ranging from approximately 9,400 to 9,600 feet. Other wells of this type have been drilled and produced all across Chemung County beginning in 2000 and as late as 2010.

Approximately 24-miles southwest of Turkey Hill State Forest are wells drilled into the Van Etten Field located in the Town of Van Etten, Chemung County. These wells were drilled and produced targeting the Oriskany Sandstone formation with total depths ranging from approximately 3,200 to 3,800 feet. Additional activity took place as late as 1997 when Potter-McKean Resources, Inc. drilled and are currently producing two wells in this field.

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 unit are not currently under oil/gas lease contracts.

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.

Mining of Gravel & Hard Rock

The majority of bedrock outcropping or subcropping beneath surficial deposits in the UMP area consists of shale and siltstones of the Upper Devonian age Sonyea Group. Shale and siltstones of the Upper Devonian age West Falls Group comprise the bedrock on some of the hilltops of the UMP area while shales and siltstones of the Genesee Group subcrop beneath the unconsolidated deposits in the Owego Creek valley at the northwestern area of the UMP. Shale and siltstone can be excavated near the surface where it is weathered and used as a source of aggregate. There are two small active shale quarries on the unit that are used for infrastructure maintenance.

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. 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 four actively permitted sand and gravel mines near the UMP area. The closest of these is the Town of Richford Highway Department - Harrington Mine. It is a twenty-acre sand and gravel mine located approximately 3,700 feet south of Beaver Dam State Forest in the Town of Richford, Tioga County. This mine and other mines in near the UMP area are located where the surficial deposits consist of kame and recent alluvial deposits. Though there are six reclaimed sand and gravel mines within five miles of the unit boundary, there are no known historically reclaimed sand and gravel sites within the unit.

References: *Surficial Geologic Map of New York, New York State Museum - Geologic Survey - Map and Chart series #40, 1986.*

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

P. Supporting Local Communities

Tourism

State Forests can be an economic asset to the local communities that surround them. It is estimated that more than three out of every four Americans participate in active outdoor recreation of some sort each year. When they do, they spend money, generate jobs, and support local communities. For more information, please see SPSFM page 245 at http://www.dec.ny.gov/lands/64567.html.

Forests within the unit provide good wildlife and primitive outdoor activities related recreation opportunities that may help contribute to the local tourism economy.

Taxes Paid

The New York State Real Property Tax Law provides that all **State reforestation areas** are subject to taxation for school and town purposes. Some reforestation areas are also subject to taxation for county purposes. Most unique areas and **multiple use areas** are exempt from taxation. All of these lands are assessed as if privately owned.

A table containing the projected taxes for State lands in the towns of this unit for the 2014 tax year can be found in Appendix II.

Q. Forest Products

Timber

Timber Management provides a renewable supply of sustainably-harvested forest products and can also enhance biodiversity. The products harvested may include furniture quality hardwoods, **softwoods** for log cabins, fiber for paper making, firewood, animal bedding, wood pellets, biofuel, and chips for electricity production. For more information, please see SPSFM page 251 at http://www.dec.ny.gov/lands/64567.html.

Information on upcoming timber expected to be produced from timber management activities on the unit is contained in the land management action schedules in Part III of this plan.

The demand for traditional and non-traditional forest products can vary over time. The demand for traditional forest products such as fence posts, firewood, hardwood and softwood sawtimber as well as hardwood and softwood pulpwood have remained stable or increased slightly in the Broome, Cortland and Tioga County areas. The demands for these products are expected to continue in the future.

The following is a summary of comments regarding forest products that were expressed at a public scoping session held at NYSDEC Office in Cortland NY on February 23, 2012 and through written correspondence.

- The unit should remain mainly for timber management.
- Change the law to allow the elderly and the poor to remove fallen trees for fuelwood.
- I support science based forest management.
- Use timber sales to increase early successional cover.

Non-Timber Forest Products

The demand for non-traditional forest products such as ginseng, honey, maple syrup, medicinal plants and mushrooms have remained stable or increased slightly in the Broome, Cortland and Tioga County areas. There were no comments regarding non-timber forest products received at the public scoping session held at NYSDEC Office in Cortland NY on February 23, 2012 or through written correspondence.

According to Title 6 of the New York State Codes, Rules and Regulations, Part 190, non-timber forest products such as mushrooms and berries may be removed from State land for personal consumption. To view Part 190 in its entirety please visit the following link: http://www.dec.ny.gov/regs/2493.html

R. Forest Health

Threats and challenges to New York's forest health are principally: global climate change, invasive plant and animal species, and poor reestablishment of desired trees and plants following natural or human caused disturbances. Change is inevitable. Scientists have come to understand that disturbance is necessary for many kinds of forests and that it is the frequency, kind, degree and rate of change that is important, not necessarily the change itself (Botkin

1990). Not all changes are beneficial, especially those not integral to natural processes. Human introduced changes, such as those caused by the introduction of invasive species can cause drastic, sudden and permanent changes to the ecosystem and seriously disrupt forest health.

New York's forests are remarkably resilient, as demonstrated by how well they have reestablished themselves following large scale land clearing associated with European settlement. However, trends in economic globalization combined with exponential growth in human population continue to significantly impact the species composition, resiliency and function of New York's forest ecosystems.

The ecological health and function of forests is dependent on a carefully balanced interdependence of species. Degradation caused by a disturbance such as invasive insect activity or improper forest management can leave forests prone to further mortality. New York's forests are under constant stress from native pests such as pine beetles and tent caterpillars. These stresses are increasing due to changing site conditions caused by climate change, as well as the threat of damage from invasive species.

A map showing the known locations of **exotic** invasive plants and interfering vegetation can be found in Appendix XVI.

Invasive Species

Economic globalization has brought tremendous benefits to many people. Unfortunately, those benefits have also come with a high cost. As global trade and travel have increased, so have the introduction of non-native species. While many of these non-native species do not have adverse effects on the areas in which they are introduced, some become invasive in their new ranges, disrupting ecosystem function, reducing biodiversity and degrading natural sites.

Invasive species have been identified as one of the greatest threats to biodiversity, second only to habitat loss. Invasive species can damage native habitats by altering hydrology, fire frequency, soil fertility and other ecosystem processes. Some invasive species can also be harmful or poisonous to humans or livestock and can have negative impacts on agriculture.

In addition to causing environmental damage, invasive species can have a tremendous economic impact as well. It is estimated that invasive species cost the US over a hundred billion dollars a year in agriculture losses and control costs. Invasive species can also hamper recreational opportunities by reducing access, degrading the quality of recreational areas and altering the aesthetic beauty of scenic natural sites.

Newly found populations of invasive species may be controlled or even eradicated. If an invasion is detected when the population is small and manageable, eradication may be possible. However, if an infestation goes undetected and the population becomes well established, the best option may be to enact control efforts with the goal of lessening its impact or preventing its spread.

Insects & Diseases

Insects and diseases that affect trees are constant natural forces that shape the forest. While many insects and diseases have negligible or beneficial impacts to forest health some, particularly invasive exotic species are especially damaging. Insects and diseases addressed below are those that have already or could potentially have significant impacts on forest health on the unit.

- American chestnut blight fungus, *(Cryphonectria parasitica),* an exotic disease which kills mature American chestnut trees. This disease was accidently introduced into the United States during the early 1900s. It has virtually eliminated American chestnut as a commercial species.
- Asian Long-horned Beetle (*Anoplophora glabripennis)* an exotic insect which kills all maple varieties, alder, birch, elm, horse chestnut, poplar and willow; It was first discovered in the United States in the mid 1990s in New York City; It has since been discovered in Massachusetts, New Jersey and Ohio.
- Beech bark scale (*Cryptococcus fagisuga*) nectria fungus complex (*Nectria galligena* & *N. coccinea* var. *faginata*) an exotic disease which causes dieback of American beech trees can be found throughout the unit;
- Butternut canker (*Sirococcus clavigignenti-juglandacearum)* caused by an exotic fungus which kills Butternut trees.
- Dutch elm disease, *(Ophiostoma novo-ulmi),* an exotic disease which kills American Elm;
- Emerald Ash Borer, (*Agrilus planipennis),* an exotic insect which kills all ash species. This insect was found in a trap in Tioga County, in the Town of Nichols in 2012;
- Forest Tent Caterpillar, (*Malacosoma disstria*), a native insect *that* defoliates northern hardwood tree species. Multiple years of **defoliation** in combination with other stressors, may cause trees to die or suffer from severe dieback. Since 2005 nearly 450-acres of hardwood stands have been **salvaged** within the unit.
- Gypsy Moth (*Lymantria dispar)* an exotic insect *that* defoliates oaks, apple, basswood, birch, poplar and willow trees and can lead to widespread mortality.
- Hemlock woolly adelgid, (*Adelges tsugae),* an exotic insect which kills eastern hemlock. It was first detected in New York in the lower Hudson Valley in the 1980s. It has recently been detected in Tioga County (Towns of Owego and Barton) and is also found in nearby Tompkins and Broome Counties;
- Peach Bark Beetle, (*Phloeotribus liminaris*), a native insect bores into the trunk of black cherry trees forcing the tree to exude gum in an attempt to expel the insect. The insect does not kill the tree, but can significantly reduce the commercial value of the tree.
- Sudden Oak Death, (*Phytophthora ramorum),* an exotic disease which infects some oaks, Douglas fir and rhododendrons. To date, this disease has primarily been found in the western United States.

Plants

A brief description of exotic invasive plants that currently or could potentially have significant impacts on forest health on the unit can be found below:

Japanese Knotweed (*Fallopia japonica*)
This shrub-like herbaceous perennial that is native to Asia typically invades disturbed areas, roadsides, and riparian areas. It reproduces by rhizomes, stem fragments, and seeds. It displaces native species by crowding them out.

Bush Honeysuckle (*Lonicera spp.)*
This shrub was introduced into the United States in the late 1850s from Eurasia. This shrub can deter establishment of desirable tree or shrub species especially in fields that are reverting to forest. The seeds are dispersed by birds.

Multi-flora Rose (*Rosa multiflora*)
This shrub was introduced into the United States in the late 1880s from Asia. It prefers disturbed areas, stream banks, forest canopy gaps, and roadsides. This shrub can deter establishment of desirable tree or shrub species. The seeds are dispersed by mice, turkey, and other birds. Seed remain viable in the seed bank for up to twenty years.

Garlic Mustard (*Alliaria petiolata*)
This European herbaceous plant was introduced into the United States in the late 1860s. It prefers shady **mesic** sites. Up to 3,000 seeds are produced per plant, which are dispersed by water or animals. It can deter establishment of desirable tree species and allelopathic impacts have been documented.

Swallowwort (Cynanchum spp.)
There are two species of this perennial vine that pose a risk to the unit. The two species are pale and black swallowwort. Both species were introduced into the United States in the late 1800s. They both are prolific seeders, producing up to 2,000 seeds per square meter. The seeds are primarily distributed by the wind. It can crowd out native plants and can have various adverse impacts on native wildlife.

Interfering Vegetation
Certain plants species both native American beech, hay-scented fern, hop hornbeam, New York fern and striped maple, and exotic can adversely impact the forest understory and ultimately the species composition of future forests. Past management practices, global climate change and high deer populations are some of the factors that have promoted the growth of these species of interfering vegetation. Dense patches of interfering plants can shade out diverse herbaceous understory plants as well as restrict development of tree seedlings such as basswood, black cherry, hemlock, northern red oak, red maple, sugar maple and white ash. If left uncontrolled, these species can turn a biologically diverse understory into one that is composed of only two or three species of plants. Foresters manage forests with the goal of improving forest health, promoting biodiversity and enhancing forest productivity. Therefore control of interfering understory vegetation will be key in meeting land management goals. Nearly all of the forested acreage in the unit has some interfering vegetation present. Additionally, over 56 percent has more than thirty percent of the understory area covered with American beech, and striped maple.

Control methods are chosen which maximize interfering vegetation control while protecting overall forest health and productivity (growth). Foresters have many options for controlling interfering vegetation to increase the success of their management decisions. With all management decisions, each option comes with benefits and drawbacks. However, foresters choose the option that best controls interfering vegetation most efficiently and economically while minimizing negative environmental impacts.

Deer Impacts

High white-tailed deer populations can have similar negative impacts on forest understory diversity as interfering vegetation. Deer are browsers and like many other species of animals have preferred foods. Preferred **browse** for deer include hemlock, northern red oak, red maple, sugar maple, white ash, white trillium and witch hazel. Most of the species of interfering vegetation, American beech, hay-scented fern, hop hornbeam, New York fern and striped maple, are not preferred browse. As such, high deer populations can restrict development of desirable tree seedlings and herbaceous understory plants by over browsing. Additionally, over time interfering understory vegetation may become established and further diminish understory biodiversity.

Nearly one half of the forested portion of the unit is showing moderate to high deer impacts. These impacts were assessed during the forest inventory process. To assess the impacts at a stand level, forestry staff looked at the quantity and quality of desirable regeneration present, the amount of browse present and what species were browsed.

Fire

Forest fires have not been prevalent on this landscape for many years now. Fire management on State Forest lands will entail the suppression of fires, both natural and human-induced as well as the application of prescribed fire under appropriate conditions. The goal of this is to maintain fire-replicated natural communities and prevent extreme fire danger that could threaten natural and human communities.

The Division of Lands and Forests is heavily reliant on the support and cooperation of the Division of Forest Protection and Fire Management. Their Forest Rangers review fire plans for state lands, help oversee and develop prescribed fire programs and are responsible for maintaining an organization which is capable of responding to wild land fire.

Carbon Sequestration

One of the most important and highly-publicized environmental issues in the world today is climate change and the related concern of global warming. While there is a significant amount of debate and speculation on the rate of global warming, scientific studies from almost every nation have documented an increase in greenhouse gasses in the Earth's atmosphere. The predicted consequences of global warming include species extinction, wider swings in weather patterns, melting of polar ice and glaciers, rising sea levels, shifting trade winds and the death of coral reefs, to name a few. Even though the future cannot be accurately predicted, all possible solutions to mitigate this problem must be considered, including the contributions that forests can supply.

In order to combat climate change, carbon needs to be pulled out of the atmosphere and put into long-term storage elsewhere. Trees and forests are one of the answers. Through photosynthesis trees absorb CO_2 and use the carbon to form wood fiber while releasing oxygen into the atmosphere. Forests and urban trees presently absorb over ten percent of the overall CO_2 emissions in the United States annually. Carbon sequestration is also occurring in wetland habitats and is a great reason to protect wetlands as well as forests.

Active forest management enhances a forest's carbon sequestration capacity by harvesting of future mortality and enhancing growth rates through **thinning**. Through active forest management, State Forest lands have an advantage in the ability to sequester carbon. Although forests do release some CO_2 from natural processes such as decay and respiration, a healthy forest typically stores carbon at a greater rate than it releases carbon. A forest's rate of growth is reminiscent of human growth for in its "teenage" years it has a large appetite for CO_2. The actual rate of carbon sequestration will vary with species, climate and site, but in general, younger and faster growing forests have higher annual sequestration rates. While older forests, such as those in New York's Adirondack and Catskill Forest Preserve and on many State Forests, have significant value as pristine water sources, undisturbed wildlife habitat, genetic repositories, and places of rare beauty and special value to society, these forests have a significantly lower potential for carbon sequestration.

II. MANAGEMENT OBJECTIVES AND ACTIONS

Management objectives and actions are consistent with the Strategic Plan for State Forest Management (SPSFM). The SPSFM can be found at http://www.dec.ny.gov/lands/64567.html . The management objectives and actions found below all fall under one or more of the State Forest Management Goals that were described in the Preface beginning on page 4.

A. Ecosystem Management

Ecosystem management can be achieved through actively managing the forest using various strategies to meet landscape gaps and other desired outcomes, while applying protective measures to mitigate impacts. Foresters employ active management strategies, including various silvicultural systems and integrated pest management which in some cases involves pesticide and herbicide application. Protective measures include designation of connectivity corridors at a landscape level, natural and protection areas at the forest level, buffers around those areas and various forms of green tree retention.

The following table contains a summary of the current and proposed management directions, for the unit. The management directions are based on stand structure.

Table 6: Summary of current and proposed management directions by stand structure.

Current Management Direction			Proposed Management Direction		
Stand Structure	Acres	Percent	Stand Structure	Acres	Percent
Even-aged (early & mid successional habitat)	4317	74%	Even-aged (early & mid successional habitat)	2620	45%
Uneven-aged (actively managed late successional habitat)	1209	21%	Uneven-aged (actively managed late successional habitat)	2427	42%
Protection/Natural Areas (Uneven-aged through natural succession)	69	1%	Protection/Natural Areas (Uneven-aged through natural succession)	548	9%
Other Protection (open water & non-forested wetlands)	80	1%	Other Protection (open water & non-forested wetlands)	80	1%
Grassland	47	1%	Grassland	47	1%
Roads, shale pits, parking areas	79	1%	Roads, shale pits, parking areas	79	1%
	5801			5801	

1. Maintain or Enhance Diversity of Habitats.

A diversity of habitats will be maintained and enhanced through forest management. Timber harvesting and other silvicultural practices will be used to establish conditions that support a diversity of species, habitats and structures including habitats that are lacking in the landscape (landscape gaps). Harvests will be scheduled to maintain early, middle and late successional forest habitats. Active forest management will ensure the protection of rare, threatened, and **endangered species** and provide habitat for Species of Greatest Conservation Need (SGCN). For a complete list of confirmed and predicted bird, reptile and amphibian, and mammalian species on the unit with their protective status and SGCN status, see Appendices VI for birds, VII for reptiles and amphibians, and VIII for mammals. See the Current and Future Cover Types and the Management Direction maps found in Appendix XVI for current and planned stand level conditions.

a. Increase early successional habitat. Early successional habitat is in decline and is currently lacking within the unit. One third of all SGCN, on the unit, use early successional habitat. During the life of this UMP, early successional habitat shall be increased from about 6 percent of the area on the unit (330-acres) to over 14 percent of the area on the unit (830-acres). The long-range goal is to maintain between 10 and 20 percent of the area on the unit as early successional habitat. This increase shall be accomplished according to the following:

- Maintain 47-acres of grassland by mowing one third of the acreage (15.5-acres) every year.
- Maintain 22-acres of apple/hawthorne forest by releasing apple/hawthorne trees from woody competition.

- Maintain 255-acres of aspen forest. These areas shall be managed using a short (40 to 60 years) **rotation**. About 100-acres of these aspen forests will be regenerated throughout the life of this plan to provide dense early successional habitat cover.
- Convert 239-acres of conifer plantation to Northern hardwood or Northern hardwood/natural conifer forest. These **conversions** will create dense early successional cover.
- Regenerate 392-acres of Northern hardwood forest. These regeneration harvests will create dense early successional cover which will be used by early successional species for about 20 years.
- Maintain 31-acres of shrub wetlands. These wetlands shall be excluded from active forest management activities such as timber harvesting and oil and gas exploration and development.

b. Decrease and enhance mid successional forest habitats. Mid successional forests are pole-sized or larger even-aged forests with relatively open understories. About 78 percent (4,500 - acres) of the area within the unit can currently be classified as mid successional. Mid successional habitat will be decreased or enhanced by implementing the following strategies:

- Convert 738-acres to early successional habitat. This acreage shall be regenerated by conducting forest product sales and includes conifer plantations, aspen forests, and Northern hardwood forests as previously mentioned in the early successional habitat section.
- Enhance 2,385-acres that will be managed in a mid-successional even-aged forest condition.
    - Manage 923-acres of even-aged forest within a closed canopy habitat corridor. When possible, the following strategies shall be used within the closed canopy habitat corridor:
        - Patch **clearcut** strategy. Patch clearcuts are small regeneration harvests (less than five acres) that will create variability in horizontal and vertical structure.
        - Variable density thinning strategy. This strategy creates horizontal variation and vertical structure throughout the stand being treated.
    - Retain snags (large standing dead trees), cavity trees, coarse woody material (large dead and down trees), reserve trees (trees not removed during regeneration harvests), and hardwood/softwood inclusions as described under objective A.1.g. ("Habitat Structures") during timber harvests to help conserve biodiversity.
- Convert 2,892-acres to an uneven-aged forest structure, which is a structure with 3 or more age-classes that create desirable vertical structure. This conversion process will take multiple entries and may take 50 to 100 years to accomplish.

c. Increase l*ate successional habitat.* Late successional forest habitats will be increased from about 1 percent of the area within the unit to over 50 percent of the area within the unit. Late successional forest habitat includes actively managed uneven-aged forests and areas with no or

little human intervention (natural and protection areas). Late successional forest habitat characteristics include snags, cavity trees, coarse woody material (CWM), **biological legacy** trees, vertical structure, and a relatively closed canopy. Late successional forest habitat is currently lacking within the unit and across the landscape that surrounds the unit. Over 30 percent of the SGCN on the unit use late successional habitat.

- Manage 57-acres in natural areas or areas left alone, usually with no human intervention, to attain and sustain a climax condition.
- Manage 491-acres in protection areas or areas excluded from most active management to protect sensitive sites. These areas include steep slopes, riparian areas surrounding streams and wetlands, forested wetlands and other wet areas. Other protection areas not included are emergent and shrub wetlands, open water and SMZs as described in objective B.1 (Protect Soil and Water Quality).
- Actively manage 2,427-acres using the principles of uneven-aged forest management. Actively managed uneven-aged forests contain many late successional forest habitat characteristics such as multiple age classes (seedlings to very large trees) that create desirable vertical structure, temporary small canopy openings (no larger than 2-acres), snags, CWM, cavity trees, and biological legacy trees.

d. Maintain 30 percent of the unit as conifer cover. Conifer cover provides a variety of benefits to numerous wildlife species. Conifer cover moderates temperature extremes and snow depth and provides escape cover year round. Conifer cover within the unit consists of conifer forests and Northern hardwood-conifer mixed forests. Conifer forests are naturally regenerated forests with at least 90 percent of density being conifers and conifer plantations. Northern hardwood-conifer mixed forests contain at least 10 percent of the density in both Northern hardwoods and conifers. Conifer and Northern hardwood-conifer mixed forests will be decreased from 40 percent of the area within the unit (2,299-acres) to about 30 percent of the area within the unit (1,735-acres).

- Maintain natural conifer cover. These conifer forests include long-lived species such as native hemlock and white pine as well as naturally regenerated Norway spruce.
    - Protect 348-acres of existing hemlock, Northern hardwood-hemlock and Northern hardwood-white pine forests which are located within riparian zones that will be managed as protection areas or are within areas being managed as natural areas.
    - Convert 7-acres of Northern hardwood-white pine to natural conifer cover. The Northern hardwood-white pine stand will be naturally regenerated using an uneven-aged silvicultural system. Therefore, the conversion process will take multiple entries and many years to complete.
- Increase Northern hardwood-conifer mixed forests.
    - Retain at least 10 percent of the conifer component within the 914-acres of existing Northern hardwood-conifer mixed forests during silvicultural treatments.
    - Convert 264-acres of conifer plantation to Northern hardwood-conifer mixed forests by using even and uneven-aged silvicultural systems. The conversion

process for uneven-aged systems will take multiple entries and many years to complete.

- Tend 202-acres of conifer plantation using intermediate commercial thinning regimes.

e. Maintain a diversity of wetland habitats. Past agricultural activities and development have considerably reduced the number of wetlands on the unit and across the landscape. Wetlands provide many benefits to society and wildlife. Wetland habitats can be considered open water, emergent herbaceous, shrub, and forested wetlands and vernal pools.

- Protect 127-acres of wetland habitat and riparian areas surrounding wetlands including 31-acres of open wetland. There are 78-acres of classified (New York State or Federal) wetlands on the unit. The remaining 49-acres consist of unclassified wetlands and riparian areas surrounding wetlands.
- Construct 25 to 50 vernal pools. These shall be constructed in protection areas, natural areas, areas within an uneven-aged forest management direction, or SMZ areas if possible.
- Allow ponds, on the unit to follow natural succession processes.

f. Enhance and maintain forest landscape connectivity. Determined by the New York State Heritage Program, Least Cost Path (LCP) corridors represent the most favorable dispersal path for forest species based on a combination of percent natural forest cover in a defined area, barriers to movement, and distance traveled. LCP corridors are areas two miles wide that connect large unfragmented forested landscapes. LCP corridors should ideally contain closed canopy and forest interior conditions. There are 4,192-acres of the unit that is located within an LCP.

- Manage about 98-percent of the area (4,091-acres) in a forested condition. Over 51-percent of the forested area (2,103-acres) within least cost path (LCP) corridors will be managed as late successional habitat. An uneven-aged silvicultural system will be used for 1,640-acres of actively managed area while 463-acres will be managed as protection or natural areas. These management strategies create late successional habitat characteristics within the forest.
- Utilize **variable density thinning** (a strategy that creates variable stand conditions, both vertically and horizontally) regimes, when possible, during **intermediate treatments** (a silvicultural treatment conducted after establishment of and before the regeneration of the stand).
- Utilize patch clearcuts, patch **shelterwoods,** or other modified silvicultural treatments, when possible, during regeneration treatments in even-aged stands within LCP corridors.
- Acquire property adjacent to state forests within the unit, from willing sellers, to enhance the LCP corridor.

g. Maintain a diversity of habitat structures. Forest retention is a strategy for conserving biodiversity in actively managed forests. Retention and recruitment of snags (standing dead trees), cavity trees, CWM (dead wood > 6 inches that is on the ground), Fine Woody Material or

FWM (dead wood ≤ 6 inches that is on the ground), and other features will advance the structural and compositional complexity necessary for conserving biodiversity and maintaining long term ecosystem productivity. The following retention practices should be implemented during forest management treatments:

- Retain two snags 11'' – 17'' **Diameter Breast Height (DBH)** per acre and two ≥ 18'' DBH per acre to provide perching, nesting/denning, and foraging habitat.
- Retain three cavity trees 11'' – 17'' DBH per acre and one ≥ 18'' DBH per acre to provide perching, nesting/denning, and foraging habitat.
- Recruit one tree ≥18" DBH per acre plus any additional trees needed to satisfy deficiencies in snag or cavity trees.
- In even-aged regeneration harvests greater than five-acres, reserve at least five percent of the stand area or at least five percent of the pre-harvest **stocking**. These reserve trees help perpetuate living organisms with limited dispersal capabilities such as plants, lichens, mosses, invertebrates, and terrestrial amphibians. The reserve trees also provide protective cover for species recolonizing the site.
- During intermediate treatments in conifer plantations retain ≥ ten percent of pre-harvest **basal area** in hardwoods where possible. These hardwood inclusions provide feeding and nesting areas.
- During treatments in natural hardwood stands, retain ≥ five percent of pre-harvest basal area in conifers where possible. These softwood inclusions provide feeding, nesting, and winter cover areas.
- During treatments in natural conifer stands, retain ≥ five percent of pre-harvest basal area in hardwoods where possible. These hardwood inclusions provide feeding and nesting areas.
- Retain CWM consisting of at least three logs per acre ≥ 10'' in diameter at the small end and at least sixteen feet in length or equivalent volume in other lengths after treatments. Among other things, CWM provides habitat for many wildlife species and helps with nutrient cycling.
- Retain at least twenty percent of FWM after treatments. FWM helps return nutrients to the site and provides wildlife habitat.

B. Resources Protection

Active and passive management strategies will be used to protect natural, historic and cultural, recreational and aesthetic resources.

1. Protect Soil and Water Quality.

Soil and water quality will be protected by preventing erosion, compaction, nutrient depletion, and **soil organic carbon** loss. Protection of soil and water quality is one of the highest management priorities and is the foundation of sustainable management.

a. Protect 972- acres of wetlands, ponds, and riparian zones.

Establish at a minimum a fifty foot **protection buffer** next to ponds and perennial streams (perennial streams with classification of D or higher).

- No vehicular, construction or harvesting equipment is allowed in protection buffers unless at designated crossings to access other management areas. Protection buffers shall not be considered for active commercial forest management.
- Establish **Special Management Zones (SMZs)** or areas needing special consideration next to streams, ponds, wetlands, vernal pools and spring seeps. SMZs may include protection buffers (see previous action). The widths of SMZs are dependent upon the type of activity that is being conducted:
    - Retain at least seventy-five percent of the pre-harvest density (measured in basal area per acre) during harvesting operations in areas of an SMZ outside of any protection buffers. The width of an SMZ shall be at least 100-feet wide, for spring seeps, wetlands, intermittent streams, perennial streams, and vernal pools and at least 150 feet wide for ponds. No harvesting equipment is allowed in any wetland, vernal pool, or spring seep.
    - Avoid new skid trails construction within 100-feet from wetlands and ponds and at least 150 feet when adjoining slopes are greater than ten percent. Main skid trails shall be kept at least 100-feet from vernal pool depressions.
    - Avoid haul road construction within 250-feet from wetlands and vernal pool depressions.
    - Keep log landings at least 250-feet from all wetlands, streams, vernal pool depressions, and ponds.
    - Prohibit any surface disturbance associated with mineral development within 250 feet of any stream, pond, wetland, spring seep, or vernal pool if the properties within the unit are leased in the future.

  Deviations from the previously mentioned SMZ establishment guidelines may be undertaken for habitat improvement, invasive species control, equipment access, buffer restoration, and plantation conversion. A Request for Exemption must be submitted and approved by Central office or regionally depending on the activity prior to any deviations taking place.

  Known SMZs, on the unit were identified during past forest inventory, forest product sale administration duties or other field duties. The known SMZs on the unit can be found on the Management Direction map in Appendix XVI.
- Apply Best Management Practices (BMPs) or practices designed for the protection of water quality, which are determined to be the most effective and practical means of controlling water pollution on all projects (maintenance of existing infrastructure and new projects, which can be found in the Management Action Schedule section of this plan) undertaken on the unit. The following list contains general BMPs that shall be applied to various project types as well as specific BMPs that only pertain to one project type:
    - Walk the project area to identify any water resources and establish SMZs prior to conducting any project activities.
    - Limit the size of improvements to the minimum necessary to meet the intended use.

