NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Division of Lands & Forests | Bureau of State Land Management

HEMLOCK-CANADICE
UNIT MANAGEMENT PLAN

Final

Livingston County towns of Livonia, Conesus and Springwater

Ontario County towns of Richmond and Canadice

January 2015

NYS Department of Environmental Conservation
Region 8 Sub-Office
7291 Coon Rd.
Bath, New York 14810

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GOVERNOR

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STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233-1010

MEMORANDUM

TO: The Record

FROM: Joseph J. Martens

DATE: 1/26/2015

SUBJECT: Final Hemlock Canadice UMP

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

New York State Department of Environmental Conservation'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)

Preface

It is the policy of the New York State Department of Environmental Conservation (NYS DEC) to manage state lands for multiple benefits to serve the people of New York State. This Unit Management Plan (Unit) is the first step in carrying out that policy. The plan has been developed to address management activities on this unit for the next 10 year period. Some management recommendations may extend beyond the 10 year period.

Factors such as budget constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Vision Statement for All State Forests

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

This plan sets the stage for DEC to reach these ambitious goals by applying the latest research and science, with guidance from the public, whose land we have been entrusted to manage.

Green 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, NYS DEC 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.

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

The Unit Management Planning Process

New York State's management policy for public lands follows a multiple use concept established by New York's Environmental Conservation Law. This allows for diverse enjoyment of state lands by the people of the state. Multiple use management addresses all demands placed on these lands, such as: watershed management, timber management, wildlife management, mineral resource management, rare plant and community protection, recreational use, taxes paid, and aesthetic appreciation. For more information regarding the Unit Management Planning (UMP) process please refer to the Strategic Plan for State Forest Management (SPSFM) at www.dec.ny.gov/lands/64567.html.

In this plan, an initial resource inventory and other information is provided, followed by an assessment of existing and anticipated uses and demands. This information is used to set goals and management objectives. Management actions tables provide an estimated cost and timetable for accomplishing these objectives.

Prepared by the Hemlock-Canadice Unit Management Planning Team:

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Acknowledgments

The Hemlock-Canadice 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:

Dave Mager	Regional Real Property Supervisor
Amy Mahar	Diversity Biologist
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HEMLOCK-CANADICE UNIT LOCATION MAP

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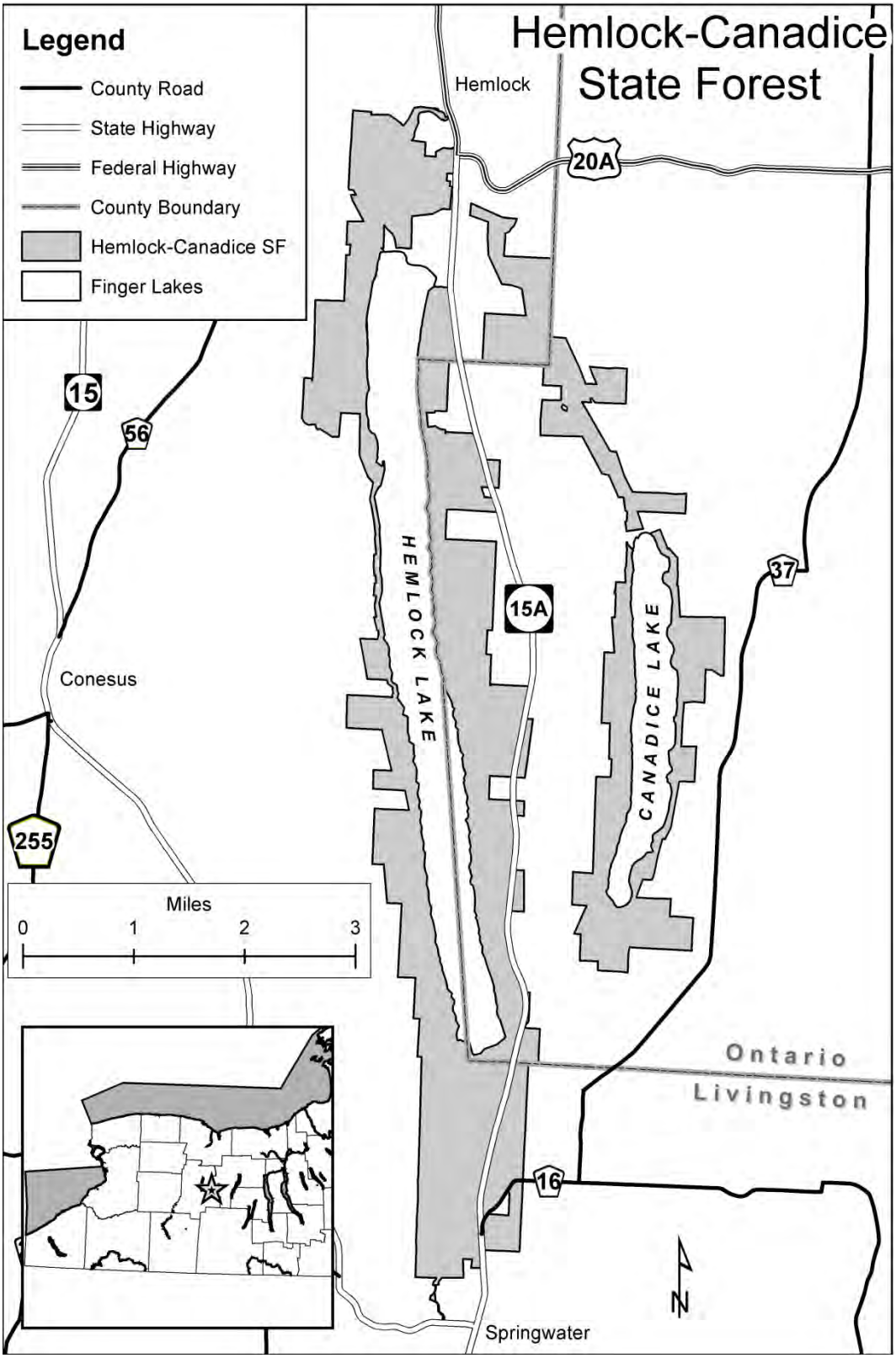


INTRODUCTION

History of State Forests and Wildlife Management Areas

Forest lands outside the Adirondack and Catskill regions owe their present character, in large part, to the impact of pioneer settlement. Following the close of the Revolutionary War, increased pressure for land encouraged westward expansion. Up to 91% of New York woodlands were cleared for cultivation and forage.

As the less fertile soils proved unproductive, they were abandoned, and settlement was attempted elsewhere. The stage of succession was set and new forests of young saplings re-occupied the ground once cleared.

The State Reforestation Law of 1929 and the Hewitt Amendment of 1931 set forth the legislation which authorized the Conservation Department to acquire land by gift or purchase for reforestation purposes. These state forests consisting of not less than 500 acres of contiguous land were to be forever devoted to reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber, and for recreation and kindred purposes. This broad program is presently authorized under Article 9, Title 5, of the NYS Environmental Conservation Law.

In 1930, Forest Districts were established, and the tasks of land acquisition and reforestation were started. In 1933, the Civilian Conservation Corps (CCC) was begun. Thousands of young men were assigned to plant millions of trees on the newly acquired state forests. In addition to tree planting, these men were engaged in road and trail building, erosion control, watershed restoration, forest protection, and other projects.

During the war years of 1941-1945, little was accomplished on the reforestation areas. Plans for further planting, construction, facility maintenance, and similar tasks had to be curtailed. However, through postwar funding, conservation projects once again received needed attention.

The Park and Recreation Land Acquisition Act of 1960 and the Environmental Quality Bond Acts of 1972 and 1986 contained provisions for the acquisition of state forest lands, these lands would serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry, and recreation.

Wildlife management areas in New York, like state forests, have a varied history of acquisition. Many were gifted to the New York State by the Federal Government or other cooperating public or private organization. Some parcels were purchased with Bond Act funds or Federal Aid in Wildlife Restoration Program funds. The latter which is commonly called the Pittman-Robertson Act is a federal fund supported by hunters from their purchase of hunting licenses, firearms and ammunition.

Today there are over 775,000 acres of State Forests, 840,000 acres of Conservation Easements, and over 200,000 acres of Wildlife Management Areas throughout the state. The use of these lands is important to the economy and to the health and well-being of the people of the state.

History of Hemlock-Canadice Unit

The state forest covered by the Hemlock-Canadice Unit Management Plan has seen numerous changes in the landscape.

The area was originally inhabited by Seneca Indians; the Seneca are a member of the Haudenosaunee (people of the long house) or Iroquois Confederacy. The Haudenosaunee were nomadic hunters and farmers. The famous Seneca chief, Red Jacket, resided in what is now Branchport on the north end of Keuka Lake. They undoubtedly hunted and fished in the Hemlock-Canadice Unit and practiced agriculture in the surrounding flats.

The destruction and devastation of the Seneca homeland by the Sullivan-Clinton Campaign of 1779 resulted in the opening of Seneca lands, as well as other Haudenosaunee lands, to American expansion. The Campaign was ordered by General George Washington during the middle of the American Revolution in order to deal both with a perceived threat of potential Indian alliances on the Colonies' western frontier, as well as retribution for actual alliances some Haudenosaunee made with the British in response to the Revolution. The Campaign came close to achieving its essential goal that Indian country "not be merely overrun, but destroyed".

In 1788, Oliver Phelps and Nathaniel Gorham purchased 2,600,000 acres from the State of Massachusetts, which owned all the land known as "western" New York. The pre-emption line delineated the boundary between New York and "western" New York. In 1790, they sold 1,250,000 acres to Robert Morris, who sold 750,000 acres to William Pulteney. Colonel Charles Williamson was the chief land agent for the Pulteney purchase. He sub-divided the Pulteney tract and sold by contract to individual homesteaders.