- Minimize tree cutting associated with construction projects.
- Avoid the use of equipment in streams except at designated stream crossings, which shall be minimized.
- Locate improvements to minimize cut and fill.
- Locate improvements away from streams, wetlands, and unstable slopes.
- Plan projects to avoid hydric and highly erodible soils. Where these soils must be traversed consider: construction in dry periods, seasonal closure, use limitations and/or the use of gravel and fabric.
- Use properly placed drainage devices such as water bars and broad-based dips.
- Design stream crossings where there are low, stable banks, a firm stream bottom and gentle approach slopes.
- Construct stream crossings perpendicular to the stream flow.
- Limit stream crossing construction to periods of low or normal flow.
- Avoid disrupting or preventing movement of fish and other aquatic species.
- Stabilize bridge approaches with aggregate or other suitable material.
- Use soil stabilization practices on exposed soil around project areas.
- Construct stream crossings which maintain a continuous natural streambed by using bridges, “D” shaped culverts, or oversize round culverts placed deep enough to provide this attribute.
- Lay out new recreational trails on existing old roads or clear or partially cleared areas, where possible.
- Use natural materials such as rock or wooden timbers for stream bank stabilizing structures as needed.
- Construct new recreational trails on low or moderate side slopes to facilitate effective drainage and avoid flat topography where ponding could develop and drainage could be problematic should the trail surface erode or become compacted to a level below the surrounding area.
- Locate parking lots on flat, stable, well-drained sites.
- Use gravel or other appropriate materials to avoid runoff and erosion problems;
- Use of drainage structures on trails leading to **lean-to** sites and campsites, to prevent water flowing into site.
- Locate lean-tos and campsites on flat, stable, well-drained sites and properly buffered from streams, wetlands and waterbodies.
- Limit construction to periods of low or normal rainfall.
- Consider limiting harvesting operations on poorly drained soils to dry, frozen, or snow covered conditions where practical.
- Use existing landings if possible. Close existing landings within SMZs unless construction of a new landing would cause greater harm to water quality.
- Locate new landings outside of SMZs and on firm well-drained soils with a slight slope or efficient drainage.
- Stabilize landing entrances using gravel and geotextile fabric where appropriate.
- Require a spill containment and clean-up kit to be on site.

- Use existing skid trails unless a new trail can improve access and environmental impacts.
- Keep new skid trail grades less than 15% where possible. Grades greater than 15% should not exceed 300 feet.
- Repair, smooth, and stabilize skid trails during and after use.
- Restrict harvesting operations during periods when soils are saturated and unable to support harvesting activities.
- Locate skid trails prior to commencement of harvesting activities to avoid sensitive soils and limit impacts on water resources.
- Refer to the "New York State Forestry Best Management Practices for Water Quality BMP Field Guide" for additional information.

- Implement Rutting Guidelines on all operations related to forest product sales, Temporary Revocable Permits, and the State Forest road system. For the purposes of these guidelines, a rut is a six inch or greater depression, measured from the immediately adjacent soil surface to the bottom of the depression, created from the passage of a vehicle or equipment.
    - Avoid creating ruts within an SMZ.
    - Avoid creating ruts in a harvest area (the area where forest products are designated for removal not including skid trails).
    - Avoid allowing a rut to create channelized flow into a protection buffer, wetland, or water body.
    - Avoid creating ruts on a Public Forest Access Road (PFAR) or haul road on slopes greater than 5%.
    - Implement BMPs on skid trails that have ruts with depths of 18 inches or greater that extend significantly prior to rain or melting events.
    - Address rutting on PFARs that are open to public use within 24-hours.
    - Smooth ruts on landings as they develop, if there is significant erosion, if work will be suspended for 14-days or more, or otherwise appropriate (eg. prior to a rain event). Apply BMPs as needed.
    - Smooth ruts on haul roads if there is channelized mud or water flow or significant erosion, if work will be suspended for 14-days or more, or otherwise appropriate (eg. prior to completion of TRP). Apply BMPs as needed.
    - Smooth ruts on skid trails if there is channelized mud or water flow or significant erosion, if work will be suspended for 14 days or more, or otherwise appropriate (eg. prior to timber sale close-out). Apply BMPs as needed.

b. Protect steep slopes.

- Designate 73-acres of steep slopes as protection. Some of these areas also contain riparian areas that were mentioned in the previous objective.
- Prohibit harvesting operations on slopes greater than forty percent without existing access trails.
- Prohibit surface disturbance associated with mineral exploration and development on slopes greater than ten percent.
- Prohibit new recreational trail development on slopes greater than forty percent.

2. Protect At-Risk Species and Natural Communities

Specific management actions will be applied at locations where at-risk plant and animal species have been identified.

a. Protect active nesting sites of bird species listed as threatened or species of special concern (See Appendix VI for a list of species). All but one bird species listed as threatened or species of special concern are raptors. The one bird that is not a raptor is the grasshopper sparrow (a small grassland bird).

- Consult with DEC Bureau of Wildlife staff when at-risk birds are known to be nesting in locations where management activities will cause disturbance. **Adaptive management** strategies and actions will be developed and applied to minimize disturbance to nesting birds. These strategies may place restrictions on timber harvesting and gas exploration activities and could include: setbacks, no-cut or no disturbance zones, 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.

b. Protect wood turtles, which is a species of special concern. Wood turtle's require water in the form of good quality streams with gravel or cobble bottoms.

- Comply with SMZ establishment guidelines and implement BMPs as described in objective B.1.a. ("Wetlands and Riparian Zones"). Compliance with the SMZ establishment guidelines and the implementation of BMPs will ensure that the water resources that are needed by wood turtles will be of the highest quality possible.

c. *Maintain habitat for Species of Greatest Conservation Need (SGCN) (see Appendices VI, VII and VIII for a list of species).* The SGCN designation takes in to account species abundance and downward population trends. SGCN are listed in the Comprehensive Wildlife Conservation Strategy (CWCS), which was developed by the DEC Division of Fish Wildlife and Marine Resources. The CWCS can be found at https://www.dec.ny.gov/animals/30483.html

- Provide habitat for SGCN. Although no SGCN (except for the previously mentioned threatened species and species of special concern) are being specifically protected, the diversity of habitats that are being managed for on the unit as well as protecting soil and water resources should ensure that there is habitat for the SGCN. The SGCN that are predicted or confirmed on the unit or within the surrounding landscape require different habitat types. The habitat requirements include: grasslands, dense early successional cover, late-successional requirements, habitat structures, streams and wetlands and conifer or mixed forest cover.

d. Consult Predicted Richness Overlays (PROs) data and conservation guides developed by the New York Natural Heritage Program (NYNHP). NYNHP assists with the conservation of New York's biodiversity by providing resource managers with information about rare species and natural communities. PROs provide spatial data that predicts suitable habitat and sites for rare species in New York. The conservation guides provide information, such as conservation and

management strategies, habitat requirements and much more, to resource managers. The conservation guides can be found at http://www.acris.nynhp.org/ .

- Consult PROs data along with the conservation guides before conducting projects (forest product sales, Temporary Revocable Permits, etc…) on the unit.
- Look for predicted species in project area prior to conducting projects and during administration duties.
- Work with NYNHP to update data and take appropriate action (buffering a site, implementing seasonal restrictions, etc…) if found.

3. Protect Visual Resources and Aesthetics

Aesthetics can be considered the value of a forest that is embedded in beauty and visual appreciation. Whether it is a stone wall, forested landscape or a beautiful waterfall, State Forests within the unit provide many visual resources for the public to enjoy.

a. Maintain the overall quality of the visual resources of the unit. Ecological responsible management may not create the most aesthetically pleasing results. State Forest management practices such as silvicultural considers many variables, but the visual impact of these practices may not be desired by some users of the forest.

- Protect historic and cultural resources from management activities on the unit (see below).
- Establish and maintain forest retention during forest management activities as outlined in objective A.1.g.
- Conduct visual assessments and mitigate potential visual impacts for clearcutting and **overstory** removal regeneration cuts that are larger than five-acres and subject to the following DEC Program Policies: ONR-DLF-1 / Plantation Management on State Forests and ONR-DLF-3 / Clearcutting on State Forests. These policies are available at http://www.dec.ny.gov/docs/lands_forests_pdf/policysfplantation.pdf and https://www.dec.ny.gov/docs/lands_forests_pdf/policysfclearcutting.pdf respectively.
    - Use mitigation practices such as buffers along public roads, use of retention, timing of harvest, irregularly shaped harvest areas, signage, public notice or other methods.
- Consider other techniques to minimize visual impacts when conducting forest management activities.
    - Use mitigation practices as described in the previous action.
    - Conceal landings from view of major travel corridors, harden landings to discourage mud holes and rutting and remove debris at the completion of harvesting activities.
    - Require top lopping and or debris removal along public roads and designated recreation trails.
    - Require directional felling techniques and removal of hanging trees.

b. Avoid sign pollution. Signs should remain noticeable, informative and unobtrusive.

- Use educational signs to explain certain management activities such as a heavy regeneration harvest.

- Require snowmobile clubs with a Volunteer Stewardship Program agreement with the DEC to remove signs at the end of the snowmobile season.
- Develop and install an informational kiosk at the proposed pheasant release area parking area and update the existing Rockefeller birth site sign, possibly with a single or two panel kiosk.

4. Protect Historic and Cultural Resources

Historic and cultural resources will be preserved and protected wherever they occur on the unit.

a. Map and collect data for stone walls, foundations, cisterns, graves, etc… during forest inventory and ***stand analysis*** *activities.*

b. Protect stone walls, foundations, cisterns, graves, etc… from management activities.

- Establish buffers around cultural resources.
- Restore cultural resources impacted by management activities.
- Maintain orchards, ornamental planting, and hedgerows associated with cultural resource sites unless they are invasive species.
- Maintain three cisterns and the John D Rockefeller birthplace.
- Require a TRP and consultation with the State Museum OPRHP for archeological research on the unit.

C. Infrastructure and Real Property

1. Boundary Line Maintenance

Illegal use of State Forests will be minimized through regular maintenance of boundary lines.

a. Maintain 48.61-miles of State Forest boundary lines.

- Work with Operation Crews to maintain boundary lines.
    - Post signs every 0.1-mile to make State Forests identifiable.
    - Paint boundary lines every seven years.
    - Encourage Operation crews to report boundary line issues.

b. Work with the Bureau of Real Property to complete new and outstanding survey requests.

c. Work with the Bureau of Real Property and the Division of Forest Protection and Law Enforcement *to address boundary line discrepancies.*

d. Reduce the distance of boundary lines by acquiring property from willing sellers.

See the Boundary the Line Action Schedule on page 99 for more information.

2. Infrastructure

Basic infrastructure will be provided and maintained, including State Forest roads, parking areas, recreational trails, informational assets, and associated appurtenances.

a. Maintain 6-miles of State Forest roads. State Forest roads provide access for recreation and administrative uses. These roads improve hunting, fishing, trapping, wildlife observation, and camping opportunities on the unit.

- Maintain 4.4-miles of Public Forest Access Roads (PFAR). PFARs are permanent unpaved roads that provide the primary access for administrative and public use.
    - Conduct routine maintenance such as grading, mowing, and cleaning of culverts and ditches every three years.
    - Maintenance, where possible, shall be accomplished through forest product sale-related work. Maintenance conducted by contractors may include providing material (gravel, shale, stones, etc…), placing material at desired locations, grading, and culvert replacement.
    - Replace the culverts that are installed along the PFARs as needed. There are a total of 51 culverts located along PFARs on the unit.
    - Replace signs along the PFARs as needed.
    - Implement Best Management Practices (BMPs) as described in objective B.1.a ("Wetlands and Riparian Zones) during all maintenance and construction activities.
    - Maintain two existing shale pits to supply material for repairs to PFARs.
- Maintain 1.6-miles of haul roads. Haul roads are permanent unpaved roads that provide limited vehicular access primarily during forest product sales.
    - Restrict vehicular access to administrative uses. All haul roads are currently blocked from public vehicular use by earthen berms or gates.
    - Conduct limited maintenance to stabilize road and restrict erosion.
    - Maintain roads through timber sale-related work.

b. Maintain and enhance parking opportunities on the unit. Parking areas improve access to recreational opportunities.

- Maintain two existing parking areas. These areas are located on Beaver Dam and Michigan Hill State Forests.
- Construct and maintain one new parking area.
    - Construct a parking area for the Pheasant Release Area on Michigan Hill State Forest to improve access to provide a safer area for hunters to park.
    - Install a gate barrier to block public vehicular access to the Pheasant Release Area.
- Maintain two existing shale pits to supply material for new and existing parking areas.
- Implement BMPs during all maintenance and construction activities.
- Block skid trails leaving landings that were used for forest product sales instead of blocking entire landings when possible. This should improve hunting, trapping, and nature observation opportunities by creating additional areas to park.

c. Maintain recreational trails on the unit. Existing designated snowmobile trails and ATV routes (CP-3) shall be maintained and clearly marked. Six existing or proposed gates along the

designated snowmobile trails shall be maintained. For more information about recreational trail objectives and actions, please see Objective D.3 (Recreation).

d. Maintain and enhance informational infrastructure on the unit. Informational infrastructures that exist or are proposed include State Forest identification signs and a kiosk. For more information about informational assets objectives and actions, please see Objective D.3 (Recreation).

D. Public/Permitted Use

1. Universal Access

Outdoor recreation activities, on the unit are enjoyed by people of all ages and abilities. As such recreational opportunities on the unit should be available for all, including those with disabilities.

a. Maintain 0.6-miles of ATV route for people issued a DEC Motorized Access Permit for People with Disabilities (CP-3). This route provides hunting and nature observation opportunities.

b. Implement the Principles of **Universal Design**; follow the Americans with Disabilities Access Guidelines (ADAAG) and American with Disabilities Act requirements for all new construction of facilities.

2. Formal and Informal Partnerships and Agreements

Conservation and stewardship partners are extremely important to protect and maintain the resources on the unit especially with the budgetary and staffing constraints that the Department is currently facing. Partnerships and agreements shall be formed through use of Temporary Revocable Permits (TRPs) and participation in the Volunteer Stewardship Program (VSP).

a. Maintain one existing VSP agreement to maintain the snowmobile trails on the unit.

- Modify the VSP agreement with the Ridge Riders Snowmobile Club to include vegetation management in and around the birthplace foundation of John D. Rockefeller.

b. Develop new VSP agreements with State Forest users. Develop new VSP agreements for things such as the historic/cultural sites, Pheasant Release Area, stewardship of entire forests, etc…

c. Consider issuing TRPs to individual and organizational partners. TRPs are required for any activity that exceeds normal permissible levels of usage or access.

- Issue a TRP for town highway and utility corridor maintenance.

- Use the TRP process to work with the Upper Susquehanna Coalition to construct vernal pools on the unit.

- Consider issuing TRPs for other activities such as competitive or group events and research purposes.

d. Provide up-to-date information about State Forests within the unit to County departments. See objective D.6.b ("Promote Tourism") for more information.

3. Recreation

State Forests offer opportunities for outdoor recreational activities that require minimum facility development or site disturbance in relatively remote undisturbed settings. Forests within this unit shall focus on providing opportunities for dispersed recreational opportunities. As such there are no new designated recreation trails or camp sites proposed. See the Access and Facilities Maps located in Appendix XVI for a visual representation of the existing and planned access opportunities and facilities on the unit.

a. Maintain 7.1-miles of existing snowmobile trails on the unit. All designated snowmobile trails on the unit are part of the Statewide Trail System as such they are supported through the New York State Snowmobile Trail Fund. There are 6.7-miles of corridor trails (high volume primary routes) and over 0.4-miles of secondary trails (medium volume connecting routes). There is currently one VSP agreement with the Ridge Riders Snowmobile Club to maintain the snowmobile trails on the unit.

- Maintain trails through VSP agreements with the previously mentioned local club. The Department will provide needed materials whenever possible if budget constraints allow.
    - Maintain three snowmobile-bridges (one on Beaver Dam State Forest and two on Grigg's Gulf State Forest) and three culverts located on Turkey Hill State Forest.
        - Work with the Ridge Riders Snowmobile Club through a VSP agreement.
        - Conduct annual inspections of structures and make necessary repairs. The Department will provide needed materials whenever possible if budget constraints allow.
- Consider requests to reroute a trail on a case-by-case basis.

b. Maintain 0.6-miles of existing ATV Routes (CP-3). The designated ATV routes on the unit shall be for persons with a DEC issued Motorized Access Permit for People with Disabilities (MAPPWD).

c. Maintain and enhance informational assets on the unit. Informational assets that exist or are proposed include signs, a kiosk and the Department website.

- Maintain three existing State Forest identification signs located on the following State Forests: Beaver Dam, Turkey Hill and Michigan Hill.
- Install and maintain one new State Forest identification sign on Grigg's Gulf State Forest.
- Create and install an informational kiosk on Michigan Hill State Forest. The kiosk will provide a map and important information about the forest.
- Update sign/kiosk at the John D. Rockefeller birth site and the fishing access site sign.

- Display, on each forest, a "Rules and Regulations on State Forests and Unique Areas" sign containing select excerpts from the Title 6 New York Codes, Rules and Regulations Part 190.
- Inspect signs and kiosks annually and make necessary repairs.
- Update signs and kiosks every ten years.
- Create high quality digital maps for forests within the unit. These maps will be posted on the Departments website.
- Review and update every ten years the web pages for each State Forest, within the unit that are located on the Department's website.

d. Allow dispersed recreation on the unit

- Allow informal horseback riding on all areas within the unit except on snow covered snowmobile trails as long as Department policies, rules and regulations are followed.
- Allow other dispersed forms of recreation such as walking, hunting, trapping, fishing, hiking, camping, orienteering, geocaching and nature observation providing Department policies, rules and regulations are followed.

e. Maintain and enhance camping opportunities. There are no designated camp sites on the unit, but camping is still allowed.

- Allow dispersed, primitive back-country camping throughout the unit unless specifically prohibited, provided persons camp at least 150-feet from roads, marked trails, streams, ponds, lakes, and other water bodies.
- Consider, on a case-by-case basis, issuing a Camping Permit to camp on old log landings or other cleared areas.

f. Enhance wildlife-related recreation opportunities. Wildlife-related recreation on the unit includes natural resource viewing (birding, nature photography, and wildlife observation), hunting, trapping, and fishing.

- Provide a diversity of wildlife habitats as described in objective A.1 (Maintain or Enhance a Diversity of Habitats). Using active forest management, conditions will be created to support a diversity of species.
- Continue to stock pheasants and maintain pheasant habitat on the unit by working with the Division of Fish, Wildlife and Marine Resources (DFWMR).
    - Improve the ford in the stream that bisects the pheasant release area to provide better administrative access.
- Implement SMZ guidelines and BMPs as described in objective B.1. (Protect Soil and Water Quality) to ensure conditions for a healthy fish population.
- Conduct fisheries surveys of Huckleberry Pond to update the Departments knowledge of the resource by working with DFWMR.
- Continue to stock trout into the East Branch of Owego Creek by working with DFWMR.
- Improve access to wildlife resources.
- Maintain an ATV route (CP-3) for persons with a Department issued MAPPWD on Beaver Dam Forest.

- Consider, on a case by case basis, issuing a Camping Permit to camp on old log landings or other cleared areas.
- Permit licensed falconers to remove raptors from the unit in compliance with ECL Article 11 and 6 NYCRR Part 173. Permits for this activity are issued by the Bureau of Wildlife.

g. Maintain patrols and enforcement on State Lands. DEC Forest Rangers have the direct responsibility to enforce all laws and regulations on State Forests. Title 6 New York Codes, Rules and Regulations Part 190 contains regulations pertaining to the use of State lands. These regulations are available at https://www.dec.ny.gov/regulations/regulations.html

- Work closely with the Division of Forest Protection and Law Enforcement to prevent illegal activities from occurring.
- Encourage VSP partners and users of the forests to report illegal activities.

4. Off-Highway and All-Terrain Vehicle Use

Off High Vehicle (OHV) and All-Terrain Vehicle (ATV) use are not compatible with the goals of State Forest management except under limited circumstances. ATV and OHV use cause environmental degradation and raise safety concerns.

a. Prohibit all public off road motor vehicle use on the unit except where authorized by DEC sign or permit.

b. Maintain the All Terrain Vehicle (ATV) route for people with disabilities on the unit. All designated ATV routes (CP-3) on the unit are designed for use by individuals with a DEC-issued Motorized Access Permit for People with Disabilities (MAPPWD).

- Restrict ATVs to trails designated for ATV use by persons with a Department issued MAPPWD. Barriers and signs will be installed throughout the unit to restrict ATV use. See below for additional information regarding proposed barriers.
- Maintain 0.6-miles of existing trail on Beaver Dam State Forest.
- Issue a no-fee MAPPWD to qualified individuals for trail use. The MAPPWD allows the individual to ride only on marked and designated routes where public use of motor vehicles is prohibited.

c. Evaluate and consider future proposals for an ATV connector routes. In the event that another entity is establishing a legitimate public ATV trail system on lands adjacent to State Forests within the unit, and the State Forest is needed to serve as a connecting link. Evaluation and consideration of connector routes will follow criteria detailed on page 223 of the SPSFM at http://www.dec.ny.gov/lands/64567.html.

d. Maintain and enhance barriers to deter illegal activities and environmental degradation on the unit. Barriers such as gates, rocks, and earthen berms help deter illegal OHV and ATV use, which can cause environmental degradation such as soil erosion, displacement, and compaction, increased siltation and turbidity, noise, disturbance to wildlife, damage to vegetation, and air pollution. Existing barriers on the unit include: four gates, which are located

on Beaver Dam State Forest and Grigg's Gulf State Forest; and numerous earthen berms located throughout the unit.

- Install two combination gate/rock barriers on Grigg's Gulf State Forest. The utility pipeline corridors are attractive to illegal OHV and ATV usage, which has caused extensive damage. These corridors shall be blocked by working with Enterprise (current owner of the pipeline).
- Install three gates at locations where there is known illegal off road use on Grigg's Gulf, Michigan Hill and Turkey Hill State Forest. Three of these gates are located on designated snowmobile trails therefore the installations should be coordinated with the Ridge Riders Snowmobile Club or the current Volunteer Stewardship Program partner.
- Install one rock barrier where there is known illegal off road use on Turkey Hill State Forests if increased enforcement is ineffective. This barrier will be installed as part of sale related work associated with a forest product sale. They could be earthen berms instead of rock barriers depending on the value of the associated forest product sale.
- Install earthen berms where access trails leave landings to deter illegal off road activities.
- Conduct annual inspections of barriers and make necessary repairs.

5. Mineral Resources

The leasing and development of mineral resources can provide revenue to the State; create local jobs; and bring money into local economies. Potential mineral activity on the unit includes oil and gas mining, surface mining of shale, sand, gravel, or other aggregate and underground mining of "hard rock" minerals.

a. 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 the entire unit be considered (nominated/proposed) for oil and gas exploration, development and extraction, or new requests for new or additional pipelines be made, they will trigger a public amendment process of this unit management plan. An amended draft unit management plan will be prepared and presented to the public for comments to the amendment before final decisions are made with respect to the proposal.

b. Restrict surface mining of shale, sand, gravel, or other aggregate and underground mining of "hard rock" minerals such as metal ores, gem minerals, and salt.

- Prohibit commercial surface and underground mining of shale, sand, gravel, other aggregate, and "hard rock" minerals. The Department's current policy is to decline any commercial mining application(s) pertaining to any lands covered by this UMP as these activities are not compatible with the purposes for which State Forests were purchased.
- Maintain two shale pits across the unit for infrastructure purposes. These surface mines will occasionally be used for road and parking area maintenance and construction activities.

6. Supporting Local Communities

State Forests are managed to conserve, improve, and protect natural resources while enhancing health, safety, and welfare of the people of the State and their overall economic and social wellbeing. State Forests provide economic benefit through forest product sales, forest-based tourism, and property taxes.

a. Provide forest resources through the Forest Product Sales Program. Forest product sales provide revenue to the State, supply raw materials to forest product industries, create local jobs, and supply local families with fuelwood. See the Forest Management and Health objectives found below for more information regarding forest products.

b. Promote tourism through dispersed forest-based recreation. Recreationists that travel to State Forests often spend money in local **communities** for things such as gas, food, lodging, supplies, and equipment. As such, dispersed forest-based recreational opportunities shall be maintained on the unit.

- Provide a variety of wildlife habitats, as outlined in the Ecosystem Management objectives, to ensure there is a diversity of wildlife species available for hunting/trapping and nature observation opportunities.
    - Continue to release pheasants on Michigan Hill State Forest.
- Provide conditions to ensure a healthy fish population.
    - Continue to stock trout in the East Branch of Owego Creek.
- Maintain State Forest roads and parking areas to provide access to the previously mentioned resources.
- Provide information about State Forest recreational opportunities.
    - Maintain the Department's website as it relates to the State Forests within the unit. The content of the website should be periodically reviewed and updated if necessary.
    - Create and install an informational kiosk at the proposed parking area at the Pheasant Release Area; consider a kiosk at the John D. Rockefeller site.
    - Create and post on appropriate web pages high quality maps of forests within the unit.
    - Provide up to date information to local municipalities such as Chambers of Commerce and Offices of Tourism.

c. Provide property tax revenue to local towns and schools. Reforestation Areas are subject to town, school, and fire district taxes, but are exempt from county taxes. These areas are taxed at the same rate as private forest land. Multiple Use Areas are exempt from property taxes. See Appendix II for a table of Real Property Taxes by all State Lands in each respective town based on 2014 Assessments.

*d. Protect the rural character and provide **ecosystem services** to local communities.* People often take for granted the benefits that they receive from healthy forested ecosystems.

Benefits such as clean air and water, flood regulation, nutrient cycling, carbon storage, pollination, food, fiber production, recreational, spiritual and aesthetic values among others are provided to society from a healthy forested ecosystem. As the human population and consumption levels increase, so does the pressure on healthy forested ecosystems and the services they provide.

- Implement the previously described Ecosystem Management and Resource Protection objectives as well as the Forest Management and Health objectives to ensure that the rural character of the unit and the ecosystem services provided by the unit are maintained for future generations.

E. Forest Management and Health

1. Forest Products

Selling forest products from State Forests within the unit contributes to the ability to meet the numerous ecological objectives outlined in this UMP such as improving or increasing biodiversity, forest health, recreational opportunities, soil and water protection, carbon sequestration and wildlife habitats.

a. Provide sustainably managed forest resources through the Forest Product Sales Program. Forest product sales provide revenue to the State, supply raw materials to the forest product industry, create local jobs, and supply local families with fuelwood.

- Treat an average of 232-acres of commercial forest stands annually. See the Land Management Action Schedules under the Management Action Schedules section of this plan for stand by **stand treatment**s.
    - Treat an average of 166-acres of natural hardwood stands per year.
    - Treat an average of 66-acres of natural and plantation conifer stands per year.

b. Consider selling maple sap from select forest stands to maple syrup producers. Potential stands for maple tapping should be dominated by sugar and red maple; consist of open grown trees or trees not likely to produce high quality lumber or veneer; be reserved from harvesting; have access roads that are well drained and stable during spring thaw; be located on steep slopes, growing in poor soils, or dedicated to other goals such as the development of late-successional habitat.

c. Educate the public about the benefits of silviculture.

- Post signs near silvicultural treatment areas that are located in high traffic areas such as along public roads or recreational trails.
- Encourage the public to participate in the Community Forest Management (CFM) program where the DEC has foresters available to offer management advice to the public through stewardship planning.

2. Plantation Management

Plantations on the unit have helped provide species diversity within the local and eco-regional landscapes. The mix of hardwood forests and conifer plantations has created diverse wildlife

habitats and aesthetically pleasing landscapes. Many of the plantations, nearly sixty percent, are at or are reaching maturity. These plantations were planted during the 1930's and 1940's. The remaining plantations were planted from the 1950's to the early 1990's, most of which have never been thinned. All plantation management on the unit is consistent with the Bureau of State Land Management's policy: Plantation Management on State Forests, which can be found at http://www.dec.ny.gov/docs/lands_forests_pdf/policysfplantation.pdf

a. Tend plantations to promote the health and vigor of planted trees and encourage the establishment of ***natural regeneration*** (hardwoods and/or conifers depending on stand objectives).

- Tend 202-acres of plantations using commercial intermediate thinning regimes.

b. Covert plantations to natural cover types. There are 618-acres of conifer plantations that are scheduled to be converted to natural forest conditions. These conversions will be accomplished using a variety of even-aged and uneven-aged management strategies.

- Convert 310-acres of conifer plantation to natural hardwood cover types using active management strategies.
    - Manage 21-acres as aspen short rotation forests.
    - Manage 68-acres as even-aged forests.
    - Manage 221-acres as uneven-aged forests.
- Convert 246-acres of conifer plantation to natural hardwood and natural conifer mixed cover types using active management strategies.
    - Manage 100-acres as even-aged forests.
    - Manage 145-acres actively managed uneven-aged forests.
- Convert 62-acres of conifer plantations to natural cover types by using passive management strategies. These stands have management directions of Natural Area or Protection. These stands will eventually become natural hardwood-conifer cover types with an uneven-aged structure.

c. Artificially regenerate stands where appropriate. Under certain circumstances, it may be necessary to artificially regenerate a stand either entirely or partially to compliment natural regeneration. Conditions where planting may be required include presence of undesirable vegetation, high deer browse or lack of seed source.

3. Forest Health

Forest health is the condition of the forest based on many factors. Some factors that influence forest health are the structure (horizontal and vertical distribution of forest components such as **crown** position, diameters, heights, and stems), species composition, function, vigor, unusual levels of insects and diseases, and resilience to disturbance (Helms, 1998). Healthy forests provide more or higher quality benefits to society than unhealthy forests do, for example trees with higher vigor sequester more carbon and release more oxygen.

a. Practice Silviculture (the art and science of controlling the establishment, growth, composition, health and quality of a forest) to improve the health of the forest.