Settlers came to the valleys in the late 1700's, followed by farmers looking to clear the hillsides for farms. European immigrants competed with settlers moving west from Vermont, Massachusetts, Connecticut, New Jersey and eastern New York for offers of large tracts of land for farming. By the late 1800s, only 30 percent of the land was forested.

Almost all land in Livingston and Ontario Counties was cleared of tree growth to make way for crops or pasture land for grazing. A walk in most woodlots shows evidence of stone fences or old hedgerows. Lands not cleared for crops were cut for wood to supply the water powered sawmills that sprang up all over the area. This early timber industry supplied wood via railroads and canals all over the eastern United States.

The farming boom was short-lived however. After one or two generations, the heavy clay soils and short growing season discouraged farming. Many farmers moved on to settle the midwest, Oregon and Washington territories. The Depression of the 1930's bankrupted many of the marginal hillside farms in this area of New York. Much of this abandoned land reverted to brush and tree growth.

The State Reforestation Law of 1929 and the Hewitt Amendment of 1931 set forth the legislation which authorized the Conservation Department to acquire land by gift or purchase for reforestation areas. These lands were to be forever devoted to "reforestation and the establishment and maintenance thereon of forests for watershed protection, production of timber, and for recreation and kindred purposes." In 1930, forest districts were established and land acquisition and reforestation were started.

The Park and Recreation Land Acquisition Act of 1960, and the Environmental Quality Bond Acts of 1972 and 1986 contained provisions for the acquisition of state forest lands. These lands serve multiple purposes involving the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry and recreation.

In 2010 NYS DEC purchased the City of Rochester's Watershed property under the State Reforestation Law. However, the history of the area as public land dates back for over a century to when the City began to acquire land in order to protect the public water supplied by Hemlock Lake.

City of Rochester: Water Supply and Stewardship

Hemlock and Canadice Lakes have been the protected source of the City of Rochester's public water since 1876. In 1896 the City of Rochester began the land acquisition process that eventually resulted in ownership of the entire shoreline and portions of the hillsides of Hemlock and Canadice Lakes in order to safeguard the public water supplied by the lakes. Stewardship by the City resulted in arguably the best protected large public water supply in New York State. Also, City efforts restored Hemlock and Canadice Lakes as the only Finger Lakes with largely undeveloped shorelines. This unique condition not only helps to minimize the City's water treatment costs by protecting water quality, but it also offers a serene atmosphere that is peerless in this section of New York.

Figure 1: Water pipeline under construction between Hemlock Lake and Rochester.

Protecting water quality continues as the most important function of this property; however the additional benefits offered by this exceptional property were also recognized by the City.

Early City administrations were convinced of the value of a water supply protected by forest cover. However, much of the watershed property being acquired in the early 1900's was in agricultural use. Therefore, in 1902, an aggressive tree-planting program began in order to provide the desired forest cover. During next 29 years, 3.7 million conifer seedlings were planted on 3000 acres. Species included Scots pine, white pine, red pine, Norway spruce and a few others.

In 1904, a fungal disease called chestnut blight was discovered in New York, having been accidentally imported from Europe. Within 30 years, it spread across the nation and virtually eliminated the American chestnut. Evidence of American chestnut can still be seen in the form of stumps and sprouts from root systems of chestnut. Overhead, the holes left by the death of the chestnuts has been filled by red maple, white ash, hickories and oaks.

In 1929 disease was noted in the plantations. Dr. H.H. York, NYS Forest Pathologist, was called upon to investigate. Three fungal diseases, “new to Dr. York,” were observed. A cooperative effort between the City and NYS Conservation Department began. In order to retain forest cover if the conifers died, a program to under plant the stressed conifers with hardwood seedlings commenced. To provide the seedlings, a hardwood nursery was started by the City in 1934. From 1936-1940, 475,000 hardwood seedlings including oak, hickory, ash, walnut, and others were planted beneath the conifers. This effort was apparently not very successful, due largely to the conifers not dying out. However, there are remnants evident today, notably on the north side of Wheaton Hill Rd, where straight rows of planted hardwoods illustrate this unique work. The City was very active in watershed forestry during this period. At other times over the decades, City forestry efforts have been minimal.

In 1939, a Forest Pathology laboratory was established by the City in Springwater, N.Y., at the head of the Hemlock Lake. It was the only municipal forest lab in the country. Records are not readily available but it seems that this period of great forestry activity ended with the start of WWII.

Once the forest cover was established, more attention was given to the maintenance of the forest resource. There were periods of pruning, thinning, and harvesting. Successional changes of the forest took place. By the mid 1960's, hardwood forests were considered to be an aging, but renewable, resource. Timber was aggressively harvested in some easily accessible hardwood forest stands during the late 1970's and early 1980’s. Many of these stands were high-graded at that time, leaving the residual forest in poor condition. Today, 30+ years post harvest, the forest is still recovering.

As conifer stands edged past age 50, many began to lose vitality. This was especially true for those poorly matched to soil conditions. A severe ice storm in 1991 proved to be an irreversible stress factor for many plantations. Plantations of Norway spruce, and red pine on better sites, will continue as conifer stands for thirty or more years. Scots pine, although still prominent as single stems and in residual pockets of former larger stands, are not expected to be a forest resource beyond the next fifteen years. Although the seed source for much of the Scots pine planted on City property was superior to plantings elsewhere, it is noted that Scots pine proved to be poorly adapted to area soils and did not become a widely utilized commercial species in New York.

In the mid-1980’s, a committee comprised of scientists, watershed residents, town and state representatives, and others was formed to advise City staff on watershed management. A key recommendation of this committee was to revise the forestry plan that had been part of the poorly conducted, 1980 timber harvest. A forest resource inventory was compiled in 1991-1992. The Forest Resource Management Plan for City Owned Property Hemlock and Canadice Lake Watershed was then written, based upon a new inventory, by Bruce E. Robinson, Inc. It was adopted by the City in 1993.

Since 1993, forestry work has been conducted throughout the watershed property per the 1993 Plan. Cleaning & Releasing has been conducted in young pole stands and along public roads to improve aesthetics. Harvest of lower grade hardwoods and conifers has been conducted on 309 acres, 20 miles of trails have been added, most in association with timber harvest, some to enhance wetlands access. A significant accomplishment was the restoration of the City’s standing as a responsible watershed steward. City timber harvests now demonstrated proper practices. The residual forest, after harvest, is healthier, more vigorous, and more diverse. Wildlife habitat is enhanced. Trails from harvests, as noted, offer great recreation opportunities.

As stated by the City in their 2005 Forestry Plan, their intention was to see the continuation of work, started over a century ago that would provide an enduring forest cover to protect the water resource. The

City's 2005 Plan was based upon experience gained during implementation of their 1993 Forest Resource Management Plan. The 2005 Plan was meant to be a guide for City forest managers, or for those who follow. It endorsed a steady, efficient application of sound forestry practices to meet the goal of a healthy, diverse forest. It presented data and guidelines to accomplish specific planned actions.

Further, City staff and the consulting forester have worked cooperatively with a variety of groups interested in forestry and related efforts. A significant wetland enhancement project was conducted with the NYS DEC Fish and Wildlife Unit. Ponds and potholes were developed with access trails and overlooks at different sites around the property. Cooperation continued with NYS DEC eagle experts (there were 2 active nests on City property in 2010). The Nature Conservancy (TNC) became a welcome and active participant in watershed protection, acquiring hundreds of key acres, thus far, and promoting environmental protection efforts. The Finger Lakes Land Trust (FLLT) has been active in education and protection efforts, primarily through conservation easements. Hikes and tours have been hosted for New York Forest Owners Association (NYFOA), a Society of American Foresters (SAF) national convention, watershed neighbors, and others.

The trend toward subdivisions or fragmentation of surrounding lands is expected to continue. Hemlock-Canadice State Forest is a large block of land. As such, it will become an even more valuable public asset in the future.

INFORMATION ON THE UNIT

Identification

The approximately 6,684 acre Hemlock Canadice Unit is comprised of one state forest. For management purposes, each state forest was consecutively numbered in the order in which they were purchased in each county, or two county combination.

Please remember that this is a very sensitive area because Hemlock and Canadice Lakes are a direct source of public water for the City of Rochester and other communities.

Table 1: Acreage and Boundary Line of State Land

Name	State Forest Number	Acreage	Est. Boundary Line (Total Exterior)	Est. Road Frontage
Hemlock-Canadice State Forest	Livingston-Ontario Reforestation Area# 1	6,684*acres	80 miles (includes 22 miles of shoreline)	24 miles
*This is land acreage only; it does not include the acres of Hemlock and Canadice Lakes.				

Table 2: Hemlock and Canadice Lakes

Name	Acreage	Length	Shoreline	Max. Depth
Hemlock Lake	1,800** acres	7 miles	16 miles	91 feet
Canadice Lake	650** acres	3 miles	7 miles	95 feet
Total	2,450** acres	10 miles	23 miles	
**This is water acreage only; this will change with water level, see also Wetlands section.				

Geography

The Unit is located in the Towns of Richmond and Canadice in Ontario County and the Towns of Livonia, Conesus and Springwater in Livingston County. It is located south of Rochester, NY and north of Dansville, NY. State Route 15A bisects the middle of the Unit, providing access to it.

It is located in the Southwestern Lake Ontario Basin. Local watersheds for this unit are the Hemlock Lake Watershed, the Canadice Lake-Canadice Outlet Watershed and the Hemlock Outlet watershed.

Elevations on the Hemlock-Canadice Unit range from approximately 905 feet on Hemlock Lake to about 1,740 feet on the west side of Canadice Lake. Canadice Lake is at about 1,096 feet and the top of Bald Hill, located on private land between the two lakes, is about 1850 feet. The vertical distance between the top of Bald Hill and Canadice Lake is about 750 feet and covers a linear distance of

approximately 3,350 feet, resulting in an average slope of 22%, with the steeper portions of that climb averaging 30% or more in slope. A contour map is located in Appendix M: Maps.

Ecoregions are areas of ecological similarity, which are defined by similarities in soil, physiography, climate, hydrology, geology and vegetation. The Hemlock-Canadice Unit is located on the transition between the New York Great Lakes Ecoregion and the New York High Allegheny Plateau Ecoregion. Maps are created with sharply defined lines, but rarely in nature does such a sharp change occur. On paper the Unit is located primarily within the New York Great Lakes Ecoregion, with only the southern third of Canadice Lake within the New York High Allegheny Plateau Ecoregion.

The Great Lakes Ecoregion extends from northeastern Minnesota across to north central New York, and south to northern Indiana and Ohio. The entire landscape was glaciated during the last Ice Age, and is characterized by level lake plains, level to gently rolling lowlands, and hillier upland areas. Elevation across the ecoregion ranges from 300 to over 2,000 feet. Michigan's Porcupine and Huron Mountains and Minnesota's North Shore are some of the areas with higher elevations, while the southern shores of Lakes Michigan, Erie and Ontario have lower elevations and less relief.

The High Allegheny Plateau Ecoregion is mostly located along the southern tier of New York and the northern tier of Pennsylvania. The ecoregion is defined by high elevation features at the northern end of the Appalachian Plateau. Most of this ecoregion is above 1200 feet. Many northern species and communities reach their southern limit in HAP, while many southern species extend into the ecoregion but not beyond.

Climate

Climatic data is supplied by the United States Department of Agriculture (USDA) Natural Resource Conservation Service.

Livingston County

The average length of the freeze-free growing season in Livingston County is 140 days. The average daily high temperature in winter is 37° F and the average daily minimum temperature is 20°F. In summer, the average daily high temperature is 78°F and the average daily minimum temperature is 55°F. Ridge tops are markedly cooler than the lowland areas.

Livingston County annual precipitation averages 31 inches. Precipitation is well distributed throughout the year and is usually adequate for all crops. The City of Rochester staff has taken precipitation measurements at the Hemlock facility, located at the north end of Hemlock Lake between 1960 - 2009, with a result of 33.6 inches; they also submitted the data to the National Oceanic and Atmospheric Administration (NOAA).

Average seasonal snowfall is 65 inches. In winter snow depths vary greatly with elevation, but on the average, snow depths are measurable for 3 months. Monthly totals of 8 to 20 inches of snow are common from December through March.

Sunshine occurs for 65% of daylight hours in the summer and 30% in the winter. The prevailing wind is from the west to southwest. Average wind speed is at its highest, 12 mph, in February.

Ontario County

The average length of the freeze-free growing season in Ontario County is 138 days. The average daily high temperature in winter is 37° F and the average daily minimum temperature is 19°F. In summer, the average daily high temperature is 79°F and the average daily minimum temperature is 53°F. Ridge tops are markedly cooler than the lowland areas.

Ontario County annual precipitation averages 30 inches. Precipitation is well distributed throughout the year and is usually adequate for all crops.

Average seasonal snowfall is 65 inches. In winter snow depths vary greatly with elevation, but on the average, snow depths are measurable for 3 months. Monthly totals of 8 to 20 inches of snow are common from December through March.

Sunshine occurs for 65% of daylight hours in the summer and 30% in the winter. The prevailing wind is from the west to southwest. Average wind speed is at its highest, 12 mph, in February.

Adjacent Land - Existing Uses

The purpose of this section is to attempt to take a brief look at land use patterns beyond the boundaries of NYS DEC ownership. This plan only applies to the Hemlock-Canadice State Forest, but it does not exist in a vacuum. The uses and conditions of the adjacent private and/or publicly owned land will impact the area and will be considered when planning actions on the Unit. This type of "landscape look" is valuable in helping to place the state forest in its proper context.

The three following tables were all created from different sources of data, all use different scales of data and cover different geographical areas. As such they are not easily comparable to each other.

However, using all of this data, and from anecdotal observations, the following generalizations can be made: For the parcels immediately adjacent to the state forest, as shown in Table 3, below, residential uses dominate, even though the parcels may be forested. Agricultural uses seem to have declined over the last 30 years, among the parcels still in an agricultural use, intensity of use seems to have declined (changes over time from active cropland to vacant agricultural land or pasture were noted).

As shown in Table 4, below, all five towns are well forested; in general, the towns furthest to the north show somewhat less forested land, due to the prevalence of better agricultural land in these locations, and agricultural abandonment becomes much more prevalent in the south.

Table 3: Real property (existing use) tax code of adjacent property

Real property tax codes were used to create this table. This is from properties that share at least one boundary with the state forest.

Percent is calculated by: # parcels / Total # parcels (**NOT** by acres)

County	Town	Agricultural	Residential	Abandoned Agricultural	Forested	Other
Livingston	Conesus	8.6%	42.9%	45.7%	2.8%	0
	Livonia	8.5%	59.3%	16.9%	0	15.3%
	Springwater	9.7%	61.3%	22.6%	0	6.4%

County	Town	Agricultural	Residential	Abandoned Agricultural	Forested	Other
Ontario	Canadice	1.5%	71.1%	22.1%	2.9%	2.4%
	Richmond	0	84.6%	15.4%	0	0

For further information on the tax codes see Appendix C: Taxes.

1. Agricultural parcels include any parcel classed in property ownership class 100
2. Residential parcels include any parcel classed in property ownership class 200
3. Abandoned Agricultural parcels include any parcel classed in property ownership class 300
4. Other parcels include any parcel classed in any other property ownership class

The lands immediately adjacent to the State Forest are largely in private ownership, and there are no industrial forest parcels adjacent to it.

For a somewhat more broad – scale, landscape level look at land uses and land cover we use the USGS Land Use and Land Cover data.

Table 4: USGS Land Use and Land Cover Data

Please note that this data was extracted from the USGS Land Use and Land Cover data. Also note that the data is displayed, by town, for the entire town. It has **not** been extracted for adjacent to state lands only. The base data was originally gathered at a scale which makes this inappropriate.

County	Town	Forested	Agricultural	Water	Residential	Wetland
Livingston	Conesus	53.1%	35.7%	7.6%	2.1%	1.6%
	Livonia	22.2%	64.7%	6.3%	6.6%	0.3%
	Springwater	59.4%	39.6%	0.0%	0.4%	0.4%
Ontario	Canadice	73.0%	15.9%	7.5%	1.3%	2.3%
	Richmond	41.9%	47.7%	4.0%	3.0%	3.4%

Note that this data shows a percentage of the total acres contained in each town rather than a percentage of the number of parcels as is used in the tax data, above. Thus the results of this study are not directly comparable with the results of the tax parcel study, above. In addition, the data for the first study are concerned with land use. The data for the second study are concerned with vegetative cover.

In addition to the two data sets displayed above, The Nature Conservancy has also conducted a plant community or cover type survey for the watersheds surrounding these two lakes. This survey was finalized and the report produced in 1998. The entire report is attached to and made part of this document as Appendix L: Plant Communities of Hemlock-Canadice Watershed. Please make reference to the main body of the report for survey methodology, definitions, etc. The contribution of The Nature Conservancy in this regard is recognized and greatly appreciated.

Table 5: The Nature Conservancy/NY Natural Heritage plant community and cover type

The table below is the summary from The Nature Conservancy report. Once again, the percentages are of the watersheds as a whole; the data has not been manipulated to represent only the lands owned by the State of New York.

Plant Community or Cover Type	Total Watershed		Canadice Watershed		Hemlock Watershed	
Open Water		**7.22%**		**9.22%**		**6.73%**
Lakes	6.87%		8.68%		6.42%	
Ponds	0.36%		0.55%		0.31%	
Total Wetland Cover Types		**2.56%**		**1.57%**		**2.82%**
Shallow Emergent Swamp	0.18%		0.05%		0.21%	
Shrub Swamp	0.82%		0.93%		0.80%	
Sedge Meadow	0.10%		0%		0.13%	
Shallow emergent marsh/shrub swamp/sedge meadow	0.85%		0%		1.06%	
Inland poor fen	0.02%		0%		0.02%	
Highbush blueberry bog thicket	<0.01%		<0.01%		<0.01%	
Silver Maple Ash swamp	0.57%		0.58%		0.57%	
Rich Hemlock hardwood peat swamp	0.02%		0%		0.03%	
Total Successional Cover Types		**20.18%**		**14.94%**		**21.48%**
Successional old field	11.08%		10.17%		11.31%	
Successional shrubland	8.27%		3.66%		9.41%	
Successional shrubland/old field	0.83%		1.11%		0.76%	
Total Forest Cover Types		**54.67%**		**67.46%**		**51.49%**
Appalachian oak-hickory forest	0.31%		1.34%		0.05%	
Maple Basswood rich mesic forest	0.11%		0%		0.14%	
Hemlock Northern Hardwood forest	4.3%		2.9%		4.62%	
Successional northern hardwoods	34.4%		41.38%		32.7%	
Successional shrublands / Successional northern hardwoods	2.69%		6.89%		1.65%	
Successional northern hardwoods / conifer plantations	6.44%		7.09%		6.27%	
Conifer Plantations	6.42%		7.86%		6.06%	
Total Agricultural Types		**11.26%**		**2.33%**		**13.47%**
Cropland	10.52%		2.27%		12.56%	
Pasture	0.72%		0.06%		0.88%	
Vineyard	0.02%		0%		0.02%	
Total Developed Cover Types		**4.1%**		**4.47%**		**4.03%**
Mowed lawn	3.73%		4.47%		3.57%	
Residential / commercial	0.34%		0%		0.42%	
Gravel mine	0.03%		0%		0.04%	

Taxes

State Forest lands acquired for reforestation purposes pursuant to Section 9-0501 of the Environmental Conservation Law are subject to taxation for all purposes except county tax. Taxes on taxable State land are handled just like a private owner's taxes except all the tax bills (or rolls) are sent from the County Treasurers and go directly to the State Comptroller. The Comptroller then pays the taxes to the County Treasurer's office who then gives the money to the towns and school districts.