- Use forest product sales and silviculture to provide a diversity of species, habitats, and structure to enhance the resiliency of ecological systems and forest sustainability.
- Conduct **improvement thinnings** (a thinning conducted to improve the composition and quality of a stand) to maintain optimal stocking levels, to focus growth on the healthiest trees, to increase carbon sequestration, and to improve overall vigor of State Forest stands.
- Conduct harvesting activities in order to establish forest communities that are suited to site conditions. For example, convert a red pine plantation that was planted "off-site" to a natural Northern hardwood stand.
- Conduct harvesting activities to promote optimal growth and regeneration.

b. Hinder the introduction and spread of exotic-invasive species which can be detrimental to natural ecosystems. Exotic-invasive species can alter biodiversity, hydrology, fire frequency, soil fertility, and other processes.

- Identify and map populations of newly found and/or established invasive species on State Forest lands during the forest inventory and management action process.
- Employ strategies following principles of early detection and rapid response to identify and address newly introduced exotic-invasive species.
- Stem the spread of exotic-invasive species which can cause widespread mortality in a forest, resulting in large carbon emissions when those trees decay.
- Control existing populations where appropriate by using silviculture, mechanical controls and herbicide treatments.
- Minimize transport of exotic-invasive species from infested to uninfested areas.
- Follow guidelines outlined in the Department's Emerald Ash Borer web page, and salvage as needed. Emerald Ash Borer recommendations are available at https://www.dec.ny.gov/animals/45409.html
- Refer to the Invasive Species section of the SPSFM beginning on page 277.

c. Attempt to control vegetation that interferes with the establishment of desired regeneration. Native plants such as American beech, striped maple, hop hornbeam, New York fern, and hay-scented fern as well as some exotic species can take over forest understories and interfere with the establishment of desirable species, which decreases forest health, biodiversity, and productivity.

- Collect regeneration and interfering vegetation data during forest inventories and stand analyses for treatment prescription development.
- Assess the understory prior to conducting regeneration harvests.
- Control interfering vegetation using mechanical treatments, prescribed fire, and/or herbicide application.

4. Managing Deer Impacts

The overabundance of deer can be detrimental by altering herbaceous plant species composition, tree species composition, habitat structure, and resource availability to other wildlife species.

a. Monitor deer impacts on forest regeneration and forest health and act accordingly.

- Collect deer density impact information during forest inventories. The amount of browse is assessed during forest inventory to determine if deer density numbers are high.
- Assess deer densities when conducting a regeneration harvest to determine if fences or other actions are necessary to ensure seedling survival.

b. Address issues of over-browsing.

- Collaborate with DFWMR biologists to identify and employ active deer population control measures, such as Deer Management Assistance Program (DMAP).
- Provide current web-based information, maps, and kiosks about hunting opportunities and access.

5. Fire Management

Fire management on State Forests entails the suppression of wildfires as well as the application of prescribed fires.

a. Prevent and suppress wildfires that may emit large quantities of carbon.

- Protect the natural resources from wildfire by working closely with the Division of Forest Protection and Law Enforcement.
- Require all harvesting equipment to have spark arresters.
- Conduct salvage operations to mitigate the risk of wildfires.
- Encourage the public to use campfires responsibly.

b. Use prescribed burns if appropriate. Prescribed fire has been used to successfully regenerate oak forests and maintain grasslands.

- Work with the Division of Forest Protection and Law Enforcement if prescribed fire is being considered as a silvicultural treatment.

6. Carbon Sequestration

Active forest management enhances a forest's capacity to sequester carbon by harvesting of future mortality and increasing growth rates through thinning.

a. Keep forests as forests.

- Forested habitats on the unit will remain as forested habitat.
- Acquire property from willing sellers as previously described. These acquisitions will allow properties to be kept as or converted to forests and not be developed.

b. Enhance carbon storage in existing stands.

- Control wildfires as described in the previously mentioned Fire Management objective.
- Manage timber harvests to protect forest soils as previously described in the Protect Soil and Water Quality objectives.

c. Keep forests vigorous and healthy and improve forest growth rates.

- Conduct thinning treatments in young stands to concentrate growth on crop trees. These treatments will harvest future mortality and increase the vigor of crop trees, which will allow them to store more carbon.
- Stem the spread of exotic insects and disease as described in the Forest Health objectives.

d. Sequester carbon in forest products. Conduct timber sales from the unit on a sustainable basis, following sound silvicultural systems as described in this plan.

III. MANAGEMENT ACTION SCHEDULES

A. Land Management Actions

Maps containing stand numbers, management directions, and proposed and existing cover types can be found in Appendix XVI. The following tables represent a twenty-year schedule of planned management actions. The *Table of Land Management Actions by State Forest* has actions listed in order of State Forest reforestation number and the stand number while the *Table of Land Management Actions by Project Completion Interval* has the actions listed in order of treatment interval and stand number. Definitions of the abbreviations used in the tables can be found below:

a. Table Headings

- Unit – State Forest.
- Stand No. – forest stand identification.
- Ac – acres within the stand.
- CT – cover type classification.
- FT - future cover type.
- Top Five Species – the five most abundant species.
- MD – management direction.
- SC – size class.
- BA – basal area
- Treat – type of treatment. This is subject to change based on stand analyses.
- PCI –project completion interval.

b. Cover type (CT)

- APH Apple-Hawthorn
- BR Brush
- GR Grassland
- L Larch
- NH Northern Hardwoods
- NH-HEM Northern Hardwood-Hemlock

- NH-P Northern Hardwood-Pine
- NH-S Northern Hardwood-Spruce
- NS Norway Spruce
- NS-SP Norway Spruce-Scots Pine
- OAK Oak
- OAK-HEM Oak-Hemlock
- OW Open Wetland
- PH Pioneer Hardwoods
- POND Pond
- RP Red Pine
- RP-L Red Pine Larch
- RP-S Red Pine-Spruce
- TH Transition Hardwoods
- SW Shrub Wetland
- WP White Pine
- WP-HEM White Pine-Hemlock
- WP-NS White Pine-Norway Spruce
- WS White Spruce

c. Future cover type (FT)

- APH Apple-Hawthorne
- C Conifer
- GR Grassland
- M Northern Hardwood-Conifer Mixed
- NH Northern Hardwoods
- OW Open Wetland
- PH Pioneer Hardwoods
- POND Pond
- SW Shrub Wetlands
- TH Transition Hardwoods

d. Species

- AP Austrian Pine
- APL Apple species
- ASP Aspen species
- BF Balsam Fir
- BB Black Birch
- BBE Blue Beech (musclewood)
- BC Black Cherry
- BEE American Beech
- BL Black Locust
- BO Black Oak
- BW Basswood
- DF Douglas Fir
- EL European Larch
- ELM Elm species
- HEM Eastern Hemlock
- HM Hard Maple
- HWT Hawthorn (thorn apple)
- IWD Hop Hornbeam (Ironwood)
- JP Jack Pine
- JL Japanese Larch
- NS Norway Spruce
- PC Pin Cherry
- PO Pin Oak
- RM Red Maple
- RO Northern Red Oak
- RP Red Pine
- SP Scots Pine
- TS Tall Shrub species
- WA White Ash
- WC White Cedar
- WO White Oak
- WP White Pine
- WS White Spruce
- YB Yellow Birch

e. Management Direction (MD)

- APH Apple-Hawthorn
  - These stands will be managed to promote apple species and hawthorn.
- ASR Aspen Short Rotation
  - These stands will be managed using a 40 to 60 year rotation in order to regenerate aspen species creating dense early successional habitat.
- E Even-aged
  - These stands will be managed using a 100 to 120 year rotation and the principles of even-aged silviculture.
  - Traditional even-aged silviculture principles will be modified when managing stands that are located within a closed canopy habitat corridor. Modifications may include: using patch cuts as a regeneration harvest; implementing variable density thinning techniques, especially during intermediate treatments; and aggressively converting plantations to natural cover types.
- GR Grassland
  - These stands will be managed to retain a grassland cover type.
- NA Natural Area
  - These stands will be excluded from most active management activities and allowed to reach a **climax** condition.
- NF Non-forest
  - These stands include day-use and camping areas. Roads, parking areas, and shale pits are not included in these tables.
- P Protection
  - These stands will be excluded from most active management activities to protect sensitive sites and allowed to reach a climax condition.
- SO Seed Orchard
  - These stands will be managed as seed orchards to supply the State Nursery with seeds.
- U Uneven-aged
  - These stands will be managed using a twenty-year cutting cycle and the principles of uneven-aged silviculture. Stands being converted from an even-aged structure will take several harvests to develop uneven-aged characteristics.

f. Size Class (SC)

- A average DBH is less than 5.6 inches
- B average DBH is 5.6 to 8.5 inches

- C average DBH is 8.6 to 11.5 inches
- D average DBH is 11.6 to 14.5 inches
- E average DBH is 14.6 to 17.5 inches
- F average DBH is greater than 17.5 inches

g. Treatment Type (Treat)

- GS **Group Selection**
    - An uneven-aged treatment where each entry is designed to establish a new age-class. Groups are used to regenerate shade intolerant species such as black cherry. The size of the groups should be no larger than 2-acres. Thinning may or may not take place between groups and/or in previously established age-classes.
- GST **Single-tree** with Group **Selection**
    - An uneven-aged treatment where the mature trees are removed during each entry to free-up available growing space for a new age-class. Groups, as defined above, may also be used to perpetuate shade intolerant species.
    - E An even-aged or two-aged stand that is being converted to an uneven-aged structure. Variable density thinnings, patch cuts, and modified shelterwoods may be used to convert even-aged stands to uneven-aged. Converting even-aged stands to an uneven-aged stands is a very long process that takes several treatments.
- ICT Intermediate Commercial Thinning
    - An even-aged treatment, beginning with **pulpwood** size trees and ending before a regeneration harvest is conducted, that improves the health and vigor of the stand.
- M Mow
    - This treatment is used to maintain a specific successional stage for a variety of habitat, recreation, and safety reasons.
    - GR Mow at least every three years to retain a grassy condition.
- MTR **Mast**-Tree **Release**
    - This treatment removes competition from around the **crown** of mast producing trees such as apples and oaks.
- NTS No Treatment Scheduled
- PC Patch Cuts/Small Clearcuts
    - This treatment is a regeneration harvest where essentially all trees are removed from areas less than five-acres in size. Dispersed trees or groups of trees may be retained in or outside the patches. Patches are generally located in areas with good advanced regeneration or seed-trees or in areas that consist of mostly unacceptable growing stock. The percentage of area of a stand to regenerate with patch cuts depends on the size of the stand and the management direction. The following table provides the percentage of area to regenerate using patch cuts.

MD	Stand Ac	Percentage
ASR	< 3 acres	100%
ASR	3.1 to 10 acres	50%
ASR	> 10 acres	25%
E-L	n/a	50%
E	n/a	33 to 50%
U	n/a	20 to 33%

- SCH Convert Conifer Plantation to Hardwoods
  - This treatment converts conifer plantations to a natural hardwood cover type using various silvicultural treatments.
  - C The **conversion** shall be accomplished using a clearcut or **overstory** removal regeneration method.
  - P The conversion shall be accomplished using patch cuts (see description above).
- SCM Convert Conifer Plantation to a Hardwood/Conifer Mixed Cover Type
  - This treatment converts conifer plantations to a natural hardwood/conifer cover type using various silvicultural treatments.
  - P The conversion shall be accomplished using patch cuts (see description above).
  - S The conversion shall be accomplished using a **seed tree** or shelterwood regeneration method (see description below).
- SS Seed-tree or Shelterwood
  - These treatments are even-aged regeneration methods. Seed tree regeneration methods remove all but a small number of trees, which are left for seed production and to produce a new **age class** in a fully exposed microenvironment. The seed trees may be removed after adequate regeneration becomes established.
  - Shelterwood methods may use two or three cuttings to regenerate an even-aged stand. Most trees are cut, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment.
- TSI **Timber Stand Improvement**
  - This is a noncommercial treatment done to improve the health and vigor of a stand. It may include mechanically cutting of trees or herbicide application.
- VDT Variable Density Thinning
  - A thinning regime that creates horizontal variation in stand density including areas that are not thinned, areas where all trees are removed, and thinned areas that may have different residual densities.

h. Project Completion Interval (PCI)

- A 2018 through 2022
- B 2023 through 2027
- C 2028 through 2035
- D 2036 through 2040
- E No treatment scheduled.
- Y Annually

1. Table of Land Management Actions by State Forest

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
Beaver Dam State Forest (Broome-Tioga 2) - Compartment A													
A-1	5.3	NH	NH	RM	WA	BC	HM	BEE	U	D	128	GS	A
A-2	22.9	NH	NH	HM	WA	RM	RO	BW	U	D	79	GS	D
A-3	22.3	NH	NH	RM	WA	ASP	SP	BC	E	C	58	NTS	E
A-4	5.2	NH	NH	RM	RO	WA	BC	BB	E	C	88	ICT	B
A-5	10.5	NH	NH	RM	ASP	RP	BB	WA	U	C	100	GST-E	B
A-6	2.5	NH	NH	WA	ASP	RM	TS	AP	E	C	84	TSI	B
A-7	2.8	NH	NH	HM	RM	WA	BEE	IWD	U	C	95	GST-E	B
A-8	9.0	NH	NH	HM	WA	BEE	BC	RO	U	E	98	GST-E	B
A-9	28.3	NH	NH	RM	BEE	BC	HM	ASP	E	C	102	PC	B
A-10	14.2	NH-HEM	M	RM	WA	HM	HEM	BB	U	C	109	GST-E	B
A-11	10.1	NH-HEM	M	HM	YB	HEM	RM	BW	P	D	87	NTS	E
A-12	5.4	NH	NH	HM	RM	ASP	WA	HEM	P		95	NTS	E
A-13	48.1	NH-HEM	M	RM	BEE	ASP	HEM	BB	E	C	108	SS	BD
A-14	18.8	NH-HEM	M	RM	HEM	WP	YB	HM	P	C	132	NTS	E
A-15	32.6	NH	NH	HM	RM	WA	BW	BEE	U	D	105	GS	D
A-16	15.1	NH-HEM	M	HEM	YB	RM	HM	WP	P	C	173	NTS	E
A-17	57.8	NH-P	NH	RP	NS	ASP	BC	RO	U	D	137	SCM-P	A
A-18	46.3	NH-HEM	M	RM	BEE	HEM	WA	HM	E		108	SS	BD
A-19	1.4	NS	M	NS	WA				E		86	ICT	D
A-20	15.8	NH	NH	RM	ASP	HM	RO	BEE	E	C	116	ICT	B
A-21	5.8	NH	NH	RM	RO		HM	BB	E	C	81	ICT	B
A-22	9.4	NH-P	NH	RP	RM	BC	WP	WA	U		108	SCH-P	A
A-23	3.2	OW	OW	TS					P		0	NTS	E
A-24	4.2	NH	NH	RM	YB	HEM	BEE	BBE	E	D	76	ICT	B
A-25	18.3	NH-HEM	M	HM	HEM	WA	BC	RM	P	D	103	NTS	E
A-26.1	193.8	NH	NH	RM	BEE	HM	WA	BB	U	D	110	GS	C
A-26.2	21.4	NH-HEM	M	RM	YB	HEM	WA	HM	P	C	113	NTS	E
A-27.1	15.4	NH-S	NH	WS	RM	WC	WP	ASP	ASR	D	82	SCH-P	D

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
A-27.2	5.2	PH	PH	ASP					ASR	A	0	NTS	E
A-28	12.7	NH	NH	ASP	RM	BEE	HM	BC	ASR	C	126	PC	AD
A-29	2.8	WP-NS	PH	ASP	NS	WP	RM	WO	ASR	C	147	SCH-C	A
Beaver Dam State Forest (Broome-Tioga 2) - Compartment B													
B-1.1	10.9	TH	TH	HM	RM	RO	WA	BC	E	D	129	ICT	A
B-1.2	3.3	NH	NH	WA	HM	BW	RM	IWD	P	D	100	NTS	E
B-1.3	13.3	NH-S	M	NS	ASP	WA	RM	BC	P	C	123	NTS	E
B-2	3.4	NH-HEM	M	RM	HM	RO	HEM	IWD	E	C	93	ICT	A
B-3	16.6	NS	M	NS	BC	ASP			U	D	118	SCM-P	D
B-4	5.9	OW	OW	TS					P		0	NTS	E
B-5	21.1	NS-SP	M	RP	NS	BC	WC		U		117	SCM-P	A
B-6	16.1	NH-HEM	M	HEM	RM	ASP	BC	BEE	U	C	102	GST	B
B-7	18.9	NH	NH	HM	RM	WA	BC	BEE	U	D	129	GST	B
B-8	19.9	NH	NH	RM	HM	BC	ASP		U		126	GST-E	B
B-9	17.7	NH-HEM	M	HEM	HM	RM	YB	BC	P	D	107	NTS	E
B-10	12.5	NH	NH	RM	HEM	ASP	BEE	RO	ASR	C	107	PC	AD
B-11	13.4	NS	M	NS	BC	RM	ASP	RO	E	D	140	SS	D
B-12	5.8	NH	NH	RM	HM	BW	WA	YB	E	C	140	ICT	A
B-13	6.7	NH-HEM	M	RM	HM	BC	HEM	BEE	E	D	124	ICT	A
B-14	18.3	NH	NH	HEM	BEE	HM	WA	BW	E	D	67	ICT	D
B-15	23.9	NH	NH	RM	BEE	BB	RO	ASP	E		108	ICT	A
B-16	20.7	NH-HEM	M	RM	HEM	RO	BEE	YB	E	D	127	PC	D
B-17	109.2	NH	NH	RM	BEE	HM	WA	ASP	U	D	112	GST-E	A
B-18	20.5	NH	NH	HM	WA	RM	HEM	BB	E	D	114	ICT	A
B-19.1	45.9	NH	NH	HM	HEM	BC	BEE	RM	E	D	73	COR	B
B-19.2	18.1	NH	NH	HEM	RM	YB	BEE	WA	P	D	124	NTS	E
B-20	2.8	PH	PH	ASP					ASR	A	0	NTS	E
B-21	6.2	NH	NH	RM	BEE	ASP	RO	HEM	ASR	C	103	PC	AD
B-22	10.1	NH	NH	ASP	RM	WA	BEE	BB	ASR	C	110	PC	AD
B-23	6.1	NH-P		RP	BC	RM			E		204	SCH-C	A
Grigg's Gulf State Forest (Cortland 11) - Compartment A													
A-1.1	11.5	NH	NH	HM	RM	BEE	YB	BC	U	D	76	GST-E	D
A-1.2	7.0	WP-HEM	C	RM	WP	HEM	HM	YB	U	C	126	GST-E	D
A-1.3	4.7	PH	NH	ASP	RM	WA	HM	YB	E	C	83	ICT	D
A-2	25.3	NH-HEM	M	HM	WA	BW	HEM	BEE	U	D	103	GST-E	A
A-3	16.2	NH	NH	HM	WA	BW	BEE	BB	U	D	103	GST	A
A-4	19.0	NH	NH	HM	WA	BC	BW	BEE	E	D	111	SS	AB
A-5	10.2	NH	NH	HEM	HM	RM	BW	WA	U	D	105	NTS	E
A-6	7.5	NH-HEM	M	HEM	WA	RM	BW	HM	E	D	153	ICT	A

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
A-7	26.1	NH-HEM	M	RM	HM	BB	RO	HEM	U	C	110	GST-E	D
A-8	11.5	NH-HEM	M	RM	HEM	HM	BB	ASP	U	C	153	GST-E	D
A-9	12.5	TH	TH	BEE	RM	RO	ASP	HM	E	C	144	ICT	B
A-10.1	31.7	NH	NH	RM	HM	BEE	BC	RO	U	C	47	NTS	E
A-10.2	10.1	NH-HEM	M	RM	HEM	HM	RO	WA	U	D	181	GST-E	B
A-10.3	20.7	TH	TH	RO	RM	HM	WA	BB	U	D	134	GS	B
A-11	10.7	TH	TH	RM	WA	HM	RO	BW	E	D	122	ICT	A
A-12	30.9	NH	NH	HM	RM	BEE	WA	HEM	U	D	105	GST-E	A
A-13	6.2	NS	M	NS	RM	ASP	WP	RO	E	C	162	ICT	D
A-14	39.6	TH	TH	RM	RO	BEE	HEM	ASP	E	D	103	ICT	B
A-15	52.8	TH	TH	ASP	RM	RO	BEE	BB	E		113	ICT	D
A-16	34.0	NH	NH	RM	BEE	HM	WA	HEM	U	D	116	GST-E	B
A-17.1	13.3	NH	NH	RM	BEE	RO	ASP	HM	E	D	123	ICT	B
A-17.2	22.8	NH	NH	RM	BEE	BW	HEM	BB	U	D	70	NTS	E
A-18	24.7	NH-HEM	M	HEM	BEE	RM	BB	HM	U	D	121	NTS	E
A-19	22.0	RP-S	M	RP	NS	RM	WA	BC	U	C	173	SCM-P	D
A-20	15.6	NH-HEM	M	RM	HEM	BEE	HM	BC	P	D	129	NTS	E
A-21	12.9	NH	NH	RM	BEE	ASP	RO	BB	U	D	145	GS	B
A-22	12.2	NH	NH	RM	HM	BEE	RO	ASP	U	C	101	GS	B
A-23	6.9	PH	PH	ASP	RM	BEE	WA	HM	ASR	D	123	PC	D
A-24	23.5	NH	NH	RM	ASP	RO	WS	WP	E	C	111	ICT	C
A-25	69.9	TH	TH	ASP	RM	RO	BEE	WA	E	C	112	ICT	C
A-26	18.6	NH	NH	WA	BEE	RM	HM	BW	E	C	122	ICT	B
A-27	22.1	NH-S	M	NS	RM	ASP	RO	HM	E	C	144	ICT	D
A-28	6.7	NH-P	M	WP	RO	RM	ASP	WA	E	C	98	ICT	D
A-29	54.6	TH	TH	RM	ASP	RO	WA	BEE	E		143	ICT	D
A-30	26.8	RP-S	M	RP	NS	RM	BC	BEE	E	D	150	ICT	D
A-31	12.2	NH-HEM	M	HEM	RM	RO	WP	TS	P	C	201	NTS	E
A-32	5.8	NH-HEM	M	RM	HEM	ASP	BEE	BC	E	C	160	ICT	D
A-33	5.2	NH	NH	RM	BEE	HM	WA	BW	E		140	ICT	D
A-34	5.9	NS	M	NS	ASP	WP	BC	RM	E	D	164	ICT	D
A-35	19.0	NH	NH	RO	ASP	RM	BEE	WA	P	D	119	NTS	E
Grigg's Gulf State Forest (Cortland 11) - Compartment B													
B-1	7.8	NH-HEM	M	HEM	RM	HM	RO	WA	U	D	125	GST-E	B
B-2	7.6	NH-S	M	NS	RO	ASP	RM	BC	E	D	123	ICT	B
B-3	49.2	TH	TH	RM	RO	BEE	HM	BC	E	D	110	ICT	A
B-4	5.4	NH-HEM	M	HEM	RM	HM	WA	BW	U	D	130	GST-E	B
B-5.1	9.3	NH	NH	RM	ASP	BC	WA	YB	E	D	118	ICT	A
B-5.2	18.1	NH	NH	HM	RM	HEM	WA	BEE	U	E	109	GST	D

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
B-6	7.8	NH-HEM	M	RM	BB	BEE	HM	WA	E	D	120	SS	BC
B-7	19.8	NS-SP	M	NS	RM	SP	ASP	HEM	E	D	168	ICT	A
B-8.1	26.8	NH	NH	HM	RM	WA	BEE	BW	U	D	136	GST-E	D
B-8.2	8.8	TH	TH	RM	RO	HM	HEM	WA	P	D	128	NTS	E
B-9	39.4	NH-HEM	M	HM	RM	WA	HEM	BEE	U	D	158	GST	D
B-10	28.9	NH	NH	HM	BC	RM	WA	BW	E	D	132	ICT	D
B-11	25.1	NH	NH	RM	HM	BEE	BC	WA	E	E	120	COR	B
B-12	61.1	NH-HEM	M	HEM	RM	HM	WA	BC	U	D	158	GST	C
B-13	11.2	NH-S	M	NS	RM	WA	ASP	BC	E	D	135	ICT	C
B-14	13.8	NH	NH	RM	BEE	HEM	BC	WP	E	D	119	SS	BC
B-15	33.8	NH-HEM	M	HEM	RM	HM	WA	BC	U	D	151	GST	C
B-16	77.5	NH	NH	RM	HM	WA	BEE	BC	U	D	135	GST	D
B-17	7.4	NH-HEM	M	RM	HEM	BEE	BC	RO	E	C	148	ICT	C
B-18	61.5	NH	NH	RM	BEE	RO	HEM	ASP	E	D	129	ICT	A
B-19	17.9	NH-HEM	M	WA	RM	HM	RO	HEM	P	D	136	NTS	E
B-20	11.7	NH	NH	HM	WA	RM	RO	BC	E	D	126	ICT	D
B-21	19.1	NH-HEM	M	HEM	RM	HM	BEE	BB	U	D	154	GST-E	C
B-22	14.4	NH	NH	RM	BEE	RO	WA	BW	E	D	145	ICT	A
B-23	12.8	TH	TH	RM	ASP	RO	BEE	YB	E	C	123	ICT	A
B-24	2.8	NH	NH	RM	HM	WA	BW	HEM	U	D	143	GST	D
Grigg's Gulf State Forest (Cortland 11) - Compartment C													
C-1.1	4.8	NH	NH	NS	HM	RM	YB	ASP	P	C	120	NTS	E
C-1.2	10.1	PH	NH	RM	HM	ASP	BW	BC	E	C	103	ICT	B
C-2	23.2	NH	NH	HM	RM	WA	ASP	HEM	U	D	133	GST-E	A
C-3	8.8	NH	NH	RM	BEE	ASP	BB	RO	E	D	140	ICT	D
C-4	13.0	NH-S	M	NS	RM	BC	BL		E	C	125	ICT	C
C-5.1	7.2	NH	NH	WA	HM	BW	HEM		U	D	133	GST-E	D
C-5.2	14.8	NH	NH	WA	HM	RM	BEE	HEM	U	D	137	GST-E	D
C-6.1	12.7	NH-HEM	M	BW	RM	WA	HEM	YB	NA	C	94	NTS	E
C-6.2	3.7	NH	NH	HM	BEE	RM			E		70	SS	D
C-7	11.0	NH-HEM	M	HEM	RM	ASP	YB	BEE	U	C	115	GST-E	A
C-8	1.9	Pond	Pond						P			NTS	E
C-9	23.5	NH	NH	RM	ASP	SP	BC	HM	ASR	C	66	PC	AD
C-10	17.8	NH	NH	RM	WA	ASP	BEE	BC	E	C	95	ICT	D
C-11	18.2	NH-S	NH	ASP	RM	WS	SP	WA	ASR	C	85	SCH-P	AD
C-12	25.6	NH	NH	RM	HM	WA	BW	HEM	U	E	112	GST	D
C-13.1	39.2	RP-S	M	RP	NS	RM	BC	WC	E	D	103	SCM-P	C
C-13.2	15.1	PH	NH	NS	RM				E		20	NTS	E
C-14	27.7	TH	TH	RM	BEE	RO	WA	HM	E		95	ICT	B

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
C-15	20.9	L	NH	JL	WA	RM	RP	BC	E	D	71	SCH-C	C
C-16	18.0	NH-HEM	M	RM	BEE	HEM	BB	RP	E	C	150	ICT	B
C-17	14.3	RP	NH	RP	BB	RM	WA	JP	E	D	116	ICT	C
C-18	11.5	NH-S	NH	WS	WA	RM	ASP	EL	E	D	111	ICT	C
C-19	11.1	NH-P	NH	RP	RM	WA	NS	ASP	E	C	98	ICT	C
C-20	10.9	NH-S	NH	RM	BC	WA	WS	ASP	E	C	43	NTS	E
C-21.1	11.2	NH-P	NH	RP	RM	BC	SP	HM	E	C	90	ICT	B
C-21.2	8.2	PH	NH	WA	BC				E	C	10	NTS	E
C-22	2.4	NH	NH	WA	HM	RM	BC		E	C	103	ICT	B
C-23	15.8	TH	TH	RM	RO	HEM	WP	WA	E	C	131	ICT	B
C-24	13.2	NH-HEM	M	HEM	RM	BB	BW	WA	P	D	120	NTS	E
C-25	28.4	NH	NH	HM	RM	WA	BEE	HEM	U	D	144	GST-E	A
C-26	22.4	NH	NH	RM	BEE	HM	WA	BW	U	D	133	GST-E	A
C-27	17.0	TH	TH	WA	HM	RO	RM	BEE	E	C	159	ICT	A
C-28	17.5	RP	NH	RP	RM	WA	WS	HM	E	C	106	SCH-C	B
C-29	25.2	PH	NH	ASP					E	A	0	NTS	E
C-30	10.6	NH-HEM	M	NS	BB	RM	HEM	TS	E	C	60	ICT	B
C-31	15.5	NH-HEM	M	RM	HEM	HM	YB		P	C	117	NTS	E
C-32	15.9	NH-HEM	M	HEM	RM	RO	BB	ASP	U	C	115	GST-E	C
C-33	14.6	NH-HEM	M	HEM	RM	HM	YB	BW	P	D	147	NTS	E
C-34	17.5	NH-HEM	M	RM	HEM	HM	BW	BEE	U		150	GST-E	A
C-35	4.2	NH-HEM	M	RM	HEM	BW	BEE	YB	E	C	140	ICT	A
C-36	13.5	NH	NH	RM	SP	WA	ASP	BB	ASR	C	87	PC	B
C-37	3.7	NS	M	NS	WA	RP	BC	RM	E	D	127	SS	BC
C-38	18.5	NH	NH	WA	RM	ASP	HM	BC	E	C	104	ICT	A
C-39	2.0	NH	NH	BC	RM	HM	WA	HWT	E	C	77	ICT	C
C-40	8.0	NH-S	M	NS	RM	WP	TS	YB	U	C	126	GST-E	C
C-41	10.5	NH-HEM	M	RM	ASP	BEE	HEM	WA	U	C	100	GS	C
C-42	9.0	NS	M	NS	RM	WP	ASP	WA	E	C	154	ICT	C
C-43	3.7	WP-NS	NH	WS	RM	BC	TS	WA	E	C	117	ICT	C
C-44	18.7	NH	NH	RM	WA	ASP	BC	RP	E	C	68	NTS	E
C-45.1	6.1	NH	NH	ASP	RM	RP	BB		E	C	45	NTS	E
C-45.2	3.2	BR	NH						E		0	NTS	E
C-46	5.9	NH-HEM	M	RM	BEE	HEM	WA	ASP	E	D	140	ICT	B
C-47	12.8	NH-HEM	M	HEM	RM	BEE	HM	BC	U	D	146	GST-E	B
C-48	16.0	NH-HEM	M	HM	HEM	BEE	BC	RM	U	D	138	GST-E	B
C-49	7.6	NH-HEM	M	BEE	RM	HEM	WA	BB	E	C	103	ICT	B
C-50	3.4	NH	NH	BEE	PC	BC	HEM	WA	E	C	53	TSI	D
C-51	8.0	NH-P	NH	SP	RM	WA	ASP	BC	E	C	64	NTS	E