Reforestation Areas in the Towns of Livonia, Springwater and Conesus in Livingston County and the Towns of Canadice and Richmond in Ontario County are subject to taxation for all purposes in accordance with Section 532 of the Real Property Tax Law.

Prior to NYS DEC ownership the City of Rochester had entered into agreements with the county of Livingston, the towns of Conesus and Livonia, and the Livonia Central School District effective January 1, 1988, pursuant to subdivision 3 of section 406 of the real property tax law, relating to exemptions from taxes in return for payments in lieu of such taxes (PILOT agreements).

The PILOT agreements are subject to Chapter 774 of the Laws of 1989 which bind the People of the State of New York to the agreements at the time of acquisition. Upon the acquisition, the provisions of section 532 of the real property tax law shall not apply to the lands so acquired but the taxation thereof shall be governed by the agreements. The taxation of such lands will be governed by such section 532 at such time as the agreements cease to be effective.

Due to the subdivision of the City property and in accordance with a Memorandum of Agreement between the City of Rochester and the Department of Environmental Conservation, dated June 17, 2010, the PILOT obligations are divided as follows:

1. The State agreed to pay the Conesus PILOT and the Livingston County PILOT;
2. The City will continue to pay the Town of Livonia PILOT;
3. The City and State agreed to split the Livonia Central School PILOT: the State will pay the Conesus portion of the Livonia Central School District PILOT payment and the City will pay the Livonia portion.

Appendix C: Taxes - lists the taxes paid in 2010 by the City of Rochester on the lands purchase by the NYS DEC for the Hemlock-Canadice State Forest. In that appendix, the PILOT payments as agreed upon by the Memorandum of Agreement, dated June 17, 2010, are also shown.

Further details may be found in Section 532 of the Real Property Tax Law as well as in Chapter 774 of the Laws of 1989.

Geology

Surface Geology

Background

Most surface geology in the Finger Lakes region and Southern Tier of New York was influenced by the processes of glaciation that occurred during the Pleistocene Epoch. Ice sheets from the last glaciation

episode (Wisconsinan glaciation episode) retreated from the area approximately ten thousand (10,000) years ago, leaving behind numerous sedimentary deposits and surficial features; including elongated scour features. Some of these scour features filled with water creating numerous lakes, small and large; the larger ones are now called the Finger Lakes.

Most soils and sediments in the region are related to past glacial activity, and subsequent weathering and erosion processes over the last 20,000 years. The underlying parent rocks (rocks that were subjected to the processes of glaciation, weathering and erosion) of this region are sedimentary rocks; specifically shale, sandstone and minor limestone that were deposited in shallow seas that existed in this region during the Devonian Period of the Paleozoic Era, approximately 370 million years ago. Any post Devonian rocks have been eroded from the region. The presence of rounded igneous and metamorphic clasts is indicative of past glacial activity transporting material into the region from the Canadian Shield to the north. For more info on the geology of New York State Forests, please see Chapter 1 of the Strategic Plan for State Forest Management, which can be found online at www.dec.ny.gov/lands/64567.html .

Hemlock-Canadice Unit

The state lands included in this unit management plan have similar surface geologies. Surface sediments within the unit are primarily glacial till, except at the north and south ends of Hemlock Lake where lacustrine silts and clays were deposited in the pro glacial lake. Swamp deposits over lie a portion of these sediments in an area adjacent to the south end of the lake.

Bedrock outcrops and subcrops of Upper Devonian shales, siltstones, sandstones and minor limestones of the West Falls Group are located intermittently on the sides and crests of ridges and hills that surround Hemlock and Canadice lakes. The only other bedrock Group that outcrops or subcrops within the unit are the older shales and siltstones of the Sonyea Group and Genesee Group that are exposed at the north end of Hemlock Lake due to regional dip to the south. Outcrops of bedrock are most likely due to the erosion of overlying glacial sediments, causing the exposure of the bedrock.

Further information on the surface geology of the region is provided by the: Surficial Geologic Map of New York, New York State Museum - Geologic Survey - Map and Chart series #40, 1986.

Table 6: Surficial Geologic Material

Name	Surficial Geologic Material
Around Hemlock Lake	• Glacial Till - Deposition of clays, silts and boulders beneath glacial ice. Located at interlake high elevations • Lacustrine Deposits – Deposition of laminated clays and silts in proglacial lake. Located at north and south ends of lake. • Swamp Deposits – Peat, muck organic silt and sand in poorly drained unoxidized areas that overlie lacustrine deposits. Located at south end of lake. • Bedrock - Shales, silts and minor limestones of the Devonian West Falls Group, intermittent outcrops/subcrops. Located along steep slopes at the east, west, and south sides of the lake valley. Shales, silts and minor limestones of the Devonian Sonyea and Genesee Groups, intermittent outcrops/subcrops. Located along steep slopes of the lake valley at the north end of lake.
Around Canadice Lake	• Glacial Till - Deposition of clays, silts and boulders beneath glacial ice. Located at interlake high elevations • Bedrock - Shales, silts and minor limestones of the Devonian West Falls Group, intermittent outcrops/subcrops. Located along steep slopes at the west, and north sides of the lake valley.

Soils

The most common soil on this Unit is the Lordstown association, followed by the Hornell and Holly soil types. Specific soil series occurring on the unit are described and mapped in the USDA publications, Soil Survey of Livingston County, New York and Soil Survey of Ontario County, New York.

The major soil limitation which affects management is the depth of the soil to the hardpan, fragipan, or bedrock or water level. The Chippewa, Volusia, and Mardin soils all have shallow fragipans which create seasonal wetness and restrict depth of rooting. Top soil is lacking and coarse rock fragments are common at the soil surface.

Detailed soil information is contained in the above referenced publications. Digital data for soils information is currently available for both counties in this plan. Appendix M: Maps contains simplified versions of the soil types.

Bedrock Geology

Background

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

Younger bedrock units deposited during the post-Devonian Periods (such as Mississippian and Pennsylvanian Periods) have been subsequently eroded away by erosion and glacial processes.

Underlying the Paleozoic rocks are pre-Paleozoic Era rocks or Pre-Cambrian rocks generally considered to be composed of igneous and metamorphic rocks. These rocks are generally referred to as basement rocks.

Hemlock-Canadice Unit

The majority of the lands within this Unit contain bedrock outcropping or subcropping at or near the surface that are shales, siltstones, sandstones and intermittent limestones of the West Falls Group that were deposited during the Upper Devonian Period (approximately 350 - 400 million years ago). The northern end of Hemlock Lake contains rock units outcropping or subcropping at or near the surface that are shales, siltstones and intermittent limestones of the older Sonyea and Genesee Groups. These older Groups are exposed at the north end of the lake due to the structural dip to the south.

Further information on the bedrock geology of the region is provided by the: Geologic Map of New York - Finger Lake Sheet - New York State Museum and Science Service - Map and Chart #15, 1970.

No wells have been drilled into the subsurface of the areas within the Hemlock-Canadice Unit, however a number of wells have been drilled into the subsurface of the areas surrounding the Hemlock-Canadice Unit. Subsurface information about the bedrock (that does not outcrop) has been acquired through three specific wells. These wells were drilled during 1956, 1993, and 2000 while exploring for oil and natural gas reserves in areas surrounding the Hemlock-Canadice State Forest. See Appendix M: Maps for the locations of these wells, and Appendix I: Bedrock Cross Section for a sketch of the different layers of bedrock found during the drilling.

The northern most of the three wells was drilled approximately three miles northeast of the north end of Hemlock Lake in the Town of Richmond. This well encountered the top of the Devonian Marcellus Shale at 790 feet, Onondaga Limestone at 831 feet, Silurian Salt at 1,367 feet, Lockport Dolomite at 1,953 feet, Medina Sandstone at 2,350 feet, and Queenston Sandstone at 2,475 feet. The well was drilled to a total depth of 2,650 feet during the fall of 1993. It was tested at a rate of 20 thousand cubic feet of gas per day from the Medina Sandstone Formation in November of 1993, and was plugged and abandoned during the same month.

The next well to the south was drilled approximately three miles west of the central part of Hemlock Lake in the Town of Conesus. This well encountered the top of the Devonian Marcellus Shale at 1,775 feet, Onondaga Limestone at 1,815 feet, Silurian Salt at 2,175 feet, Lockport Dolomite at 2,930 feet, Medina Sandstone at 3,266 feet, Queenston Sandstone at 3,386 feet. The well was drilled to a total depth of 3,398 feet in the early part of 1956. It was tested at a rate of 304 thousand cubic feet of gas per day from the top of the Queenston Sandstone in May of 1956.

The southern most of the three wells was drilled at a surface location approximately ten miles south of Hemlock Lake, in the Town of Wayland. This well encountered the top of the Marcellus Shale at 2,282 feet, Onondaga Limestone at 2,315 feet, Silurian Salt at 2,670 feet, Lockport Dolomite at 3,510 feet, Medina Sandstone at 3,935 feet, Queenston Sandstone at 4,070 feet, Trenton Limestone at 6,039 feet, and Black River Limestone/Dolomite at 6,662 feet, Theresa Sandstone at 7,390 feet. The well was drilled to a total depth of 7,526 feet during the fall of 2000. It was then plugged and abandoned in November of 2000.

The Lower Silurian Medina Sandstone formation was deposited about 430 million years ago. The Trenton and Black River formations were deposited during the Middle Ordovician Period approximately 450 million years ago.