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
C-52	3.6	NH-S	M	NS	WP	RM	BC	ASP	E	C	137	ICT	C
C-53	1.9	NH	NH	WA	BC	RM	APL	RP	E	D	74	NTS	E
C-54	16.8	PH	NH						E	A	0	NTS	E
C-55	25.7	NH	NH	HEM	ASP	NS	WA	RM	P	C	90	NTS	E
C-56	7.7	NH-S	M	NS	WA	ASP	BC		E	D	175	ICT	C
C-57	20.1	NH-HEM	M	HEM	RM	HM	WP	ASP	U	C	182	GST-E	C
C-58	5.6	NS-SP	M	NS	RM	SP	ASP	WA	E	C	184	SCH-P	A
C-59	3.1	NH-P		SP	BC	ASP	RM	APL	E	D	80	ICT	A
C-60	5.6	NH	NH	HM	RM	WA	BEE	RO	E	D	111	ICT	A
C-61	14.2	NH	NH	HM	BEE	BW	WA	ASP	U	D	139	GST-E	B
C-62	4.4	NH	NH	RM	BC	BBE	ASP	RO	E	C	77	ICT	C
C-63	8.7	NH	NH	RM	YB	BEE	TS	RO	E	D	151	ICT	B
C-64	7.1	NH	NH	HM	WA	BEE	RM	HEM	E	E	98	SS	BC
C-65	2.4	NH-HEM	M	HEM	BEE	BB			P	D	147	NTS	E
C-66	4.6	NH-HEM	M	BEE	HEM	HM	BB	BC	E		127	ICT	C
C-67	7.0	NH	NH	HM	RM	WA	BB	BEE	E	D	90	SS	BD
C-68	46.2	NH	NH	RM	ASP	WA	HEM	BB	U	C	92	GS	C
C-69	13.3	NH-P		RP	RM	BC	HM	WA	E	C	140	ICT	A
Turkey Hill State Forest (Tioga 5) - Compartment A													
A-1	10.5	NH	NH	HM	RM	WA	RO	BEE	E	C	118	ICT	B
A-2	10.3	NH	NH	RM	ASP	BEE	RO	BB	ASR	C	120	PC	AD
A-3	14.7	NH	NH	RM	HM	BEE	RO	WA	U	D	105	GST	C
A-4.1	2.0	NH	NH	RM	BC	WA	RO	BEE	E		133	ICT	B
A-4.2	4.8	NH	NH	RM	WA	HM	RO	BEE	P		107	NTS	E
A-5.1	1.5	OAK	TH	RO	RM	BC	BW	ASP	E	D	113	ICT	A
A-5.2	4.5	NH	NH	RM	RP	SP	ASP	BW	P	D	116	NTS	E
A-6	12.5	NH-P		RP	RM	BC	WA	WP	E	D	115	SCM-C	A
A-7	13.6	OAK-HEM	M	RO	RM	BEE	HEM	HM	E	D	111	ICT	B
A-8	14.5	PH	PH	RM	ASP	BEE	BB	RO	ASR	C	114	PC	AD
A-9	27.6	NH	NH	RM	BEE	RO	BB	ASP	U	C	119	GS	C
A-10	6.2	NH	NH	RM	ASP	BEE	RO	BB	U	C	128	GST-E	D
A-11.1	1.5	PH	NH	BC	ASP	RM	WA		E	D	40	NTS	E
A-11.2	2.6	PH	PH	BC	WA	ASP	APL	WP	P	C	100	NTS	E
A-12	2.5	SW	SW						P		0	NTS	E
A-13	13.5	NH-HEM	M	RM	HM	WA	BEE	BW	E	C	123	ICT	B
A-14	22.7	NH	NH	RM	HEM	ASP	BEE	WA	P		110	NTS	E
A-15	9.8	NH	NH	RM	BEE	ASP	BB	RO	ASR	C	121	PC	AD
A-16	9.3	NH-P		RP	RM	ASP	HM	WA	U	D	90	SCH-P	A
A-17	4.4	OW	OW						P		0	NTS	E

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
A-18	7.3	NH-P	NH	RM	RP	WA	BC	HEM	P	C	109	NTS	E
A-19	24.9	NH-P	NH	RM	WS	DF	BC	WC	U	C	100	SCH-P	A
A-20	11.0	NH	NH	RM	RO	WA	BC	WP	E	C	94	ICT	D
A-21	16.2	NH	NH	RM	WA	ASP	RO	BB	E	C	111	ICT	B
A-22	8.2	NH-S	NH	RM	WA	WP	BF	SP	E	C	100	SCM-P	A
A-23	14.6	RP	NH	RP	ASP	RM	SP	JP	U	C	105	SCH-C	A
A-24	7.5	NH-HEM	M	HEM	RM	BEE	RO	WA	U	D	144	GST-E	A
A-25.1	99.6	NH-HEM	M	RM	RO	HEM	WA	HM	U	D	90	GS	D
A-25.2	10.0	NH-HEM	M	RM	HEM	RO	BEE	BC	U	D	112	GST	D
A-25.3	3.2	WP-HEM	C	HEM	WP	RM	RO	YB	P	D	160	NTS	E
A-26	12.2	NH-HEM	M	RO	HEM	HM	RM	WA	E	D	92	SS	B
A-27	43.3	OAK	TH	RO	RM	HM	WA	HEM	E	D	75	SS	B
A-28	3.8	TH	TH	RM	HM	WA	ASP	RO	E	C	100	ICT	B
A-29	7.3	NH	NH	RM	WA	ASP	BEE	HM	P	D	94	NTS	E
Turkey Hill State Forest (Tioga 5) - Compartment B													
B-1	26.2	NH	NH	RM	HM	BW	WA	BEE	E	D	110	ICT	B
B-2	15.3	TH	TH	RM	HM	BEE	WA	RO	E	D	123	SS	BC
B-3	11.6	RP-S	M	RM	RP	NS	RO	BEE	E	D	145	SCM-P	C
B-4.1	12.7	NH	NH	RM	HM	ASP	BEE	WA	U	C	115	GS	B
B-4.2	11.5	NH-HEM	M	RM	HEM	HM	WA	RO	U		131	GST	B
B-5	9.7	NH-HEM	M	HM	ASP	RM	RO	HEM	E	D	126	ICT	B
B-6	17.5	NH-S	M	NS	ASP	HM	BC	BW	E	D	177	PC	A
B-7	7.8	NH-P	M	RM	WP	ASP		BBE	E	C	96	ICT	C
B-8.1	8.1	NH-S	M	NS	RM	WP	ASP	BC	NA	C	122	NTS	E
B-8.2	1.3	NH	NH	RM	HM	BC	WP	WA	P	C	95	NTS	E
B-8.3	6.3	WP-NS	M	NS	WP	ASP	BC	HM	E	C	141	SCM-P	C
B-9	0.5	SW	SW						P		0	NTS	E
B-10	7.3	NH-P	NH	WP	RM	WA	HM		E	C	142	SCH-C	C
B-11	14.1	NH-P	NH	RM	RP	SP	WA	RO	U	C	113	SCH-P	C
B-12	33.3	RP-S	NH	RP	SP	WA	RM	NS	U	D	136	SCH-P	C
B-13.1	17.5	NH-HEM	M	HM	RM	BW	BEE	WA	P	C	86	NTS	E
B-13.2	9.1	NH	NH	ASP	WA	SP	RP	RM	P		77	NTS	E
B-14	40.1	NH-P	NH	WA	RM	SP	BB	DL	U	C	83	SCH-P	C
B-15	3.5	NH-P	APH	RP	APL	WA	SP	RM	APH		53	MTR	A
B-16	6.5	NH	NH	RM	HM	BEE	WA	RO	E	D	86	SS	D
B-17	3.4	NH	NH	RM	HM	WA	RO		E	D	90	ICT	D
B-18	44.3	RP-S	NH	RP	WS	ASP	BC	RM	U	D	131	SCH-P	C
B-19	11.9	NH	NH	RM	HM	WA	RO	BC	U	E	60	NTS	E
B-20.1	9.9	NH-S	M	NS	BC	RM	RO	YB	E	D	156	ICT	C

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
B-20.2	1.6	NH-S	M	RM	RP	NS	BC	IWD	P		114	NTS	E
B-21.1	22.4	RP-S	NH	RP	NS	RM	WA	ASP	E	D	131	SCM-S	C
B-21.2	11.1	NH	NH						E	A	0	NTS	E
B-22	5.8	NH	NH	RM	WA	BEE	BC	IWD	E	D	125	ICT	C
B-23.1	7.5	NH	NH	RM	BEE	HM	ASP	BW	U	C	113	GS	A
B-23.2	2.7	BR	NH	YB	RM	BB	HM	WP	P		35	NTS	E
B-23.3	4.6	NH	NH	RM	HM	WA	BC		P	C	115	NTS	E
B-24.1	68.7	NS	M	NS	RM	BC	ASP	WA	U	C	142	GST-E	B
B-24.2	7.1	NS	M	NS	RM	SP			P	C	100	NTS	E
B-25	21.3	WS	PH	RM	WS	BC	ASP		ASR	C	97	SCH-P	B
B-26	3.6	NH-P	NH	RP	SP	RM	BC	HM	E	C	90	SCH-C	B
B-27	7.6	NS	M	NS	RM	ASP	BC	HM	E	C	152	ICT	B
B-28	4.1	NH	NH	RM	RP	WA	BEE	BB	U	C	80	GS	C
B-29	7.8	NH	NH	RM	HM	BEE	WA	BC	E		114	ICT	B
B-30.1	5.1	NH-HEM	M	RM	HEM	YB	WA	BB	P	C	186	NTS	E
B-30.2	3.9	NH	NH	RM	BC	RO	WA	BEE	P	C	90	NTS	E
B-31.1	32.3	NH	NH						E	A	0	NTS	E
B-31.2	31.3	NH-P	NH	RP	RM	WA	BC	HM	U	C	137	SCH-P	C
B-32	3.5	NH	NH	RM	RO	WA	WP	BB	E	C	110	ICT	C
B-33	22.2	NH-HEM	M	RM	HM	HEM	ASP	WA	U		123	GST	A
B-34.1	17.3	NH	NH						E	A	0	NTS	E
B-34.2	7.0	RP	NH	RP	RM	ASP	BC		E	C	185	SCH-C	B
B-35	3.0	PH	NH	RM	ASP				P	C	55	NTS	E
B-36	3.4	NH	APH	RM	ASP	WA	APL	BC	APH	C	75	MTR	A
Michigan Hill State Forest (Tioga 8) - Compartment A													
A-1.1	20.9	NH	NH	WA	HM	HEM	RM	BC	U	C	146	GST-E	A
A-1.2	2.5	RP-S	NH	RP	WA	RM	NS	BB	U	C	152	SCM-C	A
A-2	4.3	NH	NH	APL	RM	BC	WA	HM	NA	C	90	NTS	E
A-3.1	17.6	NS	M	NS					NA	C	230	NTS	E
A-3.2	6.4	BR	NH						NA		0	NTS	E
A-4	6.5	RP-L	M	JL	NS	RP			U	D	53	NTS	E
A-5	4.6	RP	NH	RP	BC	RO			U	C	64	NTS	E
A-6.1	15.1	APH	APH	HWT	APL	ASP	RM	BC	P	C	54	MTR	A
A-6.2	8.3	PH	NH	ASP	BC	BBE	HEM	Elm	P	C	64	NTS	E
A-6.3	17.9	OW	OW						P		0	NTS	E
A-6.4	8.4	SW	SW						P		0	NTS	E
A-6.5	2.1	L	M	JL	NS				P	C	155	NTS	E
A-7	6.5	NH	NH	HM	RM	WP	BC	BBE	U	D	95	GST-E	C
A-8	32.6	TH	TH	RM	BEE	HM	RO	BW	U	D	120	GST	C

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
A-9	8.7	TH	TH	RO	HEM	RM	WA	BEE	U	D	130	GST-E	A
A-10.1	29.4	NH	NH	RM	BEE	HM	RO	WA	E	D	115	COR	C
A-10.2	24.8	TH	TH	RM	RO	BEE	PO	HM	U	D	143	GS	C
A-10.3	15.8	NH	NH	HM	WA	BC	RO		U	D	63	NTS	E
A-11	6.1	TH	TH	RM	BB	RO	ASP	BEE	E	C	103	ICT	D
A-12	7.2	L	NH	JL	RM	HM			E	C	138	ICT	A
A-13	10.0	NH	NH	RM	ASP	WA	RO	BB	E	C	90	ICT	A
A-14.1	17.0	NH-HEM	M	HEM	RM	BEE	RO	HM	U	D	125	GST-E	A
A-14.2	11.7	NH-HEM	M	HM	HEM	RM	WA	BW	U	D	48	GST-E	D
A-14.3	8.3	NH-HEM	M	RM	WP	RO	BEE	WA	NA	C	140	NTS	E
A-14.4	4.9	NH-P	M	WP	RM	RO	HM		E	C	123	ICT	A
A-15	9.2	L	NH	JL					E	C	158	ICT	A
A-16.1	29.3	NH	NH	RM	HM	RO	ASP	BC	U	C	97	GST-E	D
A-16.2	6.8	NH	NH	WA	BC	ASP	BBE	YB	P		96	NTS	E
A-16.3	6.0	PH	NH	ASP	Elm	BC			E	C	40	ICT	A
A-17	18.6	NH-HEM	M	RM	HEM	BEE	BW	BB	P	C	200	NTS	E
A-18	13.6	TH	TH	RM	RO	BEE	BB	ASP	U	C	116	GS	D
A-19	20.7	NH	NH	RM	ASP	WA	RO	BC	E	C	82	ICT	D
A-20	14.1	NH	NH	RM	HM	WA	RO	ASP	E	C	106	ICT	A
A-21	4.2	NH	NH	RM	BEE	RO	ASP	WA	E	C	133	ICT	D
A-22	16.0	NH	NH	RM	ASP	BEE	RO	BB	U	D	128	GS	A
A-23	14.7	NH	NH	RM	BEE	ASP	RO	PC	U	D	122	ICT	A
Michigan Hill State Forest (Tioga 8) - Compartment B													
B-1	12.3	OAK	TH	RO	BEE	RM	BB	PO	U	D	150	GS	A
B-2	26.5	NH	NH	RM	WA	ASP	HM	RO	E	C	87	ICT	A
B-3.1	14.2	NH	NH	HM	RO	BC			U	D	22	NTS	E
B-3.2	5.3	NH	NH	HM	RM	WA	RO	BB	U	D	81	GST-E	D
B-4	12.8	NH	NH	RM	HM	WA	ASP	RO	U	C	85	GST-E	C
B-5	18.0	OAK-HEM	M	RM	HM	RP	RO	PC	E	A	37	NTS	E
B-6	6.6	NS	M	NS	RP	RM	HM		E	C	158	ICT	B
B-7.1	5.6	BR	NH	ASP	APL				E		10	NTS	E
B-7.2	8.7	NS	M						E	A	0	NTS	E
B-8	1.8	NS	M	NS					E		90	ICT	B
B-9.1	8.5	TH	TH	RO	RM	HM	BW	BEE	E	E	98	COR	A
B-9.2	7.8	TH	TH	RO	RM	BEE	BB	HM	P	D	100	NTS	E
B-10	25.7	NH	NH	RM	BEE	ASP	WA	RO	E	C	98	ICT	D
B-11	28.8	TH	TH	RM	RO	BEE	BB	WA	E	C	123	SS	C
B-12	33.1	NH	TH	RM	WA	RO	ASP	BEE	U	C	107	GS	C
B-13.1	6.3	NH	NH	HM	RM	WA	RO	BB	U	D	81	GST	D

Stand Number	Stand Acres	CT	FT	Top Five Species					MD	SC	BA	Treat	PCI
				1	2	3	4	5					
B-13.2	4.5	NH	NH	HM	BW	WA	BO	RM	U	D	24	NTS	E
B-14	25.3	NS	M	NS	RM	ASP	BB	BEE	U	C	155	SCM-P	B
B-15	6.5	PH	PH	ASP	RM	BC	TS	BEE	ASR	C	98	PC	B
Michigan Hill State Forest (Tioga 8) - Compartment C													
C-1	11.9	NH	NH	WA	RO	RM	HM	ASP	U	C	100	GST-E	A
C-2	19.1	NH-HEM	M	ASP	RM	RO	HM	BB	P	C	104	NTS	E
C-3.1	9.9	PH	PH	ASP	RM	WA	BW	RP	ASR	C	46	PC	B
C-3.2	2.0	PH	NH						E	A	0	NTS	E
C-4	23.9	PH	NH	ASP	RM	RO	WA	BC	E	C	77	ICT	D
C-5	1.3	NS	M	NS	RM	BC			E	C	170	ICT	B
C-6	22.1	NH-HEM	M	HEM	RM	HM	YB	BEE	U	D	126	GST-E	D
C-7	27.5	NH	NH	RM	ASP	BEE	HM	WA	U	C	111	GST-E	A
C-8	11.7	NH	NH	BBE	BC	RM	ASP	HM	U	C	53	GST-E	D
C-9	21.3	NH-HEM	M	HEM	BC	WP	BBE	HM	P	C	136	NTS	E
C-10	9.7	NH	NH	RM	BC	WP	HEM	HM	E	C	48	ICT	D
C-11	9.0	WP	M	WP	BC	ASP			E	C	230	ICT	A
C-12	13.9	BR	NH	HM	TS	APL			E		7	NTS	E
C-13	18.2	NH	NH	HM	RM	ASP	TS	WA	E	C	71	ICT	C
C-14	4.9	PH	PH						ASR	A	0	NTS	E
C-15	4.6	SW	SW	APL					P		25	NTS	E
C-16	4.7	NH-S	M	WS	ASP	BC	RP		E	C	73	NTS	E
C-17	9.4	PH	NH	ASP	RP				E		30	NTS	E
C-18	3.8	NH	NH	BC	ASP	RM	TS		P	C	40	NTS	E
C-19	1.4	WP-NS	M	RP	NS	BEE	WP	WS	E	C	157	ICT	A
C-20	4.0	NH	NH	RM	BC	BBE			E	C	136	ICT	B
C-21	3.4	NH	NH	BC	HM	RM	ASP		P	D	83	NTS	E
C-22	6.6	PH	PH	ASP	APL	RM			ASR	C	63	PC	D
C-23	8.6	NS	M						E	A	0	NTS	E
C-24	46.6	GR	GR						GR		0	M-GR	Y
C-25	14.8	SW	SW	HM	RM	WA	BC	BEE	P		35	NTS	E
C-26	6.3	NS	M	NS	ASP	HM			E	C	87	ICT	D
C-27	20.3	L	NH	JL					E	C	100	ICT	D
C-28	12.1	NH	NH	RM	HM	RO	BEE	HEM	E	D	108	SS	B
C-29	22.8	NH-HEM	M	HM	BEE	RM	BB	HEM	U	D	96	GST	B
C-30	12.3	NH	NH	RM	BEE	HM	RO	WA	E	C	118	ICT	A
C-31	13.7	NH	NH	RM	BEE	HM	RO	WA	E	D	106	ICT	A
C-32	41.7	PH	PH	RM	ASP	WA	EL	HM	ASR	C	47	PC	D

2. Table of Land Management Actions by Project Completion Interval

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Broome-Tioga 2	A-1	5.3	NH	U	D	128	GT	A
Broome-Tioga 2	A-17	57.8	NH-P	U	D	137	SCM-P	A
Broome-Tioga 2	A-22	9.4	NH-P	U		108	SCH-P	A
Broome-Tioga 2	A-28	3.0	NH	ASR	C	126	PC	A
Broome-Tioga 2	A-29	2.8	WP-NS	ASR	C	147	SCH-C	A
Broome-Tioga 2	B-1.1	10.9	TH	E	D	129	ICT	A
Broome-Tioga 2	B-2	3.4	NH-HEM	E	C	93	ICT	A
Broome-Tioga 2	B-5	21.1	NS-SP	U		117	SCM-P	A
Broome-Tioga 2	B-10	3.0	NH	ASR	C	107	PC	A
Broome-Tioga 2	B-12	5.8	NH	E	C	140	ICT	A
Broome-Tioga 2	B-13	6.7	NH-HEM	E	D	124	ICT	A
Broome-Tioga 2	B-15	23.9	NH	E		108	ICT	A
Broome-Tioga 2	B-17	109.2	NH	U	D	112	GST-E	A
Broome-Tioga 2	B-18	20.5	NH	E	D	114	ICT	A
Broome-Tioga 2	B-21	3.1	NH	ASR	C	103	PC	A
Broome-Tioga 2	B-22	5.0	NH	ASR	C	110	PC	A
Broome-Tioga 2	B-23	6.1	NH-P	E		204	SCH-C	A
Cortland 11	A-2	25.3	NH-HEM	U	D	103	GST-E	A
Cortland 11	A-3	16.2	NH	U	D	103	GST	A
Cortland 11	A-4	19.0	NH	E	D	111	SS	A
Cortland 11	A-6	7.5	NH-HEM	E	D	153	ICT	A
Cortland 11	A-11	10.7	TH	E	D	122	ICT	A
Cortland 11	A-12	30.9	NH	U	D	105	GST-E	A
Cortland 11	B-3	49.2	TH	E	D	110	ICT	A
Cortland 11	B-5.1	9.3	NH	E	D	118	ICT	A
Cortland 11	B-7	19.8	NS-SP	E	D	168	ICT	A
Cortland 11	B-18	61.5	NH	E	D	129	ICT	A
Cortland 11	B-22	14.4	NH	E	D	145	ICT	A
Cortland 11	B-23	12.8	TH	E	C	123	ICT	A
Cortland 11	C-2	23.2	NH	U	D	133	GST-E	A
Cortland 11	C-7	11.0	NH-HEM	U	C	115	GST-E	A
Cortland 11	C-9	6.0	NH	ASR	C	66	PC	A
Cortland 11	C-11	4.5	NH-S	ASR	C	85	SCH-P	A
Cortland 11	C-25	28.4	NH	U	D	144	GST-E	A
Cortland 11	C-26	22.4	NH	U	D	133	GST-E	A
Cortland 11	C-27	17.0	TH	E	C	159	ICT	A
Cortland 11	C-34	17.5	NH-HEM	U		150	GST-E	A

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Cortland 11	C-35	4.2	NH-HEM	E	C	140	ICT	A
Cortland 11	C-38	18.5	NH	E	C	104	ICT	A
Cortland 11	C-58	5.6	NS-SP	E	C	184	SCH-P	A
Cortland 11	C-59	3.1	NH-P	E	D	80	ICT	A
Cortland 11	C-60	5.6	NH	E	D	111	ICT	A
Cortland 11	C-69	13.3	NH-P	E	C	140	ICT	A
Tioga 5	A-2	2.5	NH	ASR	C	120	PC	A
Tioga 5	A-5.1	1.5	OAK	E	D	113	ICT	A
Tioga 5	A-6	12.5	NH-P	E	D	115	SCM-C	A
Tioga 5	A-8	3.5	PH	ASR	C	114	PC	A
Tioga 5	A-15	4.9	NH	ASR	C	121	PC	A
Tioga 5	A-16	9.3	NH-P	U	D	90	SCH-P	A
Tioga 5	A-19	24.9	NH-P	U	C	100	SCH-P	A
Tioga 5	A-22	8.2	NH-S	E	C	100	SCM-P	A
Tioga 5	A-23	14.6	RP	U	C	105	SCH-C	A
Tioga 5	A-24	7.5	NH-HEM	U	D	144	GST-E	A
Tioga 5	B-6	17.5	NH-S	E	D	177	PC	A
Tioga 5	B-15	3.5	NH-P	APH		53	MTR	A
Tioga 5	B-23.1	7.5	NH	U	C	113	GT	A
Tioga 5	B-33	22.2	NH-HEM	U		123	GST	A
Tioga 5	B-36	3.4	NH	APH	C	75	MTR	A
Tioga 5	A-1.1	20.9	NH	U	C	146	GST-E	A
Tioga 5	A-1.2	2.5	RP-NS	U	C	152	SCM-C	A
Tioga 5	A-6.1	12.0	APH	P	C	54	MTR	A
Tioga 5	A-9	8.7	TH	U	D	130	GST-E	A
Tioga 5	A-12	7.2	L	E	C	138	ICT	A
Tioga 5	A-13	10.0	NH	E	C	90	ICT	A
Tioga 5	A-14.1	17.0	NH-HEM	U	D	125	GST-E	A
Tioga 5	A-14.4	4.9	NH-P	E	C	123	ICT	A
Tioga 5	A-15	9.2	L	E	C	158	ICT	A
Tioga 5	A-16.3	6.0	PH	E	C	40	ICT	A
Tioga 5	A-20	14.1	NH	E	C	106	ICT	A
Tioga 5	A-22	16.0	NH	U	D	128	GT	A
Tioga 5	A-23	14.7	NH	U	D	122	ICT	A
Tioga 5	B-1	12.3	OAK	U	D	150	GT	A
Tioga 5	B-2	26.5	NH	E	C	87	ICT	A
Tioga 5	B-9.1	8.5	TH	E	E	98	COR	A
Tioga 5	C-1	11.9	NH	U	C	100	GST-E	A
Tioga 5	C-7	27.5	NH	U	C	111	GST-E	A
Tioga 5	C-11	9.0	WP	E	C	230	ICT	A

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Tioga 5	C-19	1.4	WP-NS	E	C	157	ICT	A
Tioga 5	C-30	12.3	NH	E	C	118	ICT	A
Tioga 5	C-31	13.7	NH	E	D	106	ICT	A
Tioga 8	A-1.1	20.9	NH	U	C	146	GST-E	A
Tioga 8	A-1.2	2.5	RP-NS	U	C	152	SCM-C	A
Tioga 8	A-6.1	15.1	APH	P	C	54	MTR	A
Tioga 8	A-9	8.7	TH	U	D	130	GST-E	A
Tioga 8	A-12	7.2	L	E	C	138	ICT	A
Tioga 8	A-13	10.0	NH	E	C	90	ICT	A
Tioga 8	A-14.1	17.0	NH-HEM	U	D	125	GST-E	A
Tioga 8	A-14.4	4.9	NH-P	E	C	123	ICT	A
Tioga 8	A-15	9.2	L	E	C	158	ICT	A
Tioga 8	A-16.3	6.0	PH	E	C	40	ICT	A
Tioga 8	A-20	14.1	NH	E	C	106	ICT	A
Tioga 8	A-22	16.0	NH	U	D	128	GS	A
Tioga 8	A-23	14.7	NH	U	D	122	ICT	A
Tioga 8	B-1	12.3	OAK	U	D	150	GS	A
Tioga 8	B-2	26.5	NH	E	C	87	ICT	A
Tioga 8	B-9.1	8.5	TH	E	E	98	COR	A
Tioga 8	C-1	11.9	NH	U	C	100	GST-E	A
Tioga 8	C-7	27.5	NH	U	C	111	GST-E	A
Tioga 8	C-11	9.0	WP	E	C	230	ICT	A
Tioga 8	C-19	1.4	WP-NS	E	C	157	ICT	A
Tioga 8	C-30	12.3	NH	E	C	118	ICT	A
Tioga 8	C-31	13.7	NH	E	D	106	ICT	A
Total Completion Interval A		1433.4						
Broome-Tioga 2	A-4	5.2	NH	E	C	88	ICT	B
Broome-Tioga 2	A-5	10.5	NH	U	C	100	GST-E	B
Broome-Tioga 2	A-6	2.5	NH	E	C	84	TSI	B
Broome-Tioga 2	A-7	2.8	NH	U	C	95	GST-E	B
Broome-Tioga 2	A-8	9.0	NH	U	E	98	GST-E	B
Broome-Tioga 2	A-9	28.3	NH	E	C	102	PC	B
Broome-Tioga 2	A-10	14.2	NH-HEM	U	C	109	GST-E	B
Broome-Tioga 2	A-13	48.1	NH-HEM	E	C	108	SS	B
Broome-Tioga 2	A-18	46.3	NH-HEM	E		108	SS	B
Broome-Tioga 2	A-20	15.8	NH	E	C	116	ICT	B
Broome-Tioga 2	A-21	5.8	NH	E	C	81	ICT	B
Broome-Tioga 2	A-24	4.2	NH	E	D	76	ICT	B
Broome-Tioga 2	B-6	16.1	NH-HEM	U	C	102	GST	B
Broome-Tioga 2	B-7	18.9	NH	U	D	129	GST	B

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Broome-Tioga 2	B-8	19.9	NH	U		126	GST-E	B
Broome-Tioga 2	B-19.1	45.9	NH	E	D	73	COR	B
Cortland 11	A-9	12.5	TH	E	C	144	ICT	B
Cortland 11	A-10.2	10.1	NH-HEM	U	D	181	GST-E	B
Cortland 11	A-10.3	20.7	TH	U	D	134	GT	B
Cortland 11	A-14	39.6	TH	E	D	103	ICT	B
Cortland 11	A-16	34.0	NH	U	D	116	GST-E	B
Cortland 11	A-17.1	13.3	NH	E	D	123	ICT	B
Cortland 11	A-21	12.9	NH	U	D	145	GT	B
Cortland 11	A-22	12.2	NH	U	C	101	GT	B
Cortland 11	A-26	18.6	NH	E	C	122	ICT	B
Cortland 11	B-1	7.8	NH-HEM	U	D	125	GST-E	B
Cortland 11	B-2	7.6	NH-S	E	D	123	ICT	B
Cortland 11	B-4	5.4	NH-HEM	U	D	130	GST-E	B
Cortland 11	B-6	7.8	NH-HEM	E	D	120	SS	B
Cortland 11	B-11	25.1	NH	E	E	120	COR	B
Cortland 11	B-14	13.8	NH	E	D	119	SS	B
Cortland 11	C-1.2	10.1	PH	E	C	103	ICT	B
Cortland 11	C-14	27.7	TH	E		95	ICT	B
Cortland 11	C-16	18.0	NH-HEM	E	C	150	ICT	B
Cortland 11	C-21.1	11.2	NH-P	E	C	90	ICT	B
Cortland 11	C-22	2.4	NH	E	C	103	ICT	B
Cortland 11	C-23	15.8	TH	E	C	131	ICT	B
Cortland 11	C-28	17.5	RP	E	C	106	SCH-C	B
Cortland 11	C-30	10.6	NH-HEM	E	C	60	ICT	B
Cortland 11	C-36	3.0	NH	ASR	C	87	PC	B
Cortland 11	C-37	3.7	NS	E	D	127	SS	B
Cortland 11	C-46	5.9	NH-HEM	E	D	140	ICT	B
Cortland 11	C-47	12.8	NH-HEM	U	D	146	GST-E	B
Cortland 11	C-48	16.0	NH-HEM	U	D	138	GST-E	B
Cortland 11	C-49	7.6	NH-HEM	E	C	103	ICT	B
Cortland 11	C-61	14.2	NH	U	D	139	GST-E	B
Cortland 11	C-63	8.7	NH	E	D	151	ICT	B
Cortland 11	C-64	7.1	NH	E	E	98	SS	B
Cortland 11	C-67	7.0	NH	E	D	90	SS	B
Tioga 5	A-1	10.5	NH	E	C	118	ICT	B
Tioga 5	A-4.1	2.0	NH	E		133	ICT	B
Tioga 5	A-7	13.6	OAK-HEM	E	D	111	ICT	B
Tioga 5	A-13	13.5	NH-HEM	E	C	123	ICT	B
Tioga 5	A-21	16.2	NH	E	C	111	ICT	B

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Tioga 5	A-26	12.2	NH-HEM	E	D	92	SS	B
Tioga 5	A-27	43.3	OAK	E	D	75	SS	B
Tioga 5	A-28	3.8	TH	E	C	100	ICT	B
Tioga 5	B-1	26.2	NH	E	D	110	ICT	B
Tioga 5	B-2	15.3	TH	E	D	123	SS	B
Tioga 5	B-4.1	12.7	NH	U	C	115	GT	B
Tioga 5	B-4.2	11.5	NH-HEM	U		131	GST	B
Tioga 5	B-5	9.7	NH-HEM	E	D	126	ICT	B
Tioga 5	B-24.1	68.7	NS	U	C	142	GST-E	B
Tioga 5	B-25	5.0	WS	ASR	C	97	SCH-P	B
Tioga 5	B-26	3.6	NH-P	E	C	90	SCH-C	B
Tioga 5	B-27	7.6	NS	E	C	152	ICT	B
Tioga 5	B-29	7.8	NH	E		114	ICT	B
Tioga 5	B-34.2	7.0	RP	E	C	185	SCH-C	B
Tioga 5	B-6	6.6	NS	E	C	158	ICT	B
Tioga 5	B-8	1.8	NS	E		90	ICT	B
Tioga 5	B-14	25.3	NS	U	C	155	SCM-P	B
Tioga 5	B-15	3.0	PH	ASR	C	98	PC	B
Tioga 5	C-3.1	5.0	PH	ASR	C	46	PC	B
Tioga 5	C-5	1.3	NS	E	C	170	ICT	B
Tioga 5	C-20	4.0	NH	E	C	136	ICT	B
Tioga 5	C-28	12.1	NH	E	D	108	SS	B
Tioga 5	C-29	22.8	NH-HEM	U	D	96	GST	B
Tioga 8	B-6	6.6	NS	E	C	158	ICT	B
Tioga 8	B-8	1.8	NS	E		90	ICT	B
Tioga 8	B-14	6.0	NS	U	C	155	SCM-P	B
Tioga 8	B-15	3.7	PH	ASR	C	98	PC	B
Tioga 8	C-3.1	5.0	PH	ASR	C	46	PC	B
Tioga 8	C-5	1.3	NS	E	C	170	ICT	B
Tioga 8	C-20	4.0	NH	E	C	136	ICT	B
Tioga 8	C-28	12.1	NH	E	D	108	SS	B
Tioga 8	C-29	22.8	NH-HEM	U	D	96	GST	B
Total Completion Interval B		1169.7						
Broome-Tioga 2	A-26.1	193.8	NH	U	D	110	GT	C
Cortland 11	A-24	23.5	NH	E	C	111	ICT	C
Cortland 11	A-25	69.9	TH	E	C	112	ICT	C
Cortland 11	B-6	7.8	NH-HEM	E	D	120	SS	C
Cortland 11	B-12	61.1	NH-HEM	U	D	158	GST	C
Cortland 11	B-13	11.2	NH-S	E	D	135	ICT	C
Cortland 11	B-14	13.8	NH	E	D	119	SS	C

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Cortland 11	B-15	33.8	NH-HEM	U	D	151	GST	C
Cortland 11	B-17	7.4	NH-HEM	E	C	148	ICT	C
Cortland 11	B-21	19.1	NH-HEM	U	D	154	GST-E	C
Cortland 11	C-4	13.0	NH-S	E	C	125	ICT	C
Cortland 11	C-13.1	39.2	RP-S	E	D	103	SCM-P	C
Cortland 11	C-15	20.9	L	E	D	71	SCH-C	C
Cortland 11	C-17	14.3	RP	E	D	116	ICT	C
Cortland 11	C-18	11.5	NH-S	E	D	111	ICT	C
Cortland 11	C-19	11.1	NH-P	E	C	98	ICT	C
Cortland 11	C-32	15.9	NH-HEM	U	C	115	GST-E	C
Cortland 11	C-37	3.7	NS	E	D	127	SS	C
Cortland 11	C-39	2.0	NH	E	C	77	ICT	C
Cortland 11	C-40	8.0	NH-S	U	C	126	GST-E	C
Cortland 11	C-41	10.5	NH-HEM	U	C	100	GT	C
Cortland 11	C-42	9.0	NS	E	C	154	ICT	C
Cortland 11	C-43	3.7	WP-NS	E	C	117	ICT	C
Cortland 11	C-52	3.6	NH-S	E	C	137	ICT	C
Cortland 11	C-56	7.7	NH-S	E	D	175	ICT	C
Cortland 11	C-57	20.1	NH-HEM	U	C	182	GST-E	C
Cortland 11	C-62	4.4	NH	E	C	77	ICT	C
Cortland 11	C-64	7.1	NH	E	E	98	SS	C
Cortland 11	C-66	4.6	NH-HEM	E		127	ICT	C
Cortland 11	C-68	46.2	NH	U	C	92	GT	C
Tioga 5	B-2	15.3	TH	E	D	123	SS	C
Tioga 5	A-3	14.7	NH	U	D	105	GST	C
Tioga 5	A-9	27.6	NH	U	C	119	GT	C
Tioga 5	B-3	11.6	RP-S	E	D	145	SCM-P	C
Tioga 5	B-7	7.8	NH-P	E	C	96	ICT	C
Tioga 5	B-8.3	6.3	WP-NS	E	C	141	SCM-P	C
Tioga 5	B-10	7.3	NH-P	E	C	142	SCH-C	C
Tioga 5	B-11	14.1	NH-P	U	C	113	SCH-P	C
Tioga 5	B-12	33.3	RP-S	U	D	136	SCH-P	C
Tioga 5	B-14	40.1	NH-P	U	C	83	SCH-P	C
Tioga 5	B-18	44.3	RP-S	U	D	131	SCH-P	C
Tioga 5	B-20.1	9.9	NH-S	E	D	156	ICT	C
Tioga 5	B-21.1	22.4	RP-S	E	D	131	SCM-S	C
Tioga 5	B-22	5.8	NH	E	D	125	ICT	C
Tioga 5	B-28	4.1	NH	U	C	80	GT	C
Tioga 5	B-31.2	31.3	NH-P	U	C	137	SCH-P	C
Tioga 5	B-32	3.5	NH	E	C	110	ICT	C

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Tioga 5	A-7	6.5	NH	U	D	95	GST-E	C
Tioga 5	A-8	32.6	TH	U	D	120	GST	C
Tioga 5	A-10.1	29.4	NH	E	D	115	COR	C
Tioga 5	A-10.2	24.8	TH	U	D	143	GT	C
Tioga 5	B-4	12.8	NH	U	C	85	GST-E	C
Tioga 5	B-11	28.8	TH	E	C	123	SS	C
Tioga 5	B-12	33.1	NH	U	C	107	GT	C
Tioga 5	C-13	18.2	NH	E	C	71	ICT	C
Tioga 8	A-7	6.5	NH	U	D	95	GST-E	C
Tioga 8	A-8	32.6	TH	U	D	120	GST	C
Tioga 8	A-10.1	29.4	NH	E	D	115	COR	C
Tioga 8	A-10.2	24.8	TH	U	D	143	GS	C
Tioga 8	B-4	12.8	NH	U	C	85	GST-E	C
Tioga 8	B-11	28.8	TH	E	C	123	SS	C
Tioga 8	B-12	33.1	NH	U	C	107	GS	C
Tioga 8	C-13	18.2	NH	E	C	71	ICT	C
Total Completion Interval C		1369.9						
Broome-Tioga 2	A-2	22.9	NH	U	D	79	GT	D
Broome-Tioga 2	A-13	48.1	NH-HEM	E	C	108	SS	D
Broome-Tioga 2	A-15	32.6	NH	U	D	105	GT	D
Broome-Tioga 2	A-18	46.3	NH-HEM	E		108	SS	D
Broome-Tioga 2	A-19	1.4	NS	E		86	ICT	D
Broome-Tioga 2	A-27.1	4.0	NH-S	ASR	D	82	SCH-P	D
Broome-Tioga 2	A-28	3.0	NH	ASR	C	126	PC	D
Broome-Tioga 2	B-3	16.6	NS	U	D	118	SCM-P	D
Broome-Tioga 2	B-10	3.0	NH	ASR	C	107	PC	D
Broome-Tioga 2	B-11	13.4	NS	E	D	140	SS	D
Broome-Tioga 2	B-14	18.3	NH	E	D	67	ICT	D
Broome-Tioga 2	B-16	20.7	NH-HEM	E	D	127	PC	D
Broome-Tioga 2	B-21	3.1	NH	ASR	C	103	PC	D
Broome-Tioga 2	B-22	5.1	NH	ASR	C	110	PC	D
Cortland 11	A-1.1	11.5	NH	U	D	76	GST-E	D
Cortland 11	A-1.2	7.0	WP-HEM	U	C	126	GST-E	D
Cortland 11	A-1.3	4.7	PH	E	C	83	ICT	D
Cortland 11	A-7	26.1	NH-HEM	U	C	110	GST-E	D
Cortland 11	A-8	11.5	NH-HEM	U	C	153	GST-E	D
Cortland 11	A-13	6.2	NS	E	C	162	ICT	D
Cortland 11	A-15	52.8	TH	E		113	ICT	D
Cortland 11	A-19	22.0	RP-S	U	C	173	SCM-P	D
Cortland 11	A-23	3.5	PH	ASR	D	123	PC	D

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Cortland 11	A-27	22.1	NH-S	E	C	144	ICT	D
Cortland 11	A-28	6.7	NH-WP	E	C	98	ICT	D
Cortland 11	A-29	54.6	TH	E		143	ICT	D
Cortland 11	A-30	26.8	RP-S	E	D	150	ICT	D
Cortland 11	A-32	5.8	NH-HEM	E	C	160	ICT	D
Cortland 11	A-33	5.2	NH	E		140	ICT	D
Cortland 11	A-34	5.9	NS	E	D	164	ICT	D
Cortland 11	B-5.2	18.1	NH	U	E	109	GST	D
Cortland 11	B-8.1	26.8	NH	U	D	136	GST-E	D
Cortland 11	B-9	39.4	NH-HEM	U	D	158	GST	D
Cortland 11	B-10	28.9	NH	E	D	132	ICT	D
Cortland 11	B-16	77.5	NH	U	D	135	GST	D
Cortland 11	B-20	11.7	NH	E	D	126	ICT	D
Cortland 11	B-24	2.8	NH	U	D	143	GST	D
Cortland 11	C-3	8.8	NH	E	D	140	ICT	D
Cortland 11	C-5.1	7.2	NH	U	D	133	GST-E	D
Cortland 11	C-5.2	14.8	NH	U	D	137	GST-E	D
Cortland 11	C-6.2	3.7	NH	E		70	SS	D
Cortland 11	C-9	6.0	NH	ASR	C	66	PC	D
Cortland 11	C-10	17.8	NH	E	C	95	ICT	D
Cortland 11	C-11	4.5	NH-S	ASR	C	85	SCH-P	D
Cortland 11	C-12	25.6	NH	U	E	112	GST	D
Cortland 11	C-50	3.4	NH	E	C	53	TSI	D
Cortland 11	C-67	7.0	NH	E	D	90	SS	D
Tioga 5	A-2	2.5	NH	ASR	C	120	PC	D
Tioga 5	A-8	3.5	PH	ASR	C	114	PC	D
Tioga 5	A-10	6.2	NH	U	C	128	GST-E	D
Tioga 5	A-15	4.9	NH	ASR	C	121	PC	D
Tioga 5	A-20	11.0	NH	E	C	94	ICT	D
Tioga 5	A-25.1	99.6	NH-HEM	U	D	90	GT	D
Tioga 5	A-25.2	10.0	NH-HEM	U	D	112	GST	D
Tioga 5	B-16	6.5	NH	E	D	86	SS	D
Tioga 5	B-17	3.4	NH	E	D	90	ICT	D
Tioga 5	A-11	6.1	TH	E	C	103	ICT	D
Tioga 5	A-14.2	11.7	NH-HEM	U	D	48	GST-E	D
Tioga 5	A-16.1	29.3	NH	U	C	97	GST-E	D
Tioga 5	A-18	13.6	TH	U	C	116	GT	D
Tioga 5	A-19	20.7	NH	E	C	82	ICT	D
Tioga 5	A-21	4.2	NH	E	C	133	ICT	D
Tioga 5	B-3.2	5.3	NH	U	D	81	GST-E	D

Forest	Stand Number	Treated Acres	CT	MD	SC	BA	Treat	PCI
Tioga 5	B-10	25.7	NH	E	C	98	ICT	D
Tioga 5	B-13.1	6.3	NH	U	D	81	GST	D
Tioga 5	C-4	23.9	PH	E	C	77	ICT	D
Tioga 5	C-6	22.1	NH-HEM	U	D	126	GST-E	D
Tioga 5	C-8	11.7	NH	U	C	53	GST-E	D
Tioga 5	C-10	9.7	NH	E	C	48	ICT	D
Tioga 5	C-22	3.0	PH	ASR	C	63	PC	D
Tioga 5	C-26	6.3	NS	E	C	87	ICT	D
Tioga 5	C-27	20.3	L	E	C	100	ICT	D
Tioga 5	C-32	10.0	PH	ASR	C	47	PC	D
Tioga 8	A-11	6.1	TH	E	C	103	ICT	D
Tioga 8	A-14.2	11.7	NH-HEM	U	D	48	GST-E	D
Tioga 8	A-16.1	29.3	NH	U	C	97	GST-E	D
Tioga 8	A-18	13.6	TH	U	C	116	GS	D
Tioga 8	A-19	20.7	NH	E	C	82	ICT	D
Tioga 8	A-21	4.2	NH	E	C	133	ICT	D
Tioga 8	B-3.2	5.3	NH	U	D	81	GST-E	D
Tioga 8	B-10	25.7	NH	E	C	98	ICT	D
Tioga 8	B-13.1	6.3	NH	U	D	81	GST	D
Tioga 8	C-4	23.9	PH	E	C	77	ICT	D
Tioga 8	C-6	22.1	NH-HEM	U	D	126	GST-E	D
Tioga 8	C-8	11.7	NH	U	C	53	GST-E	D
Tioga 8	C-10	9.7	NH	E	C	48	ICT	D
Tioga 8	C-22	3.3	PH	ASR	C	63	PC	D
Tioga 8	C-26	6.3	NS	E	C	87	ICT	D
Tioga 8	C-27	20.3	L	E	C	100	ICT	D
Tioga 8	C-32	10.4	PH	ASR	C	47	PC	D
Total Completion Interval D		1423.2						
Grand Total		5396.2						

B. Mowing Actions

Approximately one third of the pheasant release area or 15.5 acres will be mowed annually on Michigan Hill State Forest. This mowing will be conducted in strips to allow cover for released pheasants. The mowing of the pheasant release area will be accomplished by Department's Operations crews if staffing and budget constraints allow. Ideally a Volunteer Stewardship Program agreement will be developed between the Department and an organization or individual to conduct the required mowing. Additional mowing may be required for Public Forest Access Road maintenance (see below).

C. Pond Maintenance Actions

Forest	Project Description	How Accomplished	PCI
Cortland 11	Conduct fisheries survey of Huckleberry Pond.	NYSDEC	A

D. Public Forest Access Road (PFARs) Maintenance

All PFARs within the unit shall be graded and brushed every three years beginning in 2018. Culverts and ditches will be inspected annually and repaired or replaced as necessary. Where possible, resurfacing of PFARs will be accomplished as forest product sale-related work or as requirements of TRPs.

E. New Project Action Schedule

Forest	Project Description	How Accomplished	PCI
Cortland 11	Install one gate barrier where the snowmobile trail meets the PFAR.	VSP	A
Cortland 11	Install Facility I.D. sign at the beginning of the PFAR.	NYSDEC	A
Cortland 11	Install two combination gate/rock barriers where the gas pipelines cross the haul road.	Utility	A
Tioga 5	Install one rock barrier where the PFAR crosses Turkey Hill Road.	Sale Related Work	A
Tioga 5	Install one gate barrier where the snowmobile trail meets the PFAR.	VSP	B
Tioga 8	Construct parking area near the northern end of the pheasant release area on Rockefeller Road and install a culvert in the stream that bisects the pheasant release area.	Sale-Related Work or NYSDEC	B
Tioga 8	Design, construct, & install an informational kiosk at the Pheasant Release Area parking area.	NYSDEC	B
Tioga 5	Install one gate barrier along the snowmobile trail north of Tubbs Hill Road.	VSP	C
Unit Wide	Acquire private property from willing sellers.	NYSDEC	Periodically

F. Boundary Line Action Schedule

During routine boundary line maintenance, all established boundary lines shall be painted and signed. Survey requests (new and outstanding) shall be prioritized every five years to aid Real Property staff with choosing projects to complete.

Forest	Description	Miles	PC or Year
Broome-Tioga 2	Routine boundary line maintenance.	7.73	2021, 2028 & 2035
Cortland 11	Routine boundary line maintenance.	15.58	2024, 2031 & 2038
Tioga 5	Routine boundary line maintenance.	15.46	2022, 2029 & 2036
Tioga 8	Routine boundary line maintenance.	9.84	2019, 2026 & 2033

G. Forest Inventory Data Collection Schedule

All forests within the unit will be inventoried during 2020 and 2021 and again in 2030 and 2031. Stands that have some sort of cutting treatment will be inventoried after the treatment is complete.

IV. GLOSSARY

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. (F)

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

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

Basal area - the cross sectional area, measured in square feet, of a single stem, including the bark, measured at breast height (4.5 ft above the ground).(E)

Best Management Practices (BMPs) - 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.(E)

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. (Q & M)

Biological Legacy – an organism, living or dead, inherited from a previous ecosystem – note: biological legacies often include large trees, snags, and down logs left after timber harvesting. (E)

Browse - portions of woody plants including twigs, shoots, and leaves consumed by animals such as deer. (G)

Buffer - 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.(E)

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

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. (Q)

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

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

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. (I) (Q)

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

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

Corridor - a linear strip of land identified for the present or future location of a designed use within it's 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.(E)

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

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

Crown class - a category of tree based on its crown position relative to those of adjacent trees. Examples: *dominant*: a tree whose crown extends above the general level of the main canopy and receives full light from above and partial to full light from the sides. *co-dominant*: a tree whose crown helps to form the general level of the main canopy and receives full light from above and comparatively little from the sides. *intermediate*: a tree whose crown extends into the lower portion of the main canopy and receives little direct light from above and none from the sides. *suppressed / overtopped*: a tree whose crown is completely overtopped by the crowns of one or more neighboring trees and receives little or no direct sunlight.(E)

Crown closure - the stage in the development of a forest stand at which the branches of adjacent trees touch.(G)

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

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

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

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

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.(E)

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 - early vegetative stages such as grass, shrubs or aspen forests; the animals that require these early vegetative stages.(G)

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.(E)

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 and productive environments.(D)

Ecosystem Services - benefits people obtain from ecosystems such as food, fresh water, fiber, fuel, soil formation, nutrient cycling, carbon storage, clean air, educational values, aesthetic values, recreational values, and tourism.

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.(E)

Even-aged - 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 (silviculture) - 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. (Q)

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

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. (E)

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.(E)

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

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. (Q)

Fragmentation - 1.) the condition by which a landscape is broken into small islands of forest within a mosaic of other forms of land use or ownership. 2.) islands of a particular age class that remain in areas of younger-aged forest.(E)

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

Geocaching - a high-tech hide and seek, outdoor activity for utilizing the Global Positioning System (GPS).(G)

Grassland - land on which the vegetation is dominated by grasses, grasslike plants, or forbs.(E)

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. (Q)

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.(E)

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

Improvement thinning - the removal of less desirable trees of any species in a stand of poles or larger trees, primarily to improve composition and quality.(E)

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.(E)

Intermittent Stream - a naturally occurring watercourse that is greater than 12 inches wide, greater than 4 inches deep, and periodically goes dry.(G)

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

Kame - a short ridge, hill, or mound of stratified drift deposited by glacial meltwater.(K)

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. (Q)

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. (Q)

Late successional forest habitat – habitats dominated by forests with older and larger trees, having more structural complexity than mature (see below) forests, and being either in the process of developing or have developed **old growth** characteristics; they may exhibit evidence of past human or natural disturbance; they may be actively managed using uneven-aged forest management or may be have little to no human influence such as natural or protection areas (see below); these forests may exist as entire stands or as smaller patches within younger stands. (Q)

Lean-to - a small, open fronted log shelter used for overnight camping.(G)

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

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

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

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

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.(G)

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

Natural area - an area left in a natural condition, usually without direct human intervention, to attain and sustain a climax condition, the final stage of succession. By management direction, these areas are not managed for the production of wood products or mineral resources.(G)

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

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. (G)

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

Perennial Stream - any fresh surface watercourse for which the DEC has adopted the following classifications or standards: AA, AA(t), AA(ts), A, A(t), A(ts), B, B(t), B(ts), C(t), C(ts), or D and appearing on maps (USGS) maintained and on file with the DEC, or portions of such streams if the classification is verified in the field, or by similar method, by the DEC. (G)

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

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

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

Protection area - forest 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.(G)

Protection Buffer - a vegetative strip or management zone that is a minimum of fifty feet wide maintained to mitigate the impacts of actions on adjacent lands, to enhance aesthetic values, or as a best management practice. No vehicular, construction or harvesting equipment will be allowed to operate within protection buffers unless at designated crossings to access other management areas. Protection buffers will not be considered for active commercial forest management or salvage and should be generally allowed to develop naturally. Exceptions may be considered to protect forest

health (e.g. fire or invasive plant or animal control), to protect, restore or enhance significant habitats, to develop recreational opportunity and public access and to mitigate erosion potential. Protection buffers may be part of a special management zone. (G)

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 one 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.(L) (N)

Pulpwood - low grade or small diameter logs used to make paper products, wood chips, etc.(G)

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

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

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

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

Riparian area/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 timber harvest as designated by management decisions.(M)

Salvage - 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.(E)

Sapling - a small tree, usually defined as being between 1 and 5 inches diameter at breast height.(G)

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

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

Seedling/sapling - trees less than six inches diameter at breast height.(G)

Seed tree cut/method - the removal 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)

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.(E) (G)

Shelterwood cut/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.(E)

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. (Q)

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. (E)

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.(G)

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

Soil organic carbon - carbon in the form of organic matter such as roots, leaves and twigs, collects in the soil.

Special Management Zone - a vegetation strip or management zone extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depressions, spring seeps, ponds and lakes, recreational trails, camp grounds and other land features requiring special consideration. Portions of a special management zone may include protection buffers.(G)

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.(E)

Species of Greatest Conservation Need (SGCN) – A designation given to wildlife species by DEC's Division of Fish Wildlife & Marine Resources in the New York State Comprehensive Wildlife Conservation Strategy (CWCS). The SGCN designation takes into account species abundance and downward trends in population levels.

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, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.(E)

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

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.(E)

Stand treatment - work done in a stand to achieve a management direction.(G)

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).(G)

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.(G)

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)

Sustainable forestry - 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)

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

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.(E)

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

Timber Stand Improvement (TSI) - 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.(G)

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.(E)

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

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. (Q)

Variable density thinning - A thinning regime that creates horizontal variation in stand density including areas that are not thinned, areas where all trees are removed, and thinned areas that may have different residual densities. (P)

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.(G)

Water quality classification - a system of classification in ECL Article 17 which presents a ranked listing of the State's surface waters by the letters AA, A, B, C or D according to certain quality standards and specifications. AA is the highest quality rank and has the greatest suitability for human usage.(G)

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.(E)

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). Burns, R.M., and B.H. Honkala (Eds). 1990. *Silvics of North America. Volume 1, Conifers. Volume 2, Hardwoods.* USFS, Agric. Handbk. 654.

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

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

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

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

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

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

(I). 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.

(J). United States Forest Service (USFS). *Silvicultural Systems for the Major Forest Types of the United States*. USFS, Agric. Handbk. 445.

(K). Woolf, H.B. (Ed.). 1977. *Webster's New Collegiate Dictionary.* G. & C. Merriam Co. Springfield, Mass.

(L.) Swartz, Kurt C., Editor. 2004. State Forest Infrastructure Development Handbook. NYS DEC, Bureau of State Land Management.

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

(N). Swartz, Kurt C., Editor. 2004. Unpaved Forest Road Handbook. NYS DEC, Bureau of State Land Management.

(O). USFS, 2011. More About Ecosystem Services. United States Forest Service. http://www.fs.fed.us/ecosystemservices/About_ES/index.shtml

(P). Franklin, Jerry F. et. al., 2007. Natural Disturbance and Stand Development Principles for Ecological Forestry. United States Forest Service. General Technical Report NRS-19.

(Q). Strategic Plan for State Forest Management, 2010. NYSDEC. Albany, New York.

V. PLAN REFERENCES

Alan, Mary Kay, et.al., 2006. Tioga Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

American Experience, People and Events, John D. Rockefeller Senior, www.pbs.org/wgbh/amex/rockefellers/peopleevents/p_rock_jsr.html.

American Experience, People and Events, John D. Rockefeller Junior, www.pbs.org/wgbh/amex/rockefellers/peopleevents/p_rock_jjr.html.

American Experience, People and Events, Nelson A. Rockefeller, www.pbs.org/wgbh/amex/rockefellers/peopleevents/p_rock_n.html.

Blum, Andrew, et.al., 2001. Draft Recreation Master Plan for State Forests. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

Clancy, John, et.al., 2008. Draft Tri-County Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

Clancy, John, et.al., 2011. Draft Rapid Waters Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

Clarence A Lacey, Town Historian, Town of Richford History, www.tiohistory.org/Site/Richford.html.

Cornell Lab of Ornthology, 2013. All About Birds. http://www.allaboutbirds.org/Page.aspx?pid=1189 Last accessed 1/15/2013.

Edinger, G.J. et. al. (editors). 2002. Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. (Draft for review). New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Flanagan, Meghan (ed.), 2005. State Forest Unit Management Planning Handbook, Version 2.0. NYSDEC, Albany, New York.

Forness, David M. (ed.) 2010. New York State Strategic Plan for State Forest Management (SPSFM). NYSDEC, Albany, New York.

Franklin, Jerry F. et. al., 2007. Natural Disturbance and Stand Development Principles for Ecological Forestry. United States Forest Service. General Technical Report NRS-19.

Goeller, Andrew, et.al., 2007. Draft Chenango Trail Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

Goeller, Andrew, et.al., 2010. Draft Between Rivers Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

MRLC, 2010. An Innovative Partnership for National Environmental Assessment. Multi-Resolution Land Characteristics Consortium. www.epa.gov/mrlc/ Last accessed 3/11/11.

Nyland, Ralph D., 1996. Silviculture – Concepts and Applications. McGraw-Hill.

NYSDEC, 1998. Amphibian and Reptile Atlas.

NYSDEC, 2005. New York State Comprehensive Wildlife Conservation Strategy (CWCS) www.dec.ny.gov/animals/30483.html Last accessed 12/27/12.

NYSDEC. 2007. New York State Breeding Bird Atlas. www.dec.ny.gov/cfmx/extapps/bba/ Last accessed 12/27/12.

NYSDEC, 2007. Twenty Year Deer Book. Albany, New York.

NYSDEC, 2009a, Directory of Secondary Wood Using Industry in New York State, Albany.

NYSDEC,2009b, Stumpage Price Report, Albany.

NYSDEC, 2010, List of Endangered, Threatened, and Special Concern Fish and Wildlife Species In New York State. http://www.dec.ny.gov/animals/7494.html Last Accessed 1/3/2013.

NYSDEC, 2010. NYS Hunting and Trapping2010-2011 Official Guide to Laws and Regulations. Volume 4, Issue No. 1.