Structure

Regional structure of the area is a homocline that dips (is becoming deeper) to the south-southwest at an average dip angle of approximately one degree or deepens 100 feet per each mile traveled to the south-southwest. The Geologic Map of New York - Finger Lakes Sheet #15, 1970, depicts progressively older rock units outcropping farther to the north, confirming the southern dip of strata in the region.

Linements, faulting and anticlinal/synclinal structures in the region generally trend in a northeast to southwest direction. North-south trending faults have also been identified in the region. These structures are thought to be due to compressional stress and resulting strain associated with plate tectonics and orogenic events during the Paleozoic Era, culminating with the opening of the Atlantic Ocean that began at the end of the Paleozoic Era. Structural reference is available at the Preliminary Brittle Structures Map of New York, New York state Museum-Map and Chart Series No. 31E, 1974.

Mineral Resources

Oil and Gas

Introduction

Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes NYS DEC to make leases on behalf of the State for exploration, production and development of oil and gas on State lands. On all State Forests, gas well drilling, pipelines, and related road development must be in compliance with the Governor's and Commissioner's directives, State Forest Tract Assessments, the Strategic Plan for State Forest Management (2011), the Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (1992), and the Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (SGEIS), this Unit Management Plan and any other relevant documents produced after the publication of this Plan.

The Strategic Plan for State Forest Management states

> "No exploration or extraction of the Marcellus shale formation using high volume hydraulic fracturing will be considered for permitting on State Forest lands until current efforts to assess and analyze its environmental impacts have been completed. In all areas covered by this Unit Management Plan; New York State manages the surface estate through the NYS DEC Division of Lands and Forests, and the mineral estate is managed through the NYS DEC Division of Mineral Resources."

As previously stated, ***protecting water quality is the most important function of this property***. Furthermore, In December 2014 the Governor and the Commissioners of the Department of Health (DOH) and DEC announced that the DOH had completed its public health review of NYS DEC's SGEIS on the Oil, Gas and Solution Mining Regulatory Program and recommended that high-volume hydraulic fracturing should not move forward in New York State. Therefore, consistent with the reason

for state acquisition of the property, and the findings enumerated in the Final SGEIS, no drilling for oil or gas will be allowed on Hemlock-Canadice State Forest for the duration of this UMP.

Historical Drilling & Production

The drilling of the first commercial oil and natural gas well in the United States occurred in northwestern Pennsylvania during the middle 1800's. The results of this drilling activity carried over into neighboring New York State. Eventually this activity extended into western New York and the area surrounding what is now the Hemlock Canadice Unit.

Numerous wells have been drilled in the areas surrounding the Hemlock Canadice Unit to test the Medina Sandstone for natural gas at depths ranging from 2000' to 3400'. This drilling began in the late 1950's and has continued to present day.

During the late 1950's, natural gas was discovered approximately three miles northeast of the Unit in Ontario County at the Honeoye Field. (See Appendix M: Maps) Commercial gas production was from the Medina Sandstone Formation that was deposited during the Lower Silurian Period. Gas was produced from depths of approximately 2,000-2500 feet. The Honeoye Field was depleted of natural gas and is currently used as a natural gas storage field.

Following the discovery of the Honeoye (Medina Sandstone) Field, many attempts were made to discover additional gas reserves in the Medina Sandstone from the areas surrounding the Hemlock Canadice Unit. No additional commercial gas was discovered in the Medina Sandstone, and by 1990 operators had given up in their efforts to find gas reserves in the Medina Sandstone in this area. In 2009, interest in the Medina Sandstone surfaced again when 12 drilling permits were issued to allow an operator to test the Medina Sandstone for gas within five miles and northwest of Hemlock Lake. None of the wells were drilled and subsequently the permits expired.

Approximately ten miles south of Hemlock Lake, in the Town of Wayland, Belden and Blake Corporation drilled the Belden and Blake Corporation – Huber #1 well. This well was drilled to a total depth of 7,526 feet in November of 2000 to test the Trenton Limestone and Black River Dolomite formations for natural gas. The well was never produced and was then plugged and abandoned as a dry hole during the same year.

Approximately eight miles southwest of Hemlock Lake, in the Towns of Sparta and West Sparta, a number of operators have drilled several wells, testing the Marcellus Shale. These wells were drilled to total depths ranging from approximately 1,000 feet to 1,500 feet. Most wells were drilled in the 1920's, with a few home use wells being drilled in 1980. Gas production was uneconomical and the wells were either plugged and abandoned, or assigned and transferred to the landowner for home use.

Fields drilled prior to 1986 are shown on the New York State Gas Field Map - Department of Environmental Conservation - Division of Mineral Resources, 1986.

Recent Activity

Drilling & Production

There has been no recent (2000 to 2011) drilling and production activity within a five mile radius of the Hemlock Canadice Unit.

Exploration & Drilling

Interest in exploration for natural gas in the Medina Sandstone has recently occurred in an area approximately two to five miles northwest of Hemlock Lake. The general area is located between the village of Livonia and the hamlet of Hemlock. In 2009, the US Energy Corporation was issued twelve drilling permits to test the Medina Sandstone Formation for natural gas. The company did not drill any of the wells and the drilling permits expired.

Recent interest in the shallower Marcellus Shale as a gas producing formation has resulted in a number of wells being drilled approximately 40 miles south of the Hemlock Canadice Unit in southern Steuben County. These wells tested the Marcellus shale for natural gas at depths ranging from 2,500 feet to 3,500 feet and were found to be marginal economically. It is unlikely that drilling for natural gas in the Marcellus Shale will occur in this area because of the limited gas reserve potential due to the thickness and much shallower depths (1,000 to 2,000 feet) of the formation. (See Appendix M: Maps)

Leasing Activity

Initial title review indicates the NYS DEC owns the mineral estate under all areas covered by this unit, with the qualification that mineral reservations may exist and no expressed or implied warranty of title is being offered in this document.

There are no lands in the Hemlock Canadice State Forest currently under oil/gas lease contracts.

Pipelines

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

Mining

Sand, Gravel, Hard Rock and Other Mineable Materials

There are no mining contracts, permits or operations located in the Hemlock-Canadice State Forest. Under Article 7 of the New York consolidated Laws/Public Lands, any citizen of the United States may apply for permission to explore and /or extract any mineral on State lands. However, current NYS DEC policy is to decline any commercial mining application(s) associated with State Forest lands.

The surficial geology of the Hemlock-Canadice State Forest area predominately consists of poorly sorted glacial till of variable texture along with exposed or near surface (within one meter) Paleozoic bedrock outcrops. At the south end of Hemlock Lake, Lacustrine silt and clay deposits exist along with swampy deposits consisting of peat and muck. Lacustrine deposits can also be found at the north end of Hemlock Lake as well.

Although there are no mines within State Forest limits, mining operations do exist in surrounding lands. Most of these mine sites are no longer in operation and have undergone reclamation returning the

land to a productive use. The closest of these is a reclaimed peat mine located approximately 0.8 miles west of the State Forest. An aerial map in Appendix M: Maps shows the location of the nearby mines that are currently under permit, or were permitted at one time before being reclaimed. The Mined Land Reclamation Number for each mine is included on the map. Of the ten mines shown on the map, only four are still active (80326, 80520, 80275, and 80326). All are standard sand and gravel mines, except for 80315 which is the reclaimed peat mine mentioned previously. Hard rock quarries are not found in this area. Bedrock may be exposed or within one meter of the surface but are not generally considered suitable for commercial mining.

Timber and Vegetation

Green Certification of State Forests

In 2000, New York State DEC-Bureau of State Land Management received Forest Stewardship Council® (FSC®) certification under an independent audit conducted by the National Wildlife Federation - SmartWood Program. This certification included 720,000 acres of State Forests in DEC Regions 3 through 9 managed for water quality protection, recreation, wildlife habitat, timber and mineral resources (multiple-use). To become certified, the NYS DEC 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 NYS DECs ability to award a new agreement until early 2007.

Following the signed contract with NSF-International Strategic Registrations and Scientific Certification Systems, NYS DEC 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.

NYS DEC 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.

Current Vegetative Types and Stages

Plant communities are by nature dynamic and ever changing. Young stands of trees get older, and species composition changes with time. Disturbances from fire, wind, insects, disease, timber harvest, and other land-use practices have been an important part of the history of New York forests and have determined the composition and structure of today's forests. By applying different forest management or silvicultural practices, land managers can affect change in vegetative types and stages and associated use by wildlife. The production of forest products is a clearly stated goal in the Reforestation Law of 1929 and is consistent with the proposed management actions in the Hemlock-Canadice State Forest. Future management is covered in the Timber and Vegetation Management section on page 73 and in Appendix F: Timber Management and in Appendix M: Maps. For more information regarding timber management on State Forest please refer to Chapters 2 and 6 of the Strategic Plan for State Forest Management at www.dec.ny.gov/lands/64567.html.

The Hemlock-Canadice Unit vegetation contains a mix of species, but is dominated by oak-hemlock, northern hardwood, oak, transition hardwood, and swamp hardwood, mostly sawtimber sized (12 or more inch diameter at 4.5 ft) natural hardwood forests. The dominant species of trees are red oak, green ash, sugar maple, hemlock, and red maple, other species present to a lesser extent include hickories white and black oaks, white ash, white and red pine, aspen, birches, walnut, cottonwood, beech, Norway spruce and apple.

In the Finger Lakes region of New York, northern hardwood forests predominate on the north facing slopes and oak-hickory forests occupy the south facing slopes. Past man-made disturbances have created even more diversity. Many of the formerly agricultural fields, for example, have reverted back to pioneer forest types comprised of aspen, red maple and white pine. On Hemlock-Canadice State Forest there are almost no seedling/sapling size stands. These stands are typically even-aged. (All of the trees in a stand are approximately the same age.) Non-forest land consists of wetland, pond, road, recreation, grassland and brushy cover.