NYSDEC, 2010. New York State Strategic Plan for State Forest Management. http://www.dec.ny.gov/lands/64567.html

Owens, Greg and Schoellig, Jason, 2010. Draft Muller Hill Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

Robertson, Bruce and Rosenberg, Kenneth V., 2003. Partners in Flight Conservation Plan-Allegheny Plateau. American Bird Conservancy.

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.

USDA Soil Conservation Service. 1953. Soil Survey of Tioga County. Government Printing Office. Washington DC.

Zubal, Mark, et.al., 2009. Virgil Mountain Unit Management Plan. Department of Environmental Conservation, Division of Lands and Forests, Region 7.

VII. APPENDICES

APPENDIX I
Initial Public Information Meeting Public Comment Summary

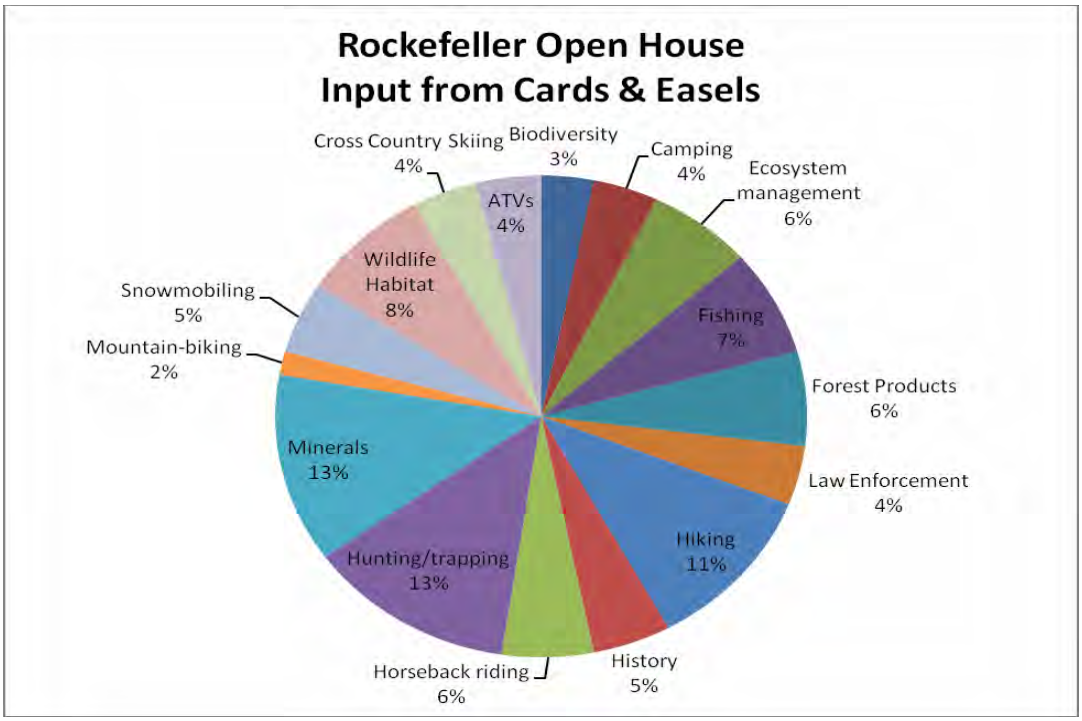
BACKGROUND

In February of 2012 the DEC Division of Lands and Forests began seeking public participation in order to develop the draft Rockefeller UMP.

The public was invited to participate through public press releases and a direct mailing to over 400 potentially affected stakeholders such as nearby residents, town officials, recreational groups, and DEC Volunteer Stewards. On February 23, 2012 a public information open house was held at the Cortland DEC office. Thirty-eight people attended the public participation open house. To gather public input/comments, a public comment card was provided to attendees and they were encouraged to write comments on easels at the public information open house.

STAKEHOLDER INTERESTS/WRITTEN COMMENTS

Stakeholders that attended the meeting had a variety of interests in regards to management of the Rockefeller unit. Interests of participating stakeholders were captured using the Topics of Interest check boxes located on the comment cards provided at the public participation meeting and written comments received. Stakeholders provided their written comments and suggestions using a large index card provided by the DEC (at the public information meeting), on easels (at the public information meeting), by email, or by letter. To date, twenty-two index cards have been returned; seventeen provided specific comments, five did not. Four written comments were received from easels at the public participation open house. The DEC also received three written letters or emails addressing the unit. The following pie chart was developed using the comment cards that were provided to participants of the public information meeting and written comments received by the DEC.



Public Interests According to the Check Boxes Located on the Comment Card and Written Comments Submitted to the DEC.

Written comments received by the DEC were grouped into the following general categories:

- Public-use and recreation – A majority of the comments received fall into the public-use and recreation category. These comments were submitted from various user groups and cover a broad range of interests.
- Forest products/economics - A vast majority of these comments request continuing or increasing harvesting on the unit.
- Oil and gas exploration – The comments received in this category are against and for oil and gas exploration/development on forests within the unit.
- Wildlife/habitat – About one third of the comments received in the wildlife/habitat category are requesting more early-successional habitat on the unit.
- Law enforcement/stewardship/infrastructure – About half of the comments in this category are requesting more law enforcement.

A list of the written comments received by the DEC can be found below. Listing of these comments does not imply any endorsement, agreement or disagreement by the DEC. The comments are listed to show the many viewpoints and ideas received during the initial public participation phase. The comments found below have, in some cases, been edited for length and clarity. Comments with the same viewpoints may have been combined to save space. The comments were considered during the development of Unit Management Plan (UMP). After most comments, there is a reference to *Section II. - Management Objectives and Actions,* where the UMP addresses the comment.

Public-Use & Recreation These comments are addressed in *Sections II.C – Infrastructure and Real Property* and *II.D. - Public/Permitted Use*.

1. The unit should remain mainly for hunting (see page 58).
2. Maybe develop some through trails for hiking, but no motorized vehicle trails (see page 58 and pages 60 and 61).
3. Camping should not be allowed on the unit, especially at the fishing access site (see page 59)
4. ATVs, dirt bikes and other off-highway vehicles should not be allowed on the unit (see pages 60 and 61).
5. Would like to have ATV trails on the unit (see pages 60 and 61).
6. Ask town teens (community service) to help with trails (see page 57).
7. Stop ATVs, they are destroying the properties (see pages 60 and 61).
8. ATVs should be allowed to use existing skid trails (see pages 60 and 61).
9. Do more publicity to encourage snowmobiles, horses, and hiking (see page 62).
10. Have summer work for teens (maintain trails) (see page 57).
11. I support science based recreation.
12. Expand the pheasant release program on the unit (see page 59).
13. Construct a fire road through the forests to provide better access for hunting and horseback riding (see pages 55 through 57).
14. Improve logging trails and develop more trails for horseback riding and hiking (see pages 55 through 57).
15. Designate areas for overnight camping/resting/picnic areas with horses such as at the end of the Grigg's Gulf Public Forest Access Road, at Huckleberry Pond, and near the beaver pond on Beaver Pond State Forest (see page 59).
16. Consider a Volunteer Stewardship Program agreement for trail maintenance (see page 57).
17. I would like to see the land used for recreational purposes i.e., hunting, snowmobiling, cross country skiing, and hiking (see pages 58 through 60).

Forest Products/Economics These comments are addressed in *Sections II.A – Ecosystem Management* and *II.E – Forest Management and Health*.

1. The unit should remain mainly for timber management (see page 63).
2. Change the law to allow the elderly and the poor to remove fallen trees for fuelwood.
3. Any problems with forest insects & diseases in the area (see pages 64 and 65)?
4. Continue to offer timber for sale (see page 63).
5. I support science based forest management.
6. Use timber sales to increase early successional cover (see pages 45 and 46) .
7. Let's do some logging to save trees being wasted.
8. Many local people depend on harvesting deer and turkey each fall in order to provide meat for the table throughout the winter months.
9. Not opposed to thinning dense forests.

Oil and Gas Exploration These comments are addressed in *Objective II.D.5 – Mineral Resources* on page 61.

1. Concerned with the impacts that gas drilling will have on me and my property if gas development takes place on State lands.
2. No hydraulic fracturing should take place on the unit to protect private wells and streams.
3. No hydraulic fracturing. Preserve our water and natural habitats.
4. I support science based natural gas exploration, development, and extraction.
5. Clearcut red pine stands and develop gas well pads in these areas.
6. Gas is good. Frack baby frack.
7. We are concerned that drilling/mining will degrade the water quality in the area.

Wildlife/Habitat These comments are addressed in *Sections II.A – Ecosystem Management, II.B – Resource Protection* and *II.D Public/Permitted Use*.

1. Protect wildlife & their habitats (see pages 44 through 53).
2. Reduce the size of wildlife management unit 7R and give out less doe tags.
3. Practice Quality Deer Management (QDM) on Turkey Hill State Forest.
4. Increase early successional habitat cover utilizing even-aged management (see pages 45 and 46).
5. Many song birds that are currently in decline require early successional cover.
6. Plant food sources for wildlife.
7. The plan should provide provisions for increasing habitat and food for deer, grouse, and turkey (see pages 44 through 48).
8. Continue to stock pheasants (see page 59).

Law Enforcement/Stewardship/ Infrastructure Most of these comments are addressed in *Section II.D – Public/Permitted Use.*

1. Need more law enforcement to curtail ATV usage (see page 60).
2. Need more law enforcement to remove tree stands that do not have ID and are left up longer than the big game season (see page 60).
3. More law enforcement to protect wildlife from illegal hunting and to control motorized vehicles (see page 60).
4. Have town do plowing and mowing on State land.
5. Use signs and put stuff into town newsletter (see page 62).
6. Better care of Rockefeller homestead (see page 57).
7. Ridge Riders Snowmobile Club would cut brush at Rockefeller homestead (see page 57).
8. Maintain the unit by avoiding development and deforestation (see pages 44 to 67).
9. Construct a fire road through the forests to provide better access for emergency crews (see pages 55 through 57).
10. More law enforcement to make sure people are not killing pheasants before the legal hunting times (see page 60).
11. The plan should be balanced, which will ensure that future generations will be able to enjoy the many things that we protect and encourage today (see pages 44 through 67).
12. Keep the pristine nature of the properties (see pages 44 through 67).

APPENDIX II Taxes Paid on State Lands by Township (2014 Tax Rolls)

County	Town	State Land * Acres in Town	# of Parcels	Municipal	School	Special District Tax	Total
Broome	Lisle	224	3	$4,658	$15,052	$0	$19,170
Cortland	Harford	2,763	36	$23,928	$73,391	$7,044	$104,363
Cortland	LaPeer	1,678	18	$19,899	$72,295	$3,653	$95,847
Tioga	Richford	4,748	50	$64,856	$132,862	$8,393	$206,111
Total		**9,413**	**107**	**$113,341**	**$293,600**	**$19,090**	**$425,491**

- * *Includes all State lands in each town, including those lands not in this planning unit.*

APPENDIX III Classified Wetlands on the Unit

All wetlands listed are federally classified and are also New York State classified if I.D. code and legal status are present in the following table. Does not contain unclassified wetlands.

Forest	Stand	Acres	Cover Type	Vegetation Type	NYS Classified Wetland	
					I.D. Code	Legal Status
BT-2	A-9	0.5	Forested	Deciduous		
BT-2	A-14	15.0	Forested	Evergreen	H-2	II
BT-2	A-23	0.8	Open Water	_		
BT-2	A-23	1.1	Scrub/Shrub	Deciduous		
BT-2	B-4	1.6	Emergent Herbaceous	Persistent		
BT-2	B-4	4.6	Scrub/Shrub	Deciduous		
Cortland 11	B-12	4.0	Forested	Evergreen		
Cortland 11	B-15	0.9	Forested	Evergreen		
Cortland 11	C-41	0.1	Open Water	_		
Cortland 11	C-45.1	0.3	Open Water	_		
Cortland 11	C-55	0.1	Emergent Herbaceous	Persistent		
Cortland 11	C-8	2.3	Open Water	_		
Tioga 5	A-11.2	0.4	Forested	Deciduous		
Tioga 5	A-11.2	0.6	Scrub/Shrub	Deciduous		
Tioga 5	A-12	0.8	Scrub/Shrub	Deciduous		
Tioga 5	A-17	0.0	Emergent Herbaceous	Persistent		

Forest	Stand	Acres	Cover Type	Vegetation Type	NYS Classified Wetland	
					I.D. Code	Legal Status
Tioga 5	A-17	5.6	Open Water	_		
Tioga 5	B-8.2	1.6	Scrub/Shrub	Deciduous		
Tioga 5	B-23.2	2.8	Forested	Deciduous		
Tioga 5	B-30.1	0.8	Forested	Evergreen		
Tioga 8	A-3.2	1.0	Emergent Herbaceous	Persistent		
Tioga 8	A-6.1	2.1	Forested	Deciduous		
Tioga 8	A-6.2	6.9	Forested	Deciduous		
Tioga 8	A-6.3	3.3	Emergent Herbaceous	Persistent		
Tioga 8	A-6.3	5.0	Emergent Herbaceous	Persistent		
Tioga 8	A-6.3	4.2	Forested	Deciduous		
Tioga 8	A-6.3	2.5	Forested	Deciduous		
Tioga 8	A-6.3	1.9	Scrub/Shrub	Deciduous		
Tioga 8	A-6.4	0.3	Forested	Evergreen		
Tioga 8	A-6.4	0.4	Forested	Deciduous		
Tioga 8	A-6.4	0.4	Scrub/Shrub	Deciduous		
Tioga 8	A-6.4	1.7	Forested	Deciduous		
Tioga 8	A-6.4	1.0	Scrub/Shrub	Deciduous		
Tioga 8	A-6.4	3.7	Scrub/Shrub	Deciduous		
Tioga 8	A-19	0.4	Forested	Deciduous		
Tioga 8	C-8	0.0	Open Water	_		
Tioga 8	C-15	1.6	Forested	Deciduous		
Tioga 8	C-15	2.1	Scrub/Shrub	Deciduous		
Tioga 8	C-21	0.1	Scrub/Shrub	Deciduous		
Tioga 8	C-25	0.1	Forested	Deciduous		
Tioga 8	C-25	0.6	Open Water	_		
Tioga 8	C-25	1.1	Scrub/Shrub	Deciduous		
TOTAL		84.4				

APPENDIX IV Classified Streams on the Unit

State Forest	Stream Name	Standard	Length (miles)
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.51
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.35
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.20
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.66
Cortland 11	East Branch Owego Creek	C(ts)	0.10
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.11
Tioga 5	Unnamed Tributary to East Branch of Owego Creek	C	0.31

State Forest	Stream Name	Standard	Length (miles)
Tioga 5	Unnamed Tributary to East Branch of Owego Creek	C	0.13
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.53
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.13
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.18
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.15
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.08
Tioga 5	Unnamed Tributary to East Branch of Owego Creek	C	0.03
Tioga 5	Unnamed Tributary to East Branch of Owego Creek	C	0.78
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.06
Tioga 5	Dudley Creek	C(t)	0.35
Tioga 8	Unnamed Tributary to East Branch of Owego Creek	C	0.68
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.41
Tioga 8	East Branch Owego Creek	C(t)	0.77
Cortland 11	Unnamed Tributary to East Branch of Owego Creek	C	0.31
			6.85

APPENDIX V Definitions for Protective Status of Wildlife on the Unit

The protective status of species listed in Appendices VI, VII and VIII are based on Federal and State regulations. Following column entries for common and scientific names, a "protective status" category appears. The following definitions are adopted for the terms as used in The Checklist of Amphibians, Reptiles, Birds, and Mammals of New York State, Including their Protective Status.

Code	Federal Definitions
E	*Endangered Species* are determined by the U. S. Department of the Interior to be in danger of extinction throughout all or a significant portion of their range. All such species are fully protected, including their habitat.
T	*Threatened Species* are determined by the U. S. Department of the Interior as likely to become endangered within the foreseeable future throughout all or a significant portion of their range. All such species are fully protected.
UN	*"Unprotected"* under Federal Law.
Code	**State Definitions**
P	*Protected* wildlife means "wild game, protected wild birds, and endangered species of wildlife" as defined in the Environmental Conservation Law.

E	*Endangered Species* are determined by the DEC to be in imminent danger of extinction or extirpation in New York State, or are federally listed as endangered. All such species are fully protected under New York State Environmental Conservation Law.
T	*Threatened Species* are determined by the DEC as likely to become endangered within the foreseeable future in New York State, or are Federally listed as threatened. All such species are fully protected under the New York State Environmental Conservation Law.
SC	*Special Concern Species* are those native species that are not yet recognized as endangered or threatened, but for which documented evidence exists relating to their continued welfare in New York State. The Special Concern category exists within DEC rules and regulations, but such designation does not in itself provide any additional protection. However, Special Concern species may be protected under other laws.
GS	*Game species* are defined as "big game", "small game", or "game bird" species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.
UN	*Unprotected* means that the species may be taken at any time without limit. However, a license to take may be required.

APPENDIX VI Breeding Species of Birds In The Vicinity of the Unit

Common Name	Scientific Name	Breeding Status	NY Legal Status	SGCN
Alder Flycatcher	*Empidonax alnorum*	POSSIBLE	Protected	N
American Crow	*Corvus brachyrhynchos*	CONFIRMED	Game Species	N
American Goldfinch	*Spinus tristis*	CONFIRMED	Protected	N
American Kestrel	*Falco sparverius*	CONFIRMED	Protected	N
American Redstart	*Setophaga ruticilla*	CONFIRMED	Protected	N
American Robin	*Turdus migratorius*	CONFIRMED	Protected	N
American Woodcock	*Scolopax minor*	PROBABLE	Game Species	Y
Baltimore Oriole	*Icterus galbula*	CONFIRMED	Protected	N
Barn Swallow	*Hirundo rustica*	CONFIRMED	Protected	N
Barred Owl	*Strix varia*	PROBABLE	Protected	N
Belted Kingfisher	*Megaceryle alcyon*	PROBABLE	Protected	N
Black-and-white Warbler	*Mniotilta varia*	POSSIBLE	Protected	N
Black-billed Cuckoo	*Coccyzus erythropthalmus*	PROBABLE	Protected	N
Blackburnian Warbler	*Dendroica fusca*	CONFIRMED	Protected	N
Black-capped	*Poecile atricapillus*	CONFIRMED	Protected	N

Common Name	Scientific Name	Breeding Status	NY Legal Status	SGCN
Chickadee				
Black-throated Blue Warbler	*Dendroica caerulescens*	CONFIRMED	Protected	Y
Black-throated Green Warbler	*Dendroica virens*	CONFIRMED	Protected	N
Blue Jay	*Cyanocitta cristata*	CONFIRMED	Protected	N
Blue-headed Vireo	*Vireo solitarius*	PROBABLE	Protected	N
Blue-winged Warbler	*Vermivora pinus*	POSSIBLE	Protected	Y
Bobolink	*Dolichonyx oryzivorus*	CONFIRMED	Protected	Y
Broad-winged Hawk	*Buteo platypterus*	CONFIRMED	Protected	N
Brown Creeper	*Certhia americana*	POSSIBLE	Protected	N
Brown Thrasher	*Toxostoma rufum*	CONFIRMED	Protected	N
Brown-headed Cowbird	*Molothrus ater*	PROBABLE	Protected	N
Canada Goose	*Branta canadensis*	CONFIRMED	Game Species	N
Canada Warbler	*Wilsonia canadensis*	PROBABLE	Protected	Y
Cedar Waxwing	*Bombycilla cedrorum*	CONFIRMED	Protected	N
Chestnut-sided Warbler	*Dendroica pensylvanica*	CONFIRMED	Protected	N
Chimney Swift	*Chaetura pelagica*	PROBABLE	Protected	N
Chipping Sparrow	*Spizella passerina*	CONFIRMED	Protected	N
Clay-colored Sparrow	*Spizella pallida*	POSSIBLE	Protected	N
Common Grackle	*Quiscalus quiscula*	CONFIRMED	Protected	N
Common Raven	*Corvus corax*	POSSIBLE	Protected	N
Common Yellowthroat	*Geothlypis trichas*	CONFIRMED	Protected	N
Cooper's Hawk	*Accipiter cooperii*	PROBABLE	Protected-Special Concern	Y
Dark-eyed Junco	*Junco hyemalis*	CONFIRMED	Protected	N
Downy Woodpecker	*Picoides pubescens*	CONFIRMED	Protected	N
Eastern Bluebird	*Sialia sialis*	CONFIRMED	Protected	N
Eastern Kingbird	*Tyrannus tyrannus*	CONFIRMED	Protected	N
Eastern Meadowlark	*Sturnella magna*	CONFIRMED	Protected	Y
Eastern Phoebe	*Sayornis phoebe*	CONFIRMED	Protected	N
Eastern Towhee	*Pipilo erythrophthalmus*	CONFIRMED	Protected	N
Eastern Wood-Pewee	*Contopus virens*	PROBABLE	Protected	N
European Starling	*Sturnus vulgaris*	CONFIRMED	Unprotected	N
Field Sparrow	*Spizella pusilla*	CONFIRMED	Protected	N
Golden-crowned Kinglet	*Regulus satrapa*	POSSIBLE	Protected	N
Grasshopper Sparrow	*Ammodramus savannarum*	POSSIBLE	Protected-Special Concern	Y

Common Name	Scientific Name	Breeding Status	NY Legal Status	SGCN
Gray Catbird	*Dumetella carolinensis*	CONFIRMED	Protected	N
Great Blue Heron	*Ardea herodias*	PROBABLE	Protected	N
Great Crested Flycatcher	*Myiarchus crinitus*	PROBABLE	Protected	N
Great Horned Owl	*Bubo virginianus*	POSSIBLE	Protected	N
Green Heron	*Butorides virescens*	POSSIBLE	Protected	N
Hairy Woodpecker	*Picoides villosus*	CONFIRMED	Protected	N
Hermit Thrush	*Catharus guttatus*	CONFIRMED	Protected	N
House Finch	*Carpodacus mexicanus*	PROBABLE	Protected	N
House Sparrow	*Passer domesticus*	CONFIRMED	Unprotected	N
House Wren	*Troglodytes aedon*	CONFIRMED	Protected	N
Indigo Bunting	*Passerina cyanea*	CONFIRMED	Protected	N
Killdeer	*Charadrius vociferus*	CONFIRMED	Protected	N
Least Flycatcher	*Empidonax minimus*	CONFIRMED	Protected	N
Louisiana Waterthrush	*Seiurus motacilla*	POSSIBLE	Protected	Y
Magnolia Warbler	*Dendroica magnolia*	POSSIBLE	Protected	N
Mallard	*Anas platyrhynchos*	CONFIRMED	Game Species	N
Mourning Dove	*Zenaida macroura*	CONFIRMED	Protected	N
Mourning Warbler	*Oporornis philadelphia*	POSSIBLE	Protected	N
Nashville Warbler	*Vermivora ruficapilla*	CONFIRMED	Protected	N
Northern Cardinal	*Cardinalis cardinalis*	CONFIRMED	Protected	N
Northern Flicker	*Colaptes auratus*	CONFIRMED	Protected	N
Northern Harrier	*Circus cyaneus*	POSSIBLE	Threatened	Y
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	POSSIBLE	Protected	N
Northern Waterthrush	*Seiurus noveboracensis*	PROBABLE	Protected	N
Ovenbird	*Seiurus aurocapilla*	CONFIRMED	Protected	N
Pileated Woodpecker	*Dryocopus pileatus*	POSSIBLE	Protected	N
Prairie Warbler	*Dendroica discolor*	CONFIRMED	Protected	N
Purple Finch	*Carpodacus purpureus*	CONFIRMED	Protected	N
Red-bellied Woodpecker	*Melanerpes carolinus*	POSSIBLE	Protected	Y
Red-breasted Nuthatch	*Sitta canadensis*	CONFIRMED	Protected	N
Red-eyed Vireo	*Vireo olivaceus*	CONFIRMED	Protected	N
Red-shouldered Hawk	*Buteo lineatus*	CONFIRMED	Protected-Special Concern	Y
Red-tailed Hawk	*Buteo jamaicensis*	PROBABLE	Protected	N
Red-winged Blackbird	*Agelaius phoeniceus*	CONFIRMED	Protected	N

Common Name	Scientific Name	Breeding Status	NY Legal Status	SGCN
Rock Pigeon	*Columba livia*	CONFIRMED	Unprotected	N
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	CONFIRMED	Protected	N
Ruby-throated Hummingbird	*Archilochus colubris*	CONFIRMED	Protected	N
Ruffed Grouse	*Bonasa umbellus*	CONFIRMED	Game Species	Y
Savannah Sparrow	*Passerculus sandwichensis*	CONFIRMED	Protected	N
Scarlet Tanager	*Piranga olivacea*	CONFIRMED	Protected	Y
Sharp-shinned Hawk	*Accipiter striatus*	CONFIRMED	Protected-Special Concern	Y
Song Sparrow	*Melospiza melodia*	CONFIRMED	Protected	N
Swamp Sparrow	*Melospiza georgiana*	PROBABLE	Protected	N
Tree Swallow	*Tachycineta bicolor*	CONFIRMED	Protected	N
Tufted Titmouse	*Baeolophus bicolor*	CONFIRMED	Protected	N
Turkey Vulture	*Cathartes aura*	PROBABLE	Protected	N
Veery	*Catharus fuscescens*	CONFIRMED	Protected	N
Warbling Vireo	*Vireo gilvus*	CONFIRMED	Protected	N
White-breasted Nuthatch	*Sitta carolinensis*	CONFIRMED	Protected	N
Wild Turkey	*Meleagris gallopavo*	CONFIRMED	Game Species	N
Willow Flycatcher	*Empidonax traillii*	PROBABLE	Protected	N
Winter Wren	*Troglodytes troglodytes*	POSSIBLE	Protected	N
Wood Duck	*Aix sponsa*	PROBABLE	Game Species	N
Wood Thrush	*Hylocichla mustelina*	PROBABLE	Protected	Y
Yellow Warbler	*Dendroica petechia*	CONFIRMED	Protected	N
Yellow-bellied Sapsucker	*Sphyrapicus varius*	CONFIRMED	Protected	N
Yellow-billed Cuckoo	*Coccyzus americanus*	CONFIRMED	Protected	N
Yellow-rumped Warbler	*Dendroica coronata*	CONFIRMED	Protected	N
Yellow-throated Vireo	*Vireo flavifrons*	POSSIBLE	Protected	N

[1] SGCN – Species of Greatest Conservation Need (See Glossary).

APPENDIX VII Reptiles and Amphibians of the Unit and Vicinity

Common Name	Scientific Name	Federal	State	SGCN
Allegheny Dusky Salamander	Desmognathus ochrophaeus	UN	UN	N
American Toad	Bufo americanus	UN	UN	N
Bullfrog	Rana catesbeiana	UN	GS	N
Common Garter Snake	Thamnophis sirtalis	UN	UN	N
Common Snapping Turtle	Chelydra serpentina	UN	UN	Y
Gray Treefrog	Hyla versicolor	UN	UN	N

Common Name	Scientific Name	Federal	State	SGCN
Green Frog	Rana clamitans	UN	GS	N
Milk Snake	Lampropeltis triangulum	UN	UN	N
Northern Dusky Salamander	Desmognathus fuscus	UN	UN	N
Northern Leopard Frog	Rana pipiens	UN	GS	N
Northern Redback Salamander	Plethodon cinereus	UN	UN	N
Northern Slimy Salamander	Plethodon glutinosus	UN	UN	N
Northern Two-lined Salamander	Eurycea bislineata	UN	UN	N
Northern Water Snake	Nerodia sipedon	UN	UN	N
Painted Turtle	Chrysemys picta	UN	UN	N
Pickerel Frog	Rana palustris	UN	GS	N
Redbelly Snake	Storeria occiptomaculata	UN	UN	N
Red-spotted Newt	Notophthalmus viridescens	UN	UN	N
Ringneck Snake	Diadophis punctatus	UN	UN	N
Spotted Salamander	Ambystoma maculatum	UN	UN	N
Spring Peeper	Pseudacris crucifer	UN	UN	N
Spring Salamander	Gyrinophilus porphyriticus	UN	UN	N
Wood Frog	Rana sylvatica	UN	GS	N
Wood Turtle	Glyptemys insculpta	UN	SC	Y

[1] SGCN – Species of Greatest Conservation Need (See Glossary).

APPENDIX VIII Mammals of the Unit and Vicinity

Common Name	Scientific Name	Status	Protective Status		SGCN
			Federal	State	
American Beaver	Castor canadensis	Confirmed	UN	GS	N
Big Brown Bat	Eptesicus fuscus	Confirmed	UN	UN	N
Black Bear	Ursus americanus	Predicted	UN	GS	N
Bobcat	Lynx rufus	Predicted	UN	GS	N
Common Muskrat	Ondatra zibethicus	Confirmed	UN	GS	N
Common Raccoon	Procyon lotor	Confirmed	UN	GS	N
Coyote	Canis latrans	Confirmed	UN	GS	N
Deer Mouse b	Peromyscus maniculatus	Confirmed	UN	UN	N
E. small-footed Myotis	Myotis leibii	Predicted	UN	SC	Y
Eastern Chipmunk	Tamias striatus	Confirmed	UN	UN	N
Eastern Cottontail	Sylvilagus floridanus	Confirmed	UN	GS	N
Eastern Gray Squirrel	Sciurus carolinensis	Confirmed	UN	GS	N
Eastern Pipistrelle	Pipistrellus subflavus	Predicted	UN	UN	N
Eastern Red Bat	Lasiurus borealis	Predicted	UN	UN	N
Fisher	Martes pennanti	Confirmed	UN	GS	N
Fox Squirrel	Sciurus niger	Predicted	UN	GS	N

Common Name	Scientific Name	Status	Protective Status		SGCN
			Federal	State	
Gray Fox	Urocyon cinereoargentus	Confirmed	UN	GS	N
Hairy-tailed Mole	Parascalops breweri	Predicted	UN	UN	N
Hoary Bat	Lasiurus cinereus	Confirmed	UN	UN	Y
House Mouse	Mus musculus	Predicted	UN	UN	N
Indiana Myotis	Myotis sodalis	Predicted	E	E	Y
Least Shrew	Cryptotis parva	Predicted	UN	UN	N
Little Brown Myotis	Myotis lucifugus	Confirmed	UN	UN	N
Long-tailed Weasel	Mustela frenata	Predicted	UN	GS	N
Masked Shrew	Sorex cinereus	Predicted	UN	UN	N
Meadow Jumping Mouse	Zapus hudsonius	Predicted	UN	UN	N
Meadow Vole	Microtus pennsylvanicus	Confirmed	UN	UN	N
Mink	Mustela vison	Confirmed	UN	GS	N
N. Short-tailed Shrew	Blarina brevicauda	Predicted	UN	UN	N
Northern Flying Squirrel	Glaucomys sabrinus	Confirmed	UN	UN	N
Northern Myotis (Keen'S Myotis	Myotis septentrionalis	Confirmed	UN	UN	N
Norway Rat	Rattus norvegicus	Predicted	UN	UN	N
Porcupine	Erethizon dorsatum	Predicted	UN	UN	N
Pygmy Shrew	Sorex hoyi	Predicted	UN	UN	N
Red Fox	Vulpes vulpes	Confirmed	UN	GS	N
Red Squirrel	Tamiasciurus hudsonicus	Confirmed	UN	UN	N
River Otter	Lutra canadensis	Confirmed	UN	GS	Y
Short-tailed Weasel (Ermine)	Mustela erminea	Predicted	UN	UN	N
Silver-haired Bat	Lasionycteris noctivagans	Predicted	UN	UN	Y
Smoky Shrew	Sorex fumeus	Predicted	UN	UN	N
Snowshoe Hare	Lepus americanus	Predicted	UN	GS	N
Southern Bog Lemming	Synaptomys cooperi	Predicted	UN	UN	N
Southern Flying Squirrel	Glaucomys volans	Predicted	UN	UN	N
Southern Red-backed Vole	Clethrionomys gapperi	Predicted	UN	UN	N
Star-nosed Mole	Condylura cristata	Predicted	UN	UN	N
Striped Skunk	Mephitis mephitis	Confirmed	UN	GS	N
Virginia Opossum	Didelphis virginiana	Confirmed	UN	GS	N
White-footed Mouse	Peromyscus leucopus	Confirmed	UN	UN	N
White-tailed Deer	Odocoileus virginianus	Confirmed	UN	GS	N
Woodchuck	Marmota monax	Confirmed	UN	UN	N
Woodland Jumping Mouse	Napaeozapus insignis	Predicted	UN	UN	N
Woodland Vole	Microtus pinetorum	Predicted	UN	UN	N

[1] SGCN – Species of Greatest Conservation Need (See Glossary).

Source: Adapted from The New York Gap Program, U.S. EPA EMAP Hexagons 417 and 450.

APPENDIX IX Deer Harvest Records for Towns within the Unit

Deer Kill By Town										
Town	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Harford	192	161	131	139	165	114	130	66	74	69
LaPeer	145	143	122	128	122	141	119	105	134	100
Lisle	270	317	341	305	278	354	296	235	330	316
Richford	233	223	196	208	227	240	190	147	221	205

Source: NYSDEC Deer and Bear Harvests http://www.dec.ny.gov/outdoor/42232.html

Deer Killed Per Square Mile										
Town	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Harford	7.87	6.60	5.37	5.70	6.99	4.83	5.51	2.79	3.14	2.92
LaPeer	5.70	5.78	4.86	5.10	4.87	5.63	4.75	4.19	5.35	3.99
Lisle	5.77	6.77	7.29	6.52	5.91	7.53	6.29	5.00	7.02	6.72
Richford	6.04	5.78	5.08	5.39	5.94	6.28	4.97	3.85	5.79	5.37

Source: NYSDEC Deer and Bear Harvests http://www.dec.ny.gov/outdoor/42232.html

APPENDIX X Reported Turkey Harvest 2008-2017 for Counties within the Unit

Fall Season

County	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Broome	416	382	176	262	91	194	81	113	48	37
Cortland	291	283	139	185	53	108	37	76	29	30
Tioga	517	434	194	257	101	177	60	158	36	41

Source: Fall Turkey Take by County http://www.dec.ny.gov/outdoor/30412.html

Spring Season

County	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Broome	576	587	467	378	315	353	421	412	379	275
Cortland	489	572	458	287	298	466	450	292	307	178
Tioga	585	707	561	390	406	348	355	245	301	270

Source: Spring Turkey Take by County http://www.dec.ny.gov/outdoor/30420.html

APPENDIX XI Roads on the Unit

Forest	Road Name	Length (miles)
Public Forest Access Roads (PFARs) on the Unit		
Broome-Tioga 2 (Beaver Dam SF)	Sears PFAR	1.4
Cortland 11 (Griggs Gulf SF)	Grigg's Gulf PFAR	1.5
Tioga 5 (Turkey Hill SF)	Turkey Hill PFAR	1.3
Tioga 8 (Michigan Hill SF)	Unnamed Access Road	0.2
Total Miles of PFAR		4.4
Haul Roads (HR) on the Unit		
Broome-Tioga 2 (Beaver Dam SF)	Town Road HR	0.6
Broome-Tioga 2 (Beaver Dam SF)	Clute Hill HR	0.4
Cortland 11 (Griggs Gulf SF)	Grigg's Gulf HR	0.5
Tioga 5 (Turkey Hill SF)	Tubbs Hill HR	0.1
Total Miles of Haul Roads		1.6
Seasonal Town Roads on the Unit		
Cortland 11 (Griggs Gulf SF)	Faulkenham Rd	0.6
Tioga 5 (Turkey Hill SF)	Turkey Hill Rd	0.5
Total Seasonal Town Roads		1.1
Plowed Town Roads on the Unit		
Broome-Tioga 2 (Beaver Dam SF)	Sears Rd	0.9
Cortland 11 (Griggs Gulf SF)	Grigg's Gulf Rd	0.6
Cortland 11 (Griggs Gulf SF)	Chwalek Rd	0.2
Cortland 11 (Griggs Gulf SF)	Rockefeller Rd	0.7
Cortland 11 (Griggs Gulf SF)	Sears Rd	0.1
Tioga 5 (Turkey Hill SF)	Payne Marsh Rd	0.1
Tioga 5 (Turkey Hill SF)	Tubbs Hill Rd	1.2
Tioga 5 (Turkey Hill SF)	Michigan Hill Rd	0.4
Tioga 5 (Turkey Hill SF)	Turkey Hill Rd	0.3
Tioga 8 (Michigan Hill SF)	Michigan Hill Rd	1.1

Forest	Road Name	Length (miles)
Tioga 8 (Michigan Hill SF)	Rockefeller Rd	0.4
Total Miles of Plowed Town Roads (2013)		6.0
State Roads on the Unit Maintained by DOT		
Tioga 5 (Turkey Hill SF)	NYS Rte 79	0.2
Tioga 8 (Michigan Hill SF)	NYS Rte 38	0.6
Total Miles of State Roads Maintained by DOT		0.8
Total Miles of All Roads on the Unit		13.9

APPENDIX XII Facilities on the Unit That Require Maintenance

State Forest	Type of Facility	Status	Size	Quantity
Snowmobile Trails			Miles	
Broome-Tioga 2	Snowmobile Trail	Existing	1.9	1
Cortland 11	Snowmobile Trail	Existing	2.7	1
Tioga 5	Snowmobile Trail	Existing	2.0	2
Tioga 8	Snowmobile Trail	Existing	0.5	1
Total			7.1	
ATV Access route for Disabled Persons with DEC Permit			Miles	
Broome-Tioga 2	ATV Route (CP-3)	Existing	0.6	1
Recreational Bridges/Culverts				
Broome-Tioga 2	Snowmobile Bridge	Existing		1
Broome-Tioga 2	ATV Route (CP-3) - Culvert	Existing		1
Cortland 11	Snowmobile Bridge	Existing		2
Tioga 5	Snowmobile Trail –Culvert	Existing	18 inch	3
Tioga 8	Pheasant Release Area-Ford	Existing		
Total				7
Parking Areas				
Broome-Tioga 2	Parking Area – ATV Route (CP-3)	Existing	15 cars	1
Tioga 8	Parking Area – Fishing Access Site	Existing	15 cars	1
Tioga 8	Parking Area – Pheasant Release Area	Proposed	15 cars	1
Total				3
Roads			Miles	
Broome-Tioga 2	Roads (PFARS/Haul Roads)	Existing	2.4	3
Cortland 11	Roads (PFARS/Haul Roads)	Existing	2.0	2
Tioga 5	Roads (PFARS/Haul Roads)	Existing	1.4	2

State Forest	Type of Facility	Status	Size	Quantity
Tioga 8	Roads (PFARS/Haul Roads)	Existing	0.2	1
Total			6.0	8
Shale Pits				
Broome-Tioga 2	Shale Pit	Existing	1.5 acres	1
Tioga 5	Shale Pit	Existing	0.1 acres	1
Total			1.6 acres	2
Signs				
Broome-Tioga 2	Forest Identification Sign	Existing		1
Cortland 11	Forest Identification Sign	Proposed		1
Tioga 5	Forest Identification Sign	Existing		1
Tioga 8	Forest Identification Sign	Existing		1
Tioga 8	John D. Rockefeller Birthplace Sign	Existing		1
Tioga 8	Misc. Signs – Pheasant Release Area	Existing		1
	– Fishing Access Site	Existing		1
Total				7
Kiosks				
Tioga 8	Informational Kiosk	Proposed	2 Panel	1
Total				1
Historic Sites				
Cortland 11	Stone Cistern	Existing		2
Tioga 5	Stone Cistern	Existing		1
Tioga 8	John D. Rockefeller Birthplace	Existing		1
Total				4
Boundary Lines (desired acquisitions are not listed)			Miles	
Broome-Tioga 2	Boundary Line	Existing	7.73	
Cortland 11	Boundary Line	Existing	15.58	
Tioga 5	Boundary Line	Existing	15.46	
Tioga 8	Boundary Line	Existing	9.84	
Total			48.61	
Barriers			Size	
Broome-Tioga 2	Metal Gate	Existing	14'	1
Cortland 11	Metal Gate	Existing	14'	3
Cortland 11	Metal Gate	Proposed	14'	1
Cortland 11	Metal Gate/Boulders	Proposed	14'/ 8 rocks	2
Tioga 5	Boulders	Proposed	8 rocks	1
Tioga 5	Metal Gate	Proposed	14'	2
Tioga 8	Metal Gate	Proposed	14'	1
Total				11

State Forest	Type of Facility	Status	Size	Quantity
Mowing Needs (excluding roads)			Acres	
Tioga 8	Pheasant Release Area	Existing	46.5	
Total			46.5	

APPENDIX XIII Generic Environmental Impact Statement for State Forest Management

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:

- Forest management activities occurring on acreage occupied by protected species ranked S1, S2, G1, G2 or G3
- Pesticide applications adjacent to plants ranked S1, S2, G1, G2 or G3
- Aerial pesticide spraying by airplane or helicopter
- 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.
- Well drilling plans
- 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
- Carbon injection and storage or waste water disposal

Therefore the actions proposed in this UMP do not require any separate site specific environmental review.

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 XIV
Summary of Public Comments with Department Responses

A public meeting was held April 1, 2015 at the Tompkins-Cortland Community College located in Dryden, to gather public input on the Draft Rockefeller Unit Management Plan (UMP). The meeting was advertised through a press release and a notice in the DEC's Environmental Notice Bulletin. Additionally, about one-hundred public meeting notices were sent by email or postcard, to various stakeholders including people that attended the scoping meeting for the UMP, which was held at the DEC Cortland sub-office (during February 2010), DEC Adopt-A-Natural Resource/Volunteer Stewardship Program partners and other interested persons/groups.

Twelve 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 meeting room; listen to a presentation about the UMPs; and provide verbal comments with use of a microphone.

A total of 40 public comments were received from 16 people for the Draft Rockefeller UMP. Four people spoke at the meeting during the verbal comment session, providing 12 verbal comments. In addition to the verbal comments, 28 written comments were provided in the form of easels (at the meeting), comment cards (provided at the meeting), emails and letters.

The following table contains verbal and written comments that were received at the public meeting (April 1, 2015) or during the public comment period (April 1, 2015 to May 6, 2016) 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	
Thank you for all that you do!	The Cortland office lands and forests staff take great pride in managing State Forests for the People of the State of New York.
Your staff did an excellent job assessing the natural and physical resources of the Rockefeller UMP that currently exists.	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.

Addressing management issues for the next 10 and 20 year intervals is a long time for any changes to be made if necessary. While this might be appropriate for forest growth, five year intervals would certainly be better especially for recreational use.	This plan addresses management activities on this unit for the next twenty years, with an update due in ten. The Cortland office lands and forests staff are charged with managing 16 Units that are made up of 55 State Forests totaling 93,403 acres. Updating all 16 UMPs at 5 year intervals would be an extremely daunting task.
Ecosystem Management	
The plan does not propose enough Early Successional Habitat (ESH). Many wildlife species require ESH including game species such as grouse, woodcock, turkey and deer.	During the life of this UMP, early successional habitat shall be increased from about 6 percent of the area on the unit (330-acres) to over 14 percent of the area on the unit (830-acres). The long- range goal is to maintain between 10 and 20 percent of the area on the unit as early successional habitat.
There is too much late successional habitat proposed. What is this connectivity corridor being proposed? There is enough late successional habitat in the Adirondacks and the Catskills.	It was determined by the New York State Heritage Program, Least Cost Path (LCP) corridors represent the most favorable dispersal path for forest species based on a combination of percent natural forest cover in a defined area, barriers to movement, and distance traveled. LCP corridors are areas two miles wide that connect large unfragmented forested landscapes. LCP corridors should ideally contain closed canopy and forest interior conditions. There are 4,192-acres of the unit that is located within an LCP. Over 51 % of the forested area (2,103-acres) within least cost path (LCP) corridors will be managed as late successional habitat.
The DEC is doing a good job with the wildlife and forest management.	Comment noted.
I prefer interfering vegetation be treated mechanically rather than with herbicides.	The Department will control interfering vegetation using mechanical treatments, prescribed fire, and/or herbicide application. Herbicides may be used, to control interfering vegetation, on State Forests when all other options are not viable, effective or economically feasible.

I would like to see more fields.	State Forests are being managed to provide a variety of forested habitats. Grassland management is not a high priority and will be limited to the existing 47 acres of grassland habitat.
The topic of early, middle and late, successional forests and what you will be doing to maintain and enhance these habitats was quite detailed.	The actions included in this plan have been developed following an analysis of habitat needs and overall landscape conditions within the planning unit (i.e. the geographical area surrounding and including the State Forests) as well as the larger ecoregion and New York State.
Infrastructure	
Given the DEC's limited budget, it is really sad that people do not respect current laws. There are breached earthen berms all over the unit as well as signs and gates that have been torn down.	The Division of Lands and Forests will continue to work closely with the Division of Forest Protection and Law Enforcement to deter illegal activities from occurring. Additionally, the Department will encourage Volunteer Stewardship Program partners and users of the forests to report illegal activities.
I would like to see more public relations with the Rockefeller homestead location.	The Department will create and install an informational kiosk on Michigan Hill State Forest. The kiosk will provide a map and important information about the forest. The existing sign at the Rockefeller homestead location may be replaced with a kiosk at some point in the future.
I would like to see more signs promoting the Rockefeller UMP.	The plan looks to maintain the existing signs at the John D. Rockefeller birth site. Additionally, the Department will create and install an informational kiosk on Michigan Hill State Forest. The kiosk will provide a map and important information about the forest.
Having more signs to promote the resources and recreational activities available in the forest are needed. Signs should be located on Route 38 & Route 79 which would benefit and increase use of the Unit.	There is currently a Turkey Hill State Forest Facility I.D. sign located on NYS Route 79 and a Michigan Hill State Forest Facility I.D. sign, located at the fishing access, site on NYS Route 38. The Department will display, in high-use areas, "Rules and Regulations on State Forests and Unique Areas" signs containing select excerpts from the Title 6 New York Codes, Rules and Regulations Part 190.

The DEC should be working with towns of the Richford, La Peer, Lisle and Harford in promoting the Unit at Town Board meetings. Working closely with the local elected town supervisors and highway superintendents might help with positive public relations and the sharing of some services.	The Department has in the past and will continue in the future to work in cooperation with the local municipalities.
Have a web site or downloadable App available from the DEC where the public can access information on the Rockefeller Unit explaining where and what activities are available to the general public. Also, providing general map information on the forests of the Unit and their boundaries would be helpful. Having a display map at the entrance of each trail would also be a positive feature.	The Department plans to periodically review and update the web pages for each State Forest, within the unit that are located on the Department's website. Additionally, the plan outlines creation of high quality digital maps for forests within the unit. These maps will be posted on the Departments website. The Department will create and install an informational kiosk on Michigan Hill State Forest. The kiosk will provide a map and important information about the forest.
There needs to be parking available on all forests to get users off the road. Parking on the road is a safety issue.	The plan outlines maintenance of two existing parking areas and the construction and maintenance of one new parking area. Also, landings may be blocked, after forest product sales, in such a manner as to increase parking opportunities.
Public/Permitted Use	
Your actions for public use seems to be a continuation of current policies. While public use does get its own letter (D) in Objectives and Actions, I do not see much activity supporting public use in the UMP.	State Forests offer opportunities for outdoor recreational activities that require minimum facility development or site disturbance in relatively remote undisturbed settings. Forests within this unit shall focus on providing opportunities for dispersed recreational opportunities. As such, there are no new designated recreation trails or camp sites proposed.

Recreation	
The newspaper article made no reference whatsoever of hunting. Not once. I know many people find hiking, fishing, snowmobiling and horseback riding enjoyable, but I'm sure hunting licenses pay most of the bills for forest management. So I think it is important that the DEC think of hunters. As a hunter I pay for the privilege to use these lands while other user groups do not and yet their voices are normally heard and ours is not.	Proceeds from the sales of NYS Hunting Licenses are not used for forest management on State Forests. They stay within the Division of Fish, Wildlife and Marine Resources. State Forests are managed by the Division of Lands and Forests. Department will continue to stock pheasants and plans to construct a parking area for the Pheasant Release Area on Michigan Hill State Forest to improve access to provide a safer area for hunters to park. The plan calls for an increase in the amount of early successional habitat from 6% to 14%. This will benefit games species such as cotton-tail rabbit, ruffed grouse, wild turkey, white-tailed deer and woodcock.
The pheasant release area on Michigan Hill State Forest needs a parking area.	The Plan outlines the construction of a parking area for the Pheasant Release Area on Michigan Hill State Forest. The purpose of the perking area is to improve access and to provide a safer area for hunters to park.
Locating downed pheasants, without a dog, is very hard, especially when the grass is high. So, I would ask that the DEC consider finding a way to mow at least part of the release areas at Michigan Hill. The pheasant release area needs to be mowed. Have the grass and brush mowed in strips as it used to be.	The Department will continue to stock pheasants. Additionally, the Division of Lands and Forests will continue to maintain pheasant habitat on the unit by working with the Division of Fish, Wildlife and Marine Resources (DFWMR). Maintenance of the 47-acres of pheasant habitat will be accomplished by mowing one third of the acreage (15.5-acres) every year. The Department will also look to develop a new Volunteer Stewardship agreement for maintenance of the Pheasant Release Area.

Administrative access needs to be improved at the pheasant release area in order to distribute the pheasants better. This would create a safer and more enjoyable hunting experience. Insure that birds are properly released by repairing the access trail down the hill and over the creeks.	The plan outlines the improvement of the ford in the stream that bisects the pheasant release area to provide better administrative access.
I am writing to express my concern with the Griggs Gulf trail that is a multiple use area. As a hiker I would support keeping each use on separate trails and horse use on a trail for hikers becomes dangerous for hikers because of the deep holes caused by horse hoofs.	The only designated trails on the Unit are 0.6 miles of CP-3 trails and 7.1 miles of snowmobile trails. There are no new designated recreational trails proposed in this Plan. Hiking and horseback riding are allowed as dispersed forms of recreation and occur at low levels on this Unit. As such, conflicts between these activities should be minimal.
The creation of new trails creates swaths of restricted trapping zones due to restrictions on setting body-gripping traps within 100' of trails. Routing a new trail along a stream, shoreline or some other terrain feature could easily restrict trappers from setting the very best set locations in an entire parcel of land. Trappers are happy to share public lands, but please don't spoil our access when making new trails.	There are no new designated recreational trails proposed in this Plan.
Encourage the use of the 7.1 existing snowmobile trails for walking, hiking and backpacking. Name the trails with signs and have maps available of existing forests broken down by the four areas included in the Rockefeller UMP	Walking, hiking and backpacking are allowed as dispersed forms of recreation on the Unit and are allowed on the snowmobile trails. Designated snowmobile trails are named and signs are posted during the snowmobile season. Trails on the unit include C2, C5B and S20. Individual State forest maps are available on the DEC's website.

Would you consider working with local High Schools and Colleges through a Volunteer Stewardship Agreement or Temporary Revocable Permit? This would be an excellent way to promote both educational and recreational activities on the Unit and possibly get some help maintaining the trails.	The plan outlines the development of new VSP agreements and TRPs with State Forest users. The Department would consider developing new VSP agreements or TRPs for things such as litter pickup, the maintenance of historic/cultural sites, the maintenance of Pheasant Release Area, stewardship of entire forests, etc…
As part of harvesting the forest, logging companies must create pathways to remove the trees. Use the logging paths and create additional trails for public use. This would be a very limited cost to the DEC.	There are no new designated recreation trails proposed in this Plan. However the Department does allow dispersed forms of recreation such as walking, hunting, trapping, fishing, hiking, camping, orienteering, geocaching and nature observation providing Department policies, rules and regulations are followed.
Off-Highway and All-Terrain Vehicle Use	
There should be more ATV use allowed. ATVs should be allowed for hunting season. Please allow ATVs on State Land. The amount of ATV trails on the unit should be increased.	Based on evaluation of past efforts to accommodate ATV use and the many impacts and constraints associated with off road vehicles, DEC has made a final determination to prohibit ATV use on State Forests, except as may be considered to accommodate a "connector trail" through Unit Managetment Planning or a similar public process; and for those specific routes designated for use by DEC-issued Motorized Access Permit for People with Disabilities (MAPPWD).
Applaud the ATV use for the disabled, but there should be more.	The Department will continue to maintain 0.6-miles of ATV route for people issued a DEC Motorized Access Permit for People with Disabilities (CP-3). This route provides hunting and nature observation opportunities. However there are no plans to expand these trails at this time.
ATV use would substantially help the local economy.	Accommodating ATV use could potentially have some positive impacts on local communities surrounding the Unit.

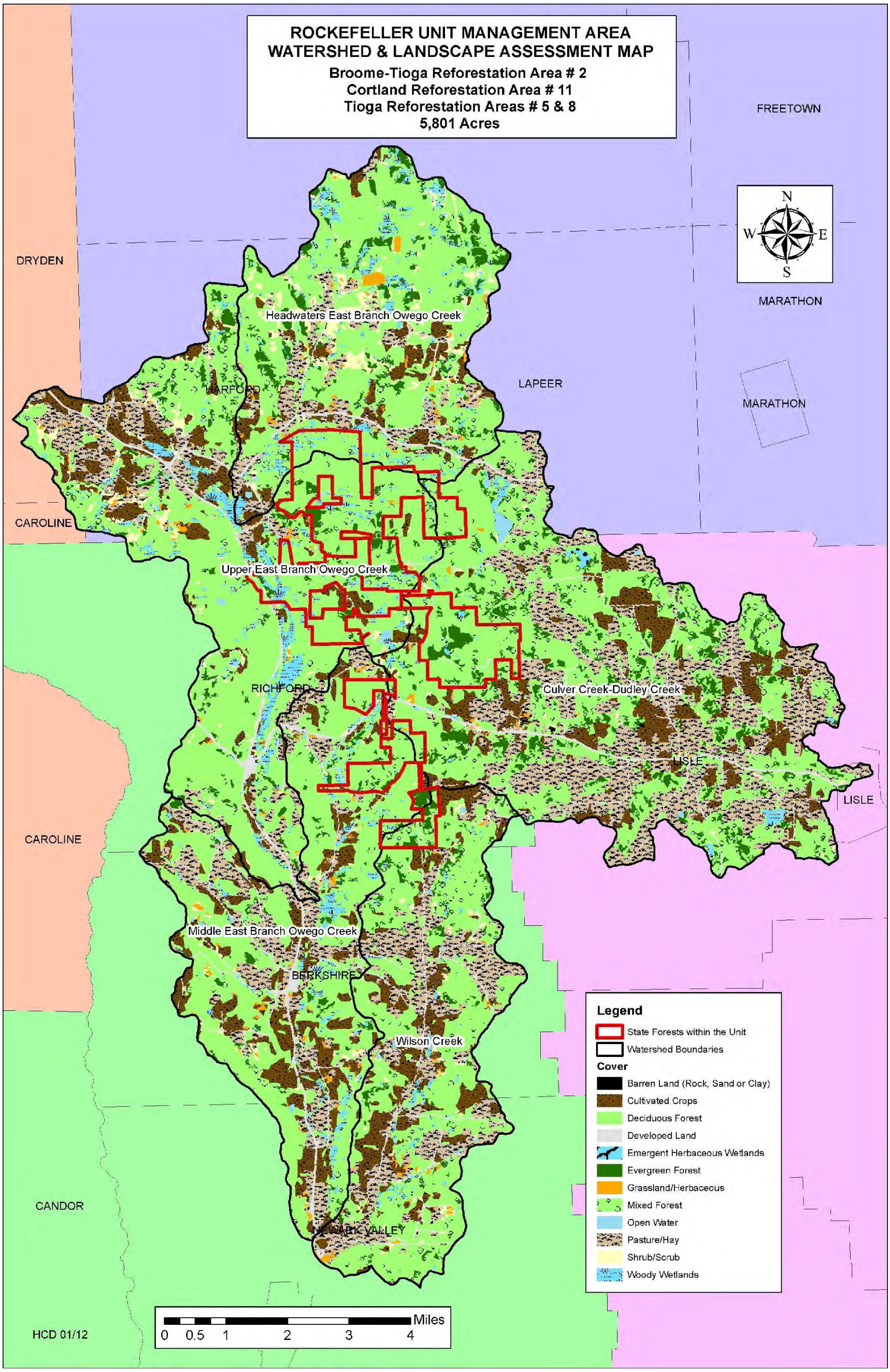
Can an ATV connector trail be considered in the future? An ATV Corridor should not be considered.	An ATV connector trail may be evaluated and considered if another entity is establishing a legitimate public ATV trail system on lands adjacent to State Forests within the unit, and the State Forest is needed to serve as a connecting link. Evaluation and consideration of connector routes will follow criteria detailed on page 223 of the SPSFM at http://www.dec.ny.gov/lands/64567.html.
There should be no off road vehicle use and less motorized vehicles in the forest throughout the year.	Any off road vehicle use including ATVs, motorcycles, RTVs, trucks/jeeps and UTVs on the Unit is illegal. The Department will continue to maintain 0.6-miles of ATV route for people issued a DEC Motorized Access Permit for People with Disabilities (CP-3). Additionally, will continue to maintain the 7.1 miles of snowmobile trails.
Minerals	
No fracking!	High-volume hydraulic fracturing has effectively been banned in New York State. No exploration or extraction using high volume hydraulic fracturing will be considered for permitting on state lands per the May 2015 FSGEIS and June 2015 Findings Statement that recommended that high-volume hydraulic fracturing should not move forward in New York State.

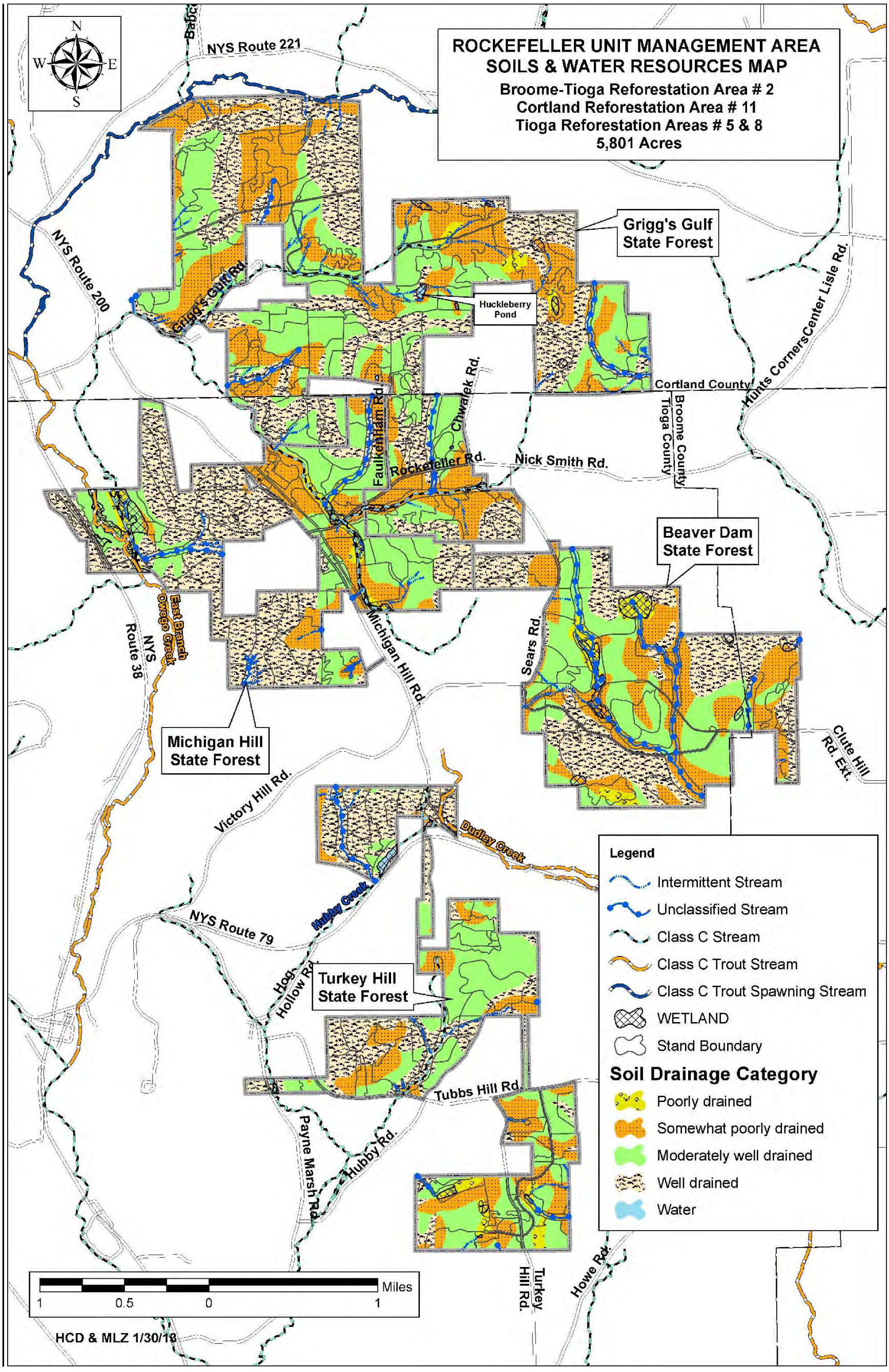
No oil and gas development.	Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes the Department of Environmental Conservation to enter into leases on behalf of the State for exploration, production and development of oil and gas on State lands. 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, and would require an amendment to the approved UMP.
Forest Products/Economy	
Cut more timber!	The Department will provide sustainably managed forest resources through the Forest Product Sales Program. Forest product sales provide revenue to the State, supply raw materials to the forest product industry, create local jobs, and supply local families with fuelwood. The Department will look to treat an average of 232-acres of commercial forest stands annually.