The softwood component is well balanced. The conifer segment is about two-thirds plantation, mostly red pine, Norway spruce, white pine, and larch, most of the Scots pine has died. The remaining one-third is natural conifer/conifer hardwood stands, with the most common conifer species of hemlock and white pine. In addition, many of the hardwood forest stands have a small softwood component made up of white pine and/or hemlock.

Most of the rest of the stands fit into either the category of transition hardwoods or pioneer hardwoods. Common species include red oak, red maple, aspen, basswood, white ash, and sugar maple. Former agricultural fields have reverted back to pioneer forest types. There are no significant areas of brushy or grassy upland meadows. The City of Rochester leased out approximately 130 acres of fields for agricultural use, some of it produced hay, others sections row crops. Currently NYS DEC does not have the authority to lease out State Forest land for agricultural use. In 2011 the fields which had been in row crops were planted to a mix of cool season grassland species.

The following table lists vegetative types and stages for the Hemlock-Canadice Unit. These records are estimated from the most recent inventory available; in this case, after acquisition of the property from the City of Rochester in 2010 the process of inventorying it began, and was completed within a year. Current division guidance requires that a forest inventory be conducted every 10 years and whenever stands are changed by any silviculture operation or by the forces of nature. Forest inventory is accomplished by a statistical analysis of stands. Samples are taken from random locations (called plots)

within each stand. Information collected during a forest inventory includes, among other items, species, forest type, tree density, forest health issues, topography, drainage, previous management, and site limiting factors. The required number of plots for each stand varies according to the variability of the stand, subject to a minimum number. For each plot, data is recorded in the field on a hand held data recorder, and then electronically transferred via the internet to servers in Albany. Maps are digitally drawn using ArcGIS on the computer over top of corrected aerial photos, and then the computer program is used to calculate acreage.

Table 7: Vegetative Types and Stages for the Hemlock-Canadice Unit

Inventory completed in 2010- 2011

	Acres by Ave. Tree Diameter Size Class					
Vegetative Type	**0-5 in (seedling-sapling)**	**6-11 in (pole)**	**12+ in (sawtimber)**	**Other**	**Total (Acres)**	**% of Total**
Natural Forest Hardwood	114	1,359	1,770		3,244	48.5%
Natural Forest Conifer/Conifer Hardwood*		283	403		717	10.7%
Plantation		404	876		1280	19.2%
Wetland (Forest)		550	323		873	13.1%
Wetland (Open and/or Shrub)				197	197	2.9%
Ponds (not including Hemlock and Canadice Lakes)				30	30	0.4%
Open/Brush				204	204	3.1%
Other (Road, ROW, Parking, etc.)				139	139	2.1%
Total (Acres)	114	2,597	3,403	570	6,684	
% of Total	1.7%	38.8%	50.9%	8.5%		100%

*Total percent of all conifer species is 33%, or more, of the total for the stand.

Additional information can be found in the Timber and Vegetation Management section on page 73.

Significant Plants and Communities

The Hemlock-Canadice Unit contains at least one rare plant listed as endangered in New York State, the Kentucky coffee tree. There is a small population located in an ecotone between a silver maple-ash swamp and successional northern hardwoods.

The Hemlock-Canadice Unit contains two significant ecological communities tracked by the New York State Natural Heritage Program. There are two silver maple-ash swamps located within the unit. Along the Canadice Outlet is an 87 acre silver maple-ash swamp. It is a fairly large wooded wetland occasionally broken up by meadows of lake sedge (Carex lacustris) or rice cutgrass (Leersia oryzoides). The uplands surrounding the swamp consist of pine plantations, successional shrubland and successional old fields. A second 70 acre silver maple-ash swamp is located at the south end of Canadice Lake along Hemlock Canadice Inlet. This forested hardwood swamp is bisected by a dirt road, with successional

northern hardwoods to the east, a shrub swamp to the south, and a shallow emergent marsh to the northern and directly bordering the lake.

Grassland Focus Areas

Grasslands are an important and yet increasingly rare habitats across New York State. These dynamic habitats are home to many types of birds and other wildlife, including the endangered Short-eared Owl and the threatened Henslow's Sparrow, Northern Harrier Hawk, and Upland Sandpiper. Due to changing land-use patterns, natural vegetative succession, and development, in many areas grasslands are fragmenting and disappearing.

The New York State Grassland Focus Areas are parts of New York State that are of special importance to grassland birds, these focus areas were determined by analyzing the data from the 2000-2005 Breeding Bird Atlas (BBA) blocks for grassland birds across the entire state. To further refine the focus areas, NYS DEC conducted point counts during the spring and summer of 2005. In this way important geographical areas for rare grassland birds have been identified. The target grassland bird species are: Northern Harrier, Upland Sandpiper, Short-eared Owl, Horned Lark, Sedge Wren, Vesper Sparrow, Grasshopper Sparrow, Henslow's Sparrow, Bobolink, Eastern Meadowlark, and Savannah Sparrows. Eight of these were found in BBA blocks that overlapped the Hemlock-Canadice Unit. The last three species listed are native grassland birds, and although their populations have declined significantly, they remain fairly widespread and abundant in New York; for now their populations appear secure. As a result, NYS DEC concentrated on the rarer species and larger unbroken expanses when determining the Grassland Focus Areas.

One of the Grassland Focus Areas overlaps with the northern end and a smaller portion on the west side of the Hemlock-Canadice Unit. See Appendix M: Maps, Timber and Vegetation Management and Fish and Wildlife Habitat for further details.

In addition, this plan does not, and cannot, cover any actions or activities on private land within the Grassland Focus Area, but outside the boundaries of the Hemlock-Canadice Unit. For assistance in managing your own grassland, please contact the NYS DEC Bureau of Wildlife for help. Visit www.dec.ny.gov/pubs/32891.html or call the Bath or Avon offices.

Forest Matrix Blocks and Least Cost Path Corridors

The identification of large, unfragmented forested areas, also called matrix forest blocks, is an important component of biodiversity conservation and forest ecosystem protection. Changes in both land use and climate will stimulate the alteration of movement patterns and range shifts for many species as they respond to changes in habitat availability and configuration along with changes in temperature, precipitation and the distribution of other species.

Research that combines data from natural, dynamic disturbance processes (e.g., fires, tornados, downbursts, icestorms, etc.) with the habitat needs of forest dwelling species in the Northeast U.S. has generated suggestions for how large forest blocks need to be in order to provide adequate blocks of continuous closed forests space for maintaining viable populations of a number of species. The two principal factors used to assess and recommend an appropriate size for proposed conservation areas of forested ecosystems, within a given ecoregion, are the home range of wide-ranging animal species and historical patch sizes that result from natural disturbance events within the landscape. Based on these

assessments, a set of priority matrix forest blocks have been identified within four of the terrestrial Ecoregions within New York.

Securing connections between major forested landscapes and their imbedded matrix forest blocks is important for the maintenance of viable populations of species, especially wide-ranging and highly mobile species, and ecological processes such as dispersal and pollination over the long term. Identifying, maintaining, and enhancing these connections represents a critical adaptation strategy if species are to shift their ranges in response to climate change and other landscape changes. Various nonprofit, state, and federally funded connectivity modeling efforts have been completed or are underway around New York State. Using these models, least cost path (LCP) corridors between identified matrix forest blocks have been predicted. An LCP corridor represents 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. Linkage Zones buffer each of the LCP corridors, representing areas of potential connectivity.

One of those forest blocks is just east of the Hemlock-Canadice Unit, with one of the LCP corridors/Linkage Zones crossing the southern end of the Unit. See Appendix M: Maps and Chapter 2 of the Strategic Plan for State Forest Management at www.dec.ny.gov/lands/64567.html. The forested acres of the Hemlock-Canadice Unit that are outside the Forest Matrix Block and Linkage Zone will still be primarily managed for forest, along with all the other things listed in the GOALS AND OBJECTIVES chapter.

In addition, this plan does not, and cannot, cover any actions or activities on private land within the Forest Matrix Block but outside the boundaries of the Hemlock-Canadice Unit. For assistance in managing your own forest, please contact the NYS Bureau of DEC Private Land Services for help. Visit www.dec.ny.gov/lands/4972.html or call the Bath or Avon offices.

High Conservation Value Forest (HCVF)

High Conservation Value Forests are those portions of State Forests which have known high conservation values that NYS DEC feels should take precedent over other land use and management decisions. Areas identified as having exceptional values may be harvested, but management activities must maintain or enhance the high conservation values present. Currently, HCVFs are assigned to one or more of five land classifications, four of which may be found on State Forests:

1) Rare Community - Forest areas that are in or contain rare, threatened or endangered ecosystems.
2) Special Treatment - Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, and refugia).
3) Cultural Heritage - Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and are critical to their traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).
4) Watershed - Forest areas that provide safe drinking water.

As of the writing of this plan, most of the Hemlock-Canadice Unit was identified as areas of HCVF, all classified as Watershed, for a total of about 6,200 acres. In addition, less than two acres where the Kentucky coffee tree grows is also classified as Special Treatment.

Everywhere is part of one watershed or another, from the tip of the Adirondack Mountains to the shores of Long Island, some area's drain directly into a drinking water reservoir, others much more indirectly. In addition, the founding legislation for the State Forest system, the State Reforestation Law of 1929 also listed watershed protection, so number 4) Watershed applies to all of the of the Hemlock-Canadice Unit, however only those acres that directly feed into Hemlock or Canadice Lakes are specifically identified as areas of HCVF. See also the Strategic Plan for State Forest Management (www.dec.ny.gov/lands/64567.html) and Wetlands and Water Resources, Watershed and Wetlands Protection, and Timber and Vegetation Management, sections for further information on watershed protection. See www.dec.ny.gov/lands/42947.html and Appendix M: Maps

Fish, Wildlife and Habitat

The fish, wildlife and their habitats found here are products of the landscape's history. Like many places in Western New York, European settlement in the 1700s and the decline of Native American cultures set the stage for widespread changes in the distribution and richness of wildlife resources. Human-induced changes in land cover, along with unregulated exploitation of fish and wildlife resources, caused the decline of many wildlife species. Forests were either cut heavily or burned, resulting in most of the land being cleared for farming and pasturing. Most big game animals as well as native brook trout and other creatures of pristine and wild environments were either eliminated or their populations greatly reduced. Streams filled with sediments. Wetlands were filled. Wild fires were suppressed. Very little of the landscape was left untouched.

In the 1930s the depression set the stage for the landscape pendulum to swing in a different direction. As farms failed, a large portion of the area started to revert back toward mature hardwoods. The resulting young forests lacked significant age to provide timber products, but the wildlife species that were adapted to these transitional habitats quickly colonized these areas and rapidly moved back onto the landscape. Cottontail rabbits and other farm wildlife that once were in great supply diminished, and species of young forests such as grouse and deer took advantage of the maturing woodlands. Today, forests have matured and the wildlife species present on the Hemlock-Canadice State Forest are those commonly associated with such habitats. Black bears, white-tailed deer, bobcat, bald eagles, beavers, otter and fisher now roam where farm wildlife species thrived at the beginning of the 20th century.

Although numerous wildlife habitat types are found on the Hemlock-Canadice Unit, two-thirds of the land is made up of mixed deciduous forest. Consequently, the bulk of the upland wildlife found on the area are those that favor this habitat type, such as deer, wild turkey, raccoon, woodpeckers, and grey squirrels. About 30% of the non-open water area of the unit is coniferous forest favoring such species as red squirrels, great horned owls, and ruffed grouse. Old fields or grassland make up only about 3% of the land, but provide needed interspersion amidst the forests. Woodcock, vesper sparrows, meadow voles, and northern harriers are some of the species using this habitat type. Freshwater wetlands comprise nearly 16% of the non-lake habitat, are perhaps the most productive habitats of the unit, and are home to many species of reptiles, amphibians, shore birds, waterfowl, aquatic mammals, fish, invertebrates, and insects. In addition to four major New York State-protected wetlands on the area, several smaller Federally-protected wetlands exist. Most of the areas wetlands are found at the north and south ends of both major lakes. Few permanent wetlands exist on the area outside these flat valley locations.

Ecological Zones and EcoRegions

The Hemlock-Canadice Unit lies on the northern edge of the Central Appalachian Ecological Subzone immediately south of the Erie-Ontario Plain subzone. The Central Appalachian Subzone encompasses an area of approximately 8,830 square miles, with elevations ranging between 1,000-2,200 feet above sea level. The landscape is dominated by forests, reverting farm lands and occasional dairy farms. Habitat present for wildlife includes numerous structural types from old field and brush land, to mature forest. Considerable wetland habitat exists, but these environments are fairly restricted to the north and south ends of the two lakes. Natural succession continues to result in the reappearance of wetland plant associations on previously farmed lands with wetter soils.

The Hemlock-Canadice Unit is located on the transition between the New York Great Lakes EcoRegion (GL) and the New York High Allegheny Plateau EcoRegion (HAP). The Nature Conservancy defines ecoregions as areas of ecological homogeneity, which are defined by similarities in soil, physiography, climate, hydrology, geology and vegetation. EcoRegions are mapped with well-defined boundaries, but rarely in nature do such abrupt changes occur. See Appendix M: Maps showing the north and west side of the Unit in GL and the southeastern corner in HAP.

Historically, the northern part of the Great Lakes Ecoregion was dominated by northern hardwood forests, pine forests, and spruce-fir forests. The vast majority of these forests were cut over by 1910, and is now in second growth; some areas are even in third growth. Much of the GL Ecoregion in New York was dominated by tallgrass prairies and savannas, with some beech-maple and other hardwood forests mixed in.

Many northern species and communities reach their southern limit in the High Allegheny Plateau Ecoregion, while many southern species extend into the ecoregion but not beyond. 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. These three different drainages contribute to the high overall aquatic diversity in the ecoregion. The northern and eastern portions of the ecoregion were glaciated, including the area of the Hemlock-Canadice Unit.

White Tail Deer and Bear

Hemlock-Canadice State Forest is in Wildlife Management Unit (WMU) 8N. Prior to 1999, the property (then owned by the City of Rochester) was divided between two Wildlife Management Units. A statewide restructuring and re-naming of WMUs in 1999 resulted in the shifting of what was then the western boundary of WMU 83 westward, putting the entirety of the Hemlock-Canadice State Forest in the newly-named WMU 8N.

Deer populations in each of the state's WMUs are managed at levels recommended by Citizen Task Forces (CTFs); committees of citizen stakeholders representing various deer-related stakes. The deer management target in each WMU is expressed as a Buck Take Objective (BTO), an index to deer population size. The current BTO for 8N is 4.6 bucks per square mile in the fall harvest. Historically speaking, deer populations peaked in the early 2000s in Western New York, and WMU 8N was no exception. Populations since that time have declined some 20-40%, but through it all, WMU 8N has had among the densest deer populations of any unit in the state (of 98 WMUs statewide) for the last 15-20 years. These historically high deer populations took their toll on the forests of 8N (and the Hemlock-

Canadice Unit) through increased deer browsing on the understory, and forest regeneration has been poor as a result. Owing to several years now of lower deer numbers, recently there have been signs of increased regeneration within the unit. But it remains to be seen how the high deer populations of the past have affected the long-term forest composition of the unit.

The northward expansion of black bear populations into the western Finger Lakes has been well-documented, and although no bears have been harvested to date on the unit, recent expansion of bear hunting opportunity into WMU 8N provides the opportunity for this to take place. The predominantly forested habitats of the Hemlock-Canadice Unit offer superior black bear habitat and ample denning sites to ensure that bears stay as permanent residents of the area.

Small Mammals, Reptiles, and Birds

The habitats of the Hemlock-Canadice Unit are home to most, if not all, of the common furbearers of Western New York including beaver, muskrat, red and grey fox, raccoon, coyote, mink, opossum, and skunk. Fisher, bobcat and river otter are all expanding their range in Western New York and have been documented in Ontario and Livingston Counties. If not already permanent residents of the unit, these species could well be present in the near future.

Upland game birds of the Hemlock-Canadice Unit include wild turkey, ruffed grouse, woodcock, and crow. Due to low numbers in New York State generally, and the lack of substantial suitable habitat on the unit in particular, wild ring-necked pheasants are rare.

Indigenous waterfowl include Canada goose and several species of both diving and puddle ducks such as mallards, wood ducks, teal, mergansers, ring-necks and bufflehead. Common loons are occasional visitors as well.

Common small mammals include red and grey squirrel, cottontail rabbit, white-footed mouse, meadow vole, weasel, and several species of bats.

Reptiles found within the unit include garter snakes, snapping turtles and painted turtles. Both species of turtles found within the unit are common turtles found in lakes and ponds. Painted turtles can often be viewed sunning themselves on logs or along the shore. Both of these species are almost entirely aquatic except when they come on shore to find appropriate soils to lay their eggs. The Hemlock-Canadice Unit was also at one time home to the queen snake, a New York State Endangered Species. The most recent records for queen snake at this location are approximately 100 years old. Any new records of this snake would be of great interest to NYS DEC and should be reported to the New York Natural Heritage Program.

Threatened, Endangered or Special Concern Species

The unit is also the residence of several New York State Threatened Species including northern harrier hawks and Henslow's sparrows. An additional Threatened Species whose history is closely tied to the Hemlock-Canadice watershed is the bald eagle. See Appendix B: Animals of the Hemlock-Canadice Unit Management Plan Area for lists of known species located on or near the Hemlock-Canadice State Forest.

Hemlock-Canadice State Forest has played an important role in the bald eagle success story. Decades of indiscriminate killing, habitat destruction, and the widespread use of harmful chemicals

nearly destroyed New York's bald eagle population until there was only one known pair of bald eagles nesting in New York located at Hemlock Lake. A national ban on DDT in 1972, prohibitions against taking or killing bald eagle in the federal Endangered Species Act of 1973, and the initiation of New York's Endangered Species Program in 1976 marked a dramatic turnaround for this impressive bird. New York's Bald Eagle Restoration Project (1976-1988) undertook an unprecedented effort - to bring back a breeding population of eagles to New York by importing young birds from other states and hand rearing them to independence (a process known as hacking). During this project, nestling bald eagles were also brought to Hemlock Lake to enhance the production of the nest when the pair had difficulty successfully breeding. Thanks to long standing cooperation between NYS DEC and the City of Rochester, descendents of that pair continue to nest here. There are currently at least 192 occupied breeding territories across the state including the two within the Hemlock-Canadice State Forest. Monitoring of eagle nesting at Hemlock is a continuing, long-term project with NYS DEC. Special management restrictions apply to the nesting areas chosen by bald eagles. Within the unit a floating sanctuary is established to define the perimeter of the nesting zone. It is the responsibility of NYS DEC Division of Fish and Wildlife to designate boundaries of any changed nesting location.

The Hemlock-Canadice Unit is the site for breeding, foraging, or migration stopover for at least 11 bird species listed as Special Concern in New York State. Forest breeding raptors, such as long-eared owl, red-shouldered hawk, northern goshawk, Cooper's hawk and sharp-shinned hawk, make up the bulk of the species listed as Special Concern in this unit. In general, the major threat to forest breeding raptors is the loss of relatively large blocks of forest land, for example fragmentation by clearing and development. On the other hand, other Special Concern species within the unit, such as early successional forest/shrubland birds, would benefit from careful management of the forest including thinning and/or judicious clear cutting.

In addition to the threatened species of Northern Harrier Hawks and Henslow's sparrows, there is also the Special Concern species of horned lark, vesper sparrow, and grasshopper sparrow, which require open grassland habitat. Suitable habitat for these species was closely tied to active agricultural use over thousands of acres. Formerly suitable habitat for these species has been replaced with planted conifer stands or naturally developing hardwood stands. For additional information on grassland management see Grass and Brush Management in the Timber and Vegetation Management section.

While not restricted to the Hemlock-Canadice Unit, the entire watershed has also been recognized by Audubon NY as an Important Bird Area (IBA). This recognition was accorded, in part, due to the presence in the 1970's of the last "wild" bald eagle nest located on the property at Hemlock Lake.

Additional information can be found in the Fish and Wildlife Habitat section on page 94 and Appendix B: Animals of the Hemlock-Canadice Unit Management Plan Area.

Species of Greatest Conservation Need

The State Wildlife Grants program is a federal program that provides funds at the state level for conservation efforts aimed at preventing fish and wildlife populations from declining, reducing the potential for these species to be listed as endangered. In order to access these grant funds, New York State was required to develop a Comprehensive Wildlife Conservation Strategy (CWCS) that focuses on the "species of greatest conservation need." This includes those species that are deemed rare, imperiled and those for which status has not been established. NYS DEC staff produced a list of 537 species of greatest conservation need (SGCN). For this program, New York State is divided into major watersheds

and each watershed has a specific list of SGCN. The Hemlock-Canadice unit is within the Southwest Lake Ontario Watershed. The list of species is certainly not exhaustive, but includes those species for which systematic assessments had been made by staff of the NYSDEC Division of Fish, Wildlife and Marine Resources and the New York Natural Heritage Program. For further information on how the list was compiled, visit the web site www.dec.ny.gov/animals/9406 which also has the entire list of species as well as by watershed.

Wetlands and Water Resources

Streams

The entire Unit is located within the Genesee River basin. The streams within the State Forest range from intermittent, meaning that stream flow does not occur year round, to high quality trout streams with year round flow. The majorities of the streams are class "C" and have fishery resources consisting of sucker and minnow species. Species composition of streams that are tributaries to Hemlock or Canadice Lakes will change seasonally as some species will leave the lakes and enter the tributaries during some portions of the year.

Springwater Creek, Tributary 5 of Springwater Creek, Limekiln Creek, and Reynolds Gully Creek all provide wild rainbow trout fisheries. Springwater and Limekiln Creeks are the largest and provide the most significant fishery. The headwaters of these streams also contain wild brook trout.

Aquifers

Information about aquifers comes from two GIS data sets maintained by NYS DEC as part of the Master Habitat Databank. These sets are titled as Primary Aquifers and Unconsolidated Aquifers @ 250K. As per the above data sets, the Hemlock-Canadice Unit does not overlay any primary aquifers; however, located at the north end of Hemlock Lake and the south ends of each of the lakes are confined unconsolidated aquifers with no overlying surficial aquifer. At the north end of Canadice lake is a confined aquifer of unknown depth and thickness. Use of Best Management Practices for water quality has been showed to protect both surface and underground water quality. Further information on these BMP's is provided by the publication: New York State Forestry Best Management Practices for Water Quality: BMP Field Guide.

Wetlands

Wetlands (swamps, marshes, bogs, and similar areas) are areas saturated by surface or ground water sufficient to support distinctive vegetation adapted for life in saturated soil conditions. Wetlands serve as natural habitat for many species of plants and animals and absorb the forces of flood and tidal erosion to prevent loss of soil. Wetlands cleanse water by filtering out natural and many manmade pollutants, which are then broken down or immobilized. In wetlands, organic materials are also broken down and recycled back into the environment, where they support the food chain. Wetlands are one of the most productive habitats for feeding, nesting, spawning, resting and cover for fish and wildlife, including many rare and endangered species.

Information about wetlands comes from two GIS data sets maintained by NYS DEC as part of the Master Habitat Databank. These sets are titled as New York Regulatory Freshwater Wetlands and

National Wetlands Inventory. Considerable further information has also been developed from personal observation by NYS DEC staff.

There are four main New York State-protected Freshwater Wetlands located wholly or in part on the Hemlock-Canadice Unit.

Table 8: NYS Freshwater Wetlands on the Hemlock-Canadice Unit

Wetland	Location	Size	Class	Type
HO-1	North end Hemlock Lake	171.3 ac.	I	Palustrine; Forested/shrub, Emergent and Riverine subtypes
SP-1	South end Hemlock Lake	452.4 ac.	I	Palustrine; Forested/shrub and Emergent subtypes
SP-4	North end Canadice Lake	89.7 ac.	II	Palustrine; Forested/shrub subtype
SP-2	South end Canadice Lake	120.1 ac.	I	Palustrine; Forested/shrub subtype

In addition, there are numerous large and small federally-protected wetlands identified in the National Wetlands Inventory coverage, the majority of which overlap the state wetlands described above. Hemlock and Canadice Lakes themselves are also identified in the National Wetlands Inventory.

Table 9: National Wetlands Inventory – Federally-protected Wetlands on the Hemlock-Canadice Unit

Wetland Type	Number of Each Type	Acres*
Palustrine, emergent	12	246.3
Palustrine forested/shrub	23	635.4
Pond	2	0.9
Lacustrine (lake)	2**	2,758.5
Riverine	1	1.4
Totals	40	3,642.5

*This water acreage will change with water level, see also Table 2: Hemlock and Canadice Lakes.
** Hemlock and Canadice Lake.

Please see also the map in Appendix M: Maps for spatial information and site specific data, and Appendix G: Glossary for definitions.

Wetlands, though sometimes difficult to define, are easily accepted as valuable assets to the watersheds involved. They have many widely recognized benefits including flood attenuation, water quality improvement, wildlife habitat, and groundwater recharge. Wetlands come in many shapes and sizes, some more obvious than others; however our ability to notice them has nothing to do with how important they are to the environment.

One wetland type that is particularly easy to overlook is the vernal pool. Vernal Pools (vernal meaning spring) in the Northeast are generally found in forests and are typically wet on a seasonal basis. In addition to being only seasonally wet, they tend to be extremely small, usually only fragments of an acre in size. No matter how inconspicuous they are, their contribution to the forest ecosystem in which they are found is monumental. Spotted Salamanders (up to 8 inches long), Wood Frogs, and many other amphibians depend on these pools as breeding sites and rarely entrust their larvae anywhere else. The

fact that they also exist on the steeper, forested slopes of the Unit, in addition to the flatter areas, is further testament to their importance in terms of spatial interspersion.

Ponded Waters

There are numerous unnamed vernal pools, small dugouts, water holes, and other small seasonal ponds located throughout the Unit. They provide valuable habitat for reptiles and amphibians, such as salamanders and frogs, but do not support fish. The volume and depth of water varies seasonally, with some drying up during the summer, and others holding water year round.

Lakes

Hemlock and Canadice Lakes make up a large portion of this Unit. Both of these lakes are considered "two-story" lakes, meaning that they support both shallow warm water fish species as well as deep cold water species. The warm water fisheries resource includes black crappie, bluegill, brown bullhead, chain pickerel, common carp, largemouth bass, pumpkinseed, rock bass, smallmouth bass, and yellow perch. Hemlock Lake also contains walleye. The cold water fisheries resource includes brown trout, lake trout, landlocked Atlantic salmon, rainbow smelt, and rainbow trout. Lake whitefish are present in both lakes but are no longer abundant.

See also the inventory of streams and ponded waters in Appendix E: Water Resources.

Special Management Zones

Special Management Zones are areas around specific water features (intermittent streams, vernal pools, wetlands, etc.) where management must be modified as compared to what is permissible in the general forest zone. See Appendix M: Maps for maps showing computer generated locations of these zones, the actual configuration of the zones can only be done during sale layout, following field reconnaissance, which is beyond the scope of this plan. See also the Fish, Wildlife and Habitat, Fish and Wildlife Habitat and, Watershed and Wetlands Protection sections for further details. In 2006 a new forest inventory system was implemented, which allows identification of areas receiving special management considerations.

Roads

The State Forest Transportation system provides for both public and administrative access to the unit. The Hemlock - Canadice Unit is accessed by a combination of Town, County and State Highways and public forest access roads. Some portions of these roads are not maintained for winter travel. Many of the abandoned roads are used as recreational trails. Roads and trails are constructed to standards that will provide reasonably safe travel and to keep maintenance costs at a minimum. There are six types of transportation corridors providing different levels of access, depending on the standards to which they are constructed. NYS DEC reserves the right to limit access to state lands when public safety or resource damage issues occur.

The next several paragraphs give brief descriptions of the six types of roads that can be found on State Land.

Public Forest Access Roads - 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 (8/04).

Haul Roads - Permanent, unpaved roads which are not designed for all weather travel, but may have hardened or improved surfaces with artificial drainage. They are constructed according to best management practices primarily for the removal of forest products, providing limited access within the unit by log trucks and other heavy equipment. These roads may or may not be open for public motor vehicle use, depending on management priorities and objectives. They may serve as recreational access corridors, but are not maintained according to specific standards or schedules. The design standards for these roads are below those of the Class B access roads as provided in the Unpaved Forest Road Handbook.

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

Recreational Trail - Unpaved recreational corridors which do not provide all weather access within a unit, and are designed to achieve specific recreational access objectives. Constructed according to best management practices, and following accepted regional standards for design, these trails may be used to support multiple types of seasonal recreation access. Maintenance is limited to activities which minimally support the access objectives and design.

Public Road - Permanent, paved or unpaved roads primarily designed for motor vehicle travel which are maintained by federal, state or local government. These roads may or may not provide year round access.

Rights-Of-Way - Permanent, paved or unpaved roads which allow the NYS DEC access to state forest properties while crossing private land, or, corridors across state forests allowing access to private in-holdings.

The public forest access roads and haul roads are all maintained by the NYS DEC and the access trails that are accessible by mower are also maintained. The public forest access roads are open to the public use all year round but are not maintained