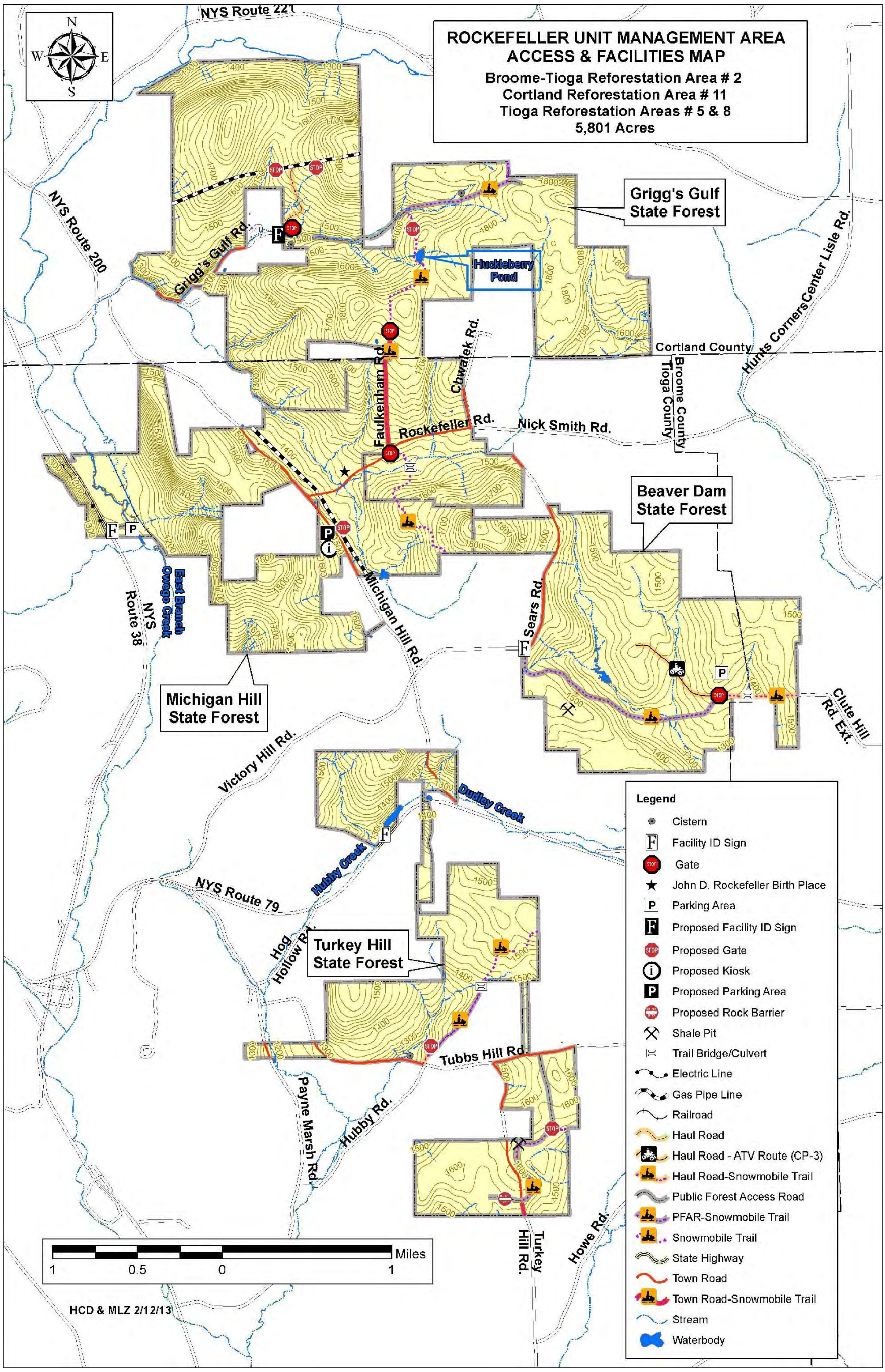
The money from forest product sales should go to the towns and be used to address local stream erosion.	The money from forest product sales goes into a special revenue account used to help offset the expenses of managing State Forests. However, Reforestation Areas are subject to town, school, and fire district taxes, but are exempt from county taxes. These areas are taxed at the same rate as private forest land. Local municipalities receive annual property tax payments from the State for the Reforestation Areas in the Rockefeller Unit.. Multiple Use Areas are exempt from property taxes. The Department follows Best Management Practices for all activities on State Forests in order to minimize erosion.

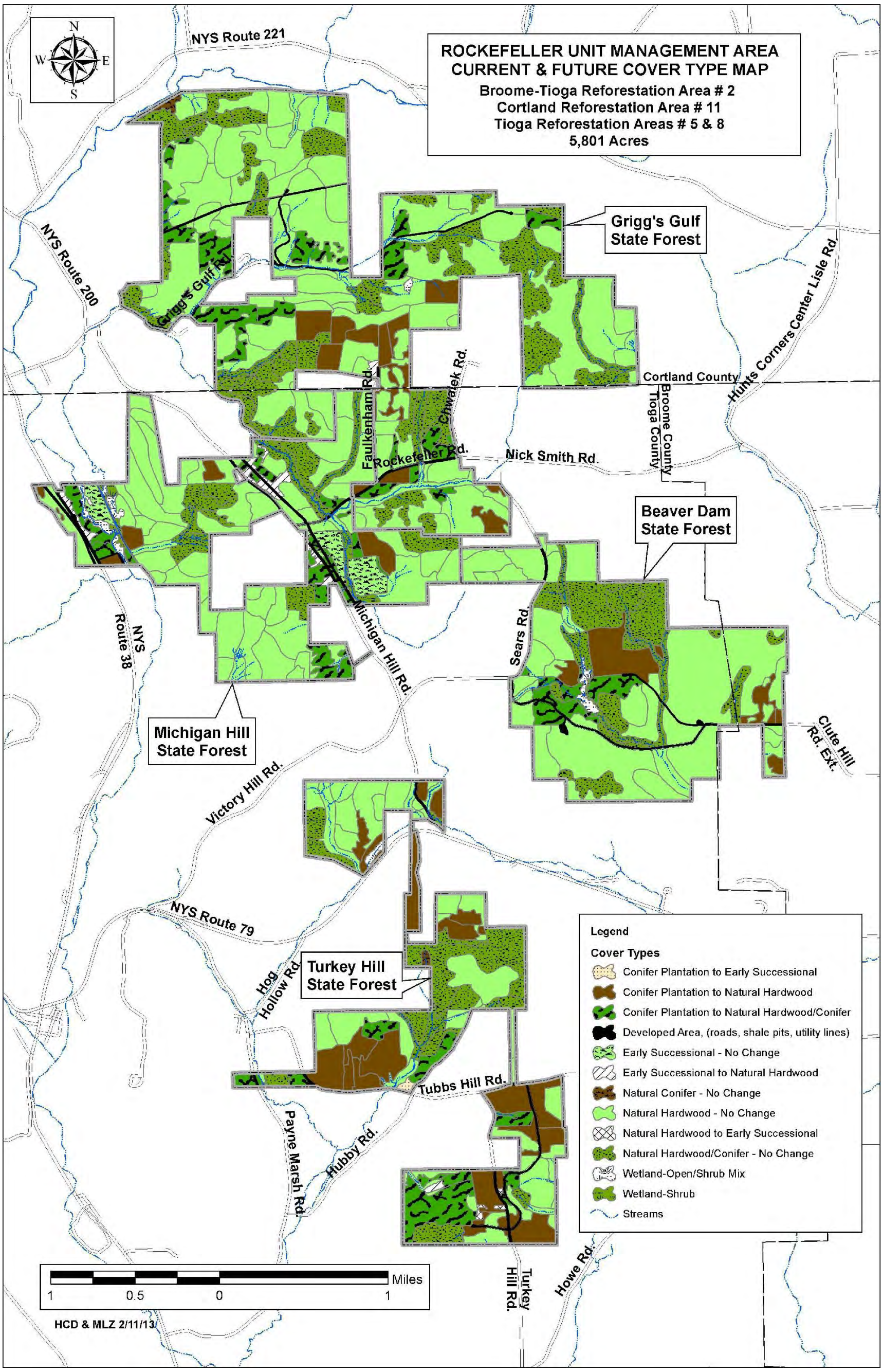
APPENDIX XV Index for the Maps of the Unit

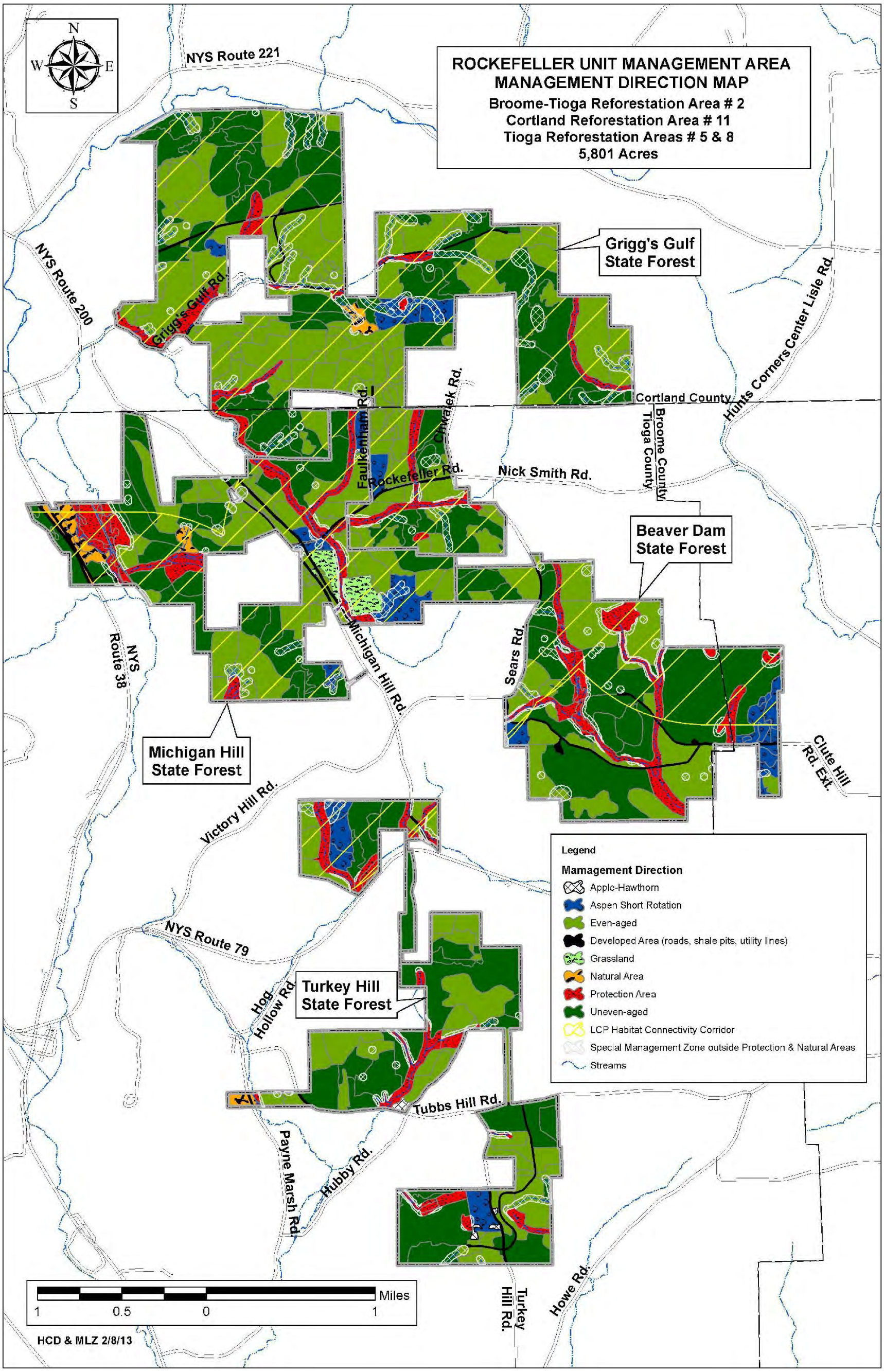
Watershed and Landscape Assessment……137
Soil and Water Resources……138
Access and Facilities……139
Current and Future Cover Types……140
Management Direction……141
Stand Identification and Treatment Blocks……142
Interfering/Invasive Vegetation……143

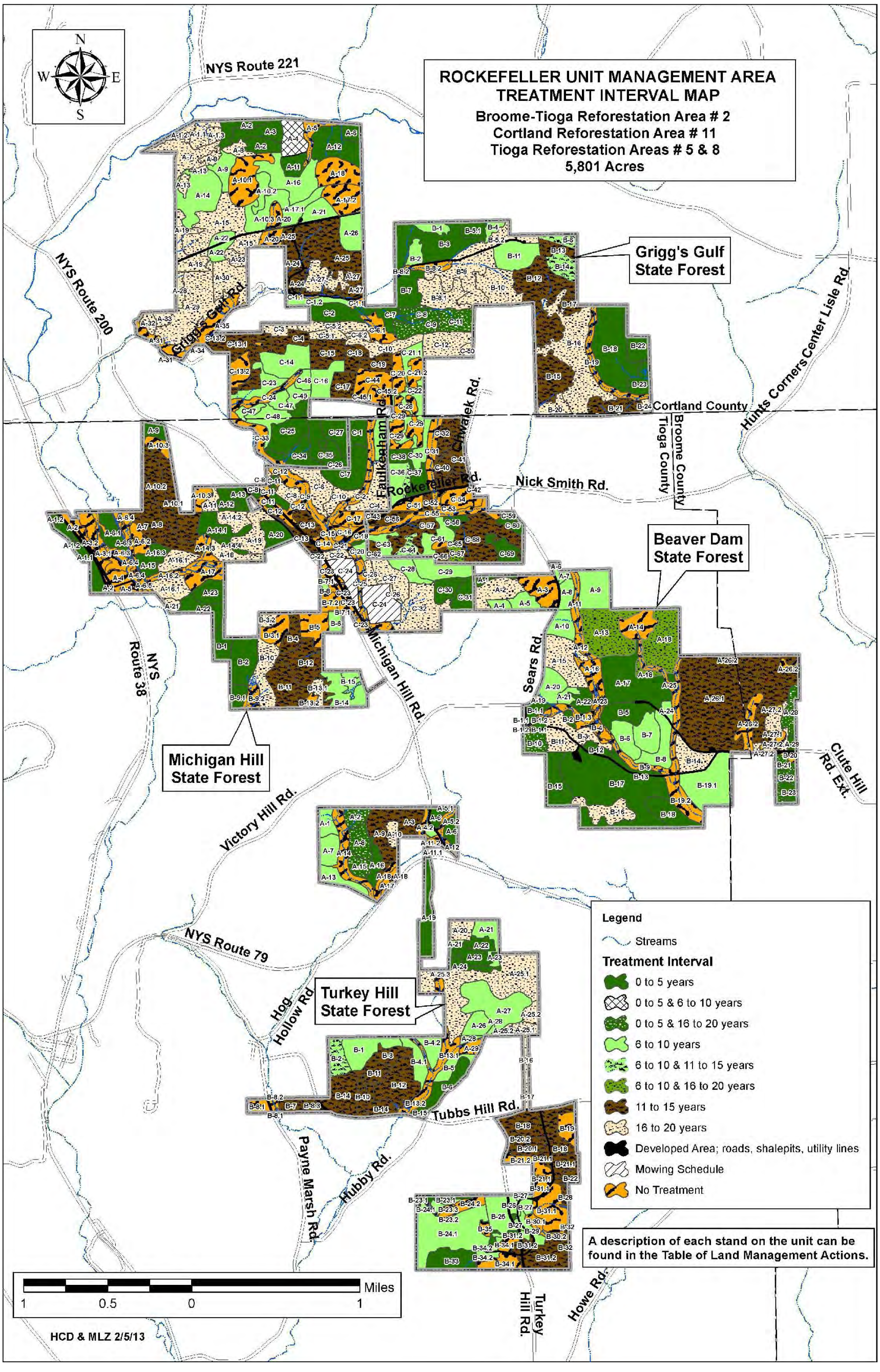

ROCKEFELLER UNIT MANAGEMENT AREA
WATERSHED & LANDSCAPE ASSESSMENT MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
FREETOWN
DRYDEN
MARATHON
Headwaters East Branch Owego Creek
HARFORD
LAPEER
MARATHON
CAROLINE
Upper East Branch Owego Creek
RICHFORD
Culver Creek-Dudley Creek
LISLE
LISLE
CAROLINE
Middle East Branch Owego Creek
BERKSHIRE
Wilson Creek
CANDOR
NEWARK VALLEY
Legend
State Forests within the Unit
Watershed Boundaries
Cover
Barren Land (Rock, Sand or Clay)
Cultivated Crops
Deciduous Forest
Developed Land
Emergent Herbaceous Wetlands
Evergreen Forest
Grassland/Herbaceous
Mixed Forest
Open Water
Pasture/Hay
Shrub/Scrub
Woody Wetlands
Miles
0 0.5 1 2 3 4
HCD 01/12

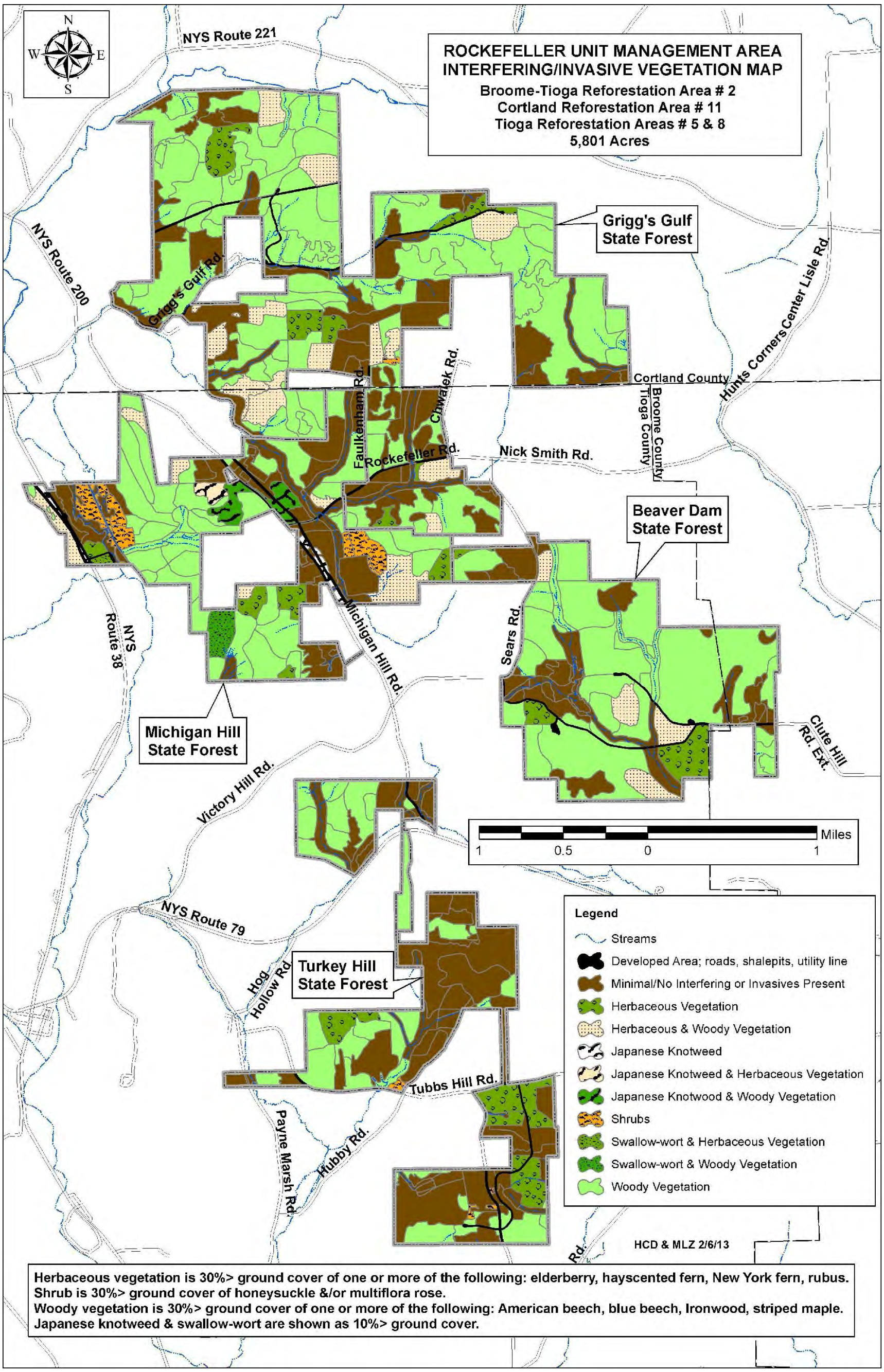

ROCKEFELLER UNIT MANAGEMENT AREA
SOILS & WATER RESOURCES MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
W
E
S
NYS Route 221
NYS Route 200
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Huckleberry Pond
Cortland County
Broome County
Tioga County
Hunts Corners
Center Lisle Rd.
Faulkenham Rd.
Chwalek Rd.
Rockefeller Rd.
Nick Smith Rd.
Beaver Dam State Forest
East Branch Owego Creek
NYS Route 38
Michigan Hill Rd.
Sears Rd.
Michigan Hill State Forest
Clute Hill Rd. Ext.
Victory Hill Rd.
Dudley Creek
Hubby Creek
NYS Route 79
Hog Hollow Rd.
Turkey Hill State Forest
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Turkey Hill Rd.
Howe Rd.
Legend
Intermittent Stream
Unclassified Stream
Class C Stream
Class C Trout Stream
Class C Trout Spawning Stream
WETLAND
Stand Boundary
Soil Drainage Category
Poorly drained
Somewhat poorly drained
Moderately well drained
Well drained
Water
Miles
1
0.5
0
1
HCD & MLZ 1/30/13


ROCKEFELLER UNIT MANAGEMENT AREA
ACCESS & FACILITIES MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
S
E
W
NYS Route 221
NYS Route 200
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Huckleberry Pond
Hunts Corners Center Lisle Rd.
Cortland County
Broome County
Tioga County
Faulkenham Rd.
Chwalek Rd.
Rockefeller Rd.
Nick Smith Rd.
Beaver Dam State Forest
Michigan Hill Rd.
Sears Rd.
East Branch Owego Creek
NYS Route 38
Michigan Hill State Forest
Clute Hill Rd. Ext.
Victory Hill Rd.
Dudley Creek
Hubby Creek
NYS Route 79
Hog Hollow Rd.
Turkey Hill State Forest
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Turkey Hill Rd.
Howe Rd.
Legend
Cistern
Facility ID Sign
Gate
John D. Rockefeller Birth Place
Parking Area
Proposed Facility ID Sign
Proposed Gate
Proposed Kiosk
Proposed Parking Area
Proposed Rock Barrier
Shale Pit
Trail Bridge/Culvert
Electric Line
Gas Pipe Line
Railroad
Haul Road
Haul Road - ATV Route (CP-3)
Haul Road-Snowmobile Trail
Public Forest Access Road
PFAR-Snowmobile Trail
Snowmobile Trail
State Highway
Town Road
Town Road-Snowmobile Trail
Stream
Waterbody
Miles
1 0.5 0 1
HCD & MLZ 2/12/13


ROCKEFELLER UNIT MANAGEMENT AREA
CURRENT & FUTURE COVER TYPE MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
W
E
S
NYS Route 221
NYS Route 200
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Hunts Corners Center Lisle Rd.
Cortland County
Broome County
Tioga County
Faulkenham Rd.
Chwalek Rd.
Rockefeller Rd.
Nick Smith Rd.
Beaver Dam State Forest
Michigan Hill Rd.
Sears Rd.
NYS Route 38
Michigan Hill State Forest
Clute Hill Rd. Ext.
Victory Hill Rd.
NYS Route 79
Hog Hollow Rd
Turkey Hill State Forest
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Turkey Hill Rd.
Howe Rd.
Legend
Cover Types
Conifer Plantation to Early Successional
Conifer Plantation to Natural Hardwood
Conifer Plantation to Natural Hardwood/Conifer
Developed Area, (roads, shale pits, utility lines)
Early Successional - No Change
Early Successional to Natural Hardwood
Natural Conifer - No Change
Natural Hardwood - No Change
Natural Hardwood to Early Successional
Natural Hardwood/Conifer - No Change
Wetland-Open/Shrub Mix
Wetland-Shrub
Streams
Miles
1
0.5
0
1
HCD & MLZ 2/11/13


ROCKEFELLER UNIT MANAGEMENT AREA
MANAGEMENT DIRECTION MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
W
E
S
NYS Route 221
NYS Route 200
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Hunts Corners Center Lisle Rd.
Cortland County
Broome County
Tioga County
Faulkenham Rd.
Chwalek Rd.
Rockefeller Rd.
Nick Smith Rd.
Beaver Dam State Forest
Michigan Hill Rd.
Sears Rd.
NYS Route 38
Michigan Hill State Forest
Clute Hill Rd. Ext.
Victory Hill Rd.
NYS Route 79
Hog Hollow Rd.
Turkey Hill State Forest
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Turkey Hill Rd.
Howe Rd.
Legend
Mamagement Direction
Apple-Hawthorn
Aspen Short Rotation
Even-aged
Developed Area (roads, shale pits, utility lines)
Grassland
Natural Area
Protection Area
Uneven-aged
LCP Habitat Connectivity Corridor
Special Management Zone outside Protection & Natural Areas
Streams
Miles
1
0.5
0
1
HCD & MLZ 2/8/13


ROCKEFELLER UNIT MANAGEMENT AREA
TREATMENT INTERVAL MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
S
E
W
NYS Route 221
NYS Route 200
NYS Route 38
NYS Route 79
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Beaver Dam State Forest
Michigan Hill State Forest
Turkey Hill State Forest
Cortland County
Tioga County
Broome County
Nick Smith Rd.
Rockefeller Rd.
Faulkenham Rd.
Chwalek Rd.
Michigan Hill Rd.
Sears Rd.
Victory Hill Rd.
Hog Hollow Rd
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Turkey Hill Rd.
Howe Rd.
Clute Hill Rd. Ext.
Hunts Corners Center Lisle Rd.
Legend
Streams
Treatment Interval
0 to 5 years
0 to 5 & 6 to 10 years
0 to 5 & 16 to 20 years
6 to 10 years
6 to 10 & 11 to 15 years
6 to 10 & 16 to 20 years
11 to 15 years
16 to 20 years
Developed Area; roads, shalepits, utility lines
Mowing Schedule
No Treatment
A description of each stand on the unit can be found in the Table of Land Management Actions.
Miles
1
0.5
0
1
HCD & MLZ 2/5/13


ROCKEFELLER UNIT MANAGEMENT AREA
INTERFERING/INVASIVE VEGETATION MAP
Broome-Tioga Reforestation Area # 2
Cortland Reforestation Area # 11
Tioga Reforestation Areas # 5 & 8
5,801 Acres
N
W
E
S
NYS Route 221
NYS Route 200
Grigg's Gulf Rd.
Grigg's Gulf State Forest
Hunts Corners Center Lisle Rd.
Cortland County
Broome County
Tioga County
Faulkenham Rd.
Chwalek Rd.
Rockefeller Rd.
Nick Smith Rd.
Beaver Dam State Forest
Michigan Hill Rd.
Sears Rd.
NYS Route 38
Michigan Hill State Forest
Clute Hill Rd. Ext.
Victory Hill Rd.
Miles
1
0.5
0
1
NYS Route 79
Hog Hollow Rd
Turkey Hill State Forest
Tubbs Hill Rd.
Payne Marsh Rd.
Hubby Rd.
Legend
Streams
Developed Area; roads, shalepits, utility line
Minimal/No Interfering or Invasives Present
Herbaceous Vegetation
Herbaceous & Woody Vegetation
Japanese Knotweed
Japanese Knotweed & Herbaceous Vegetation
Japanese Knotwood & Woody Vegetation
Shrubs
Swallow-wort & Herbaceous Vegetation
Swallow-wort & Woody Vegetation
Woody Vegetation
HCD & MLZ 2/6/13
Herbaceous vegetation is 30%> ground cover of one or more of the following: elderberry, hayscented fern, New York fern, rubus.
Shrub is 30%> ground cover of honeysuckle &/or multiflora rose.
Woody vegetation is 30%> ground cover of one or more of the following: American beech, blue beech, Ironwood, striped maple.
Japanese knotweed & swallow-wort are shown as 10%> ground cover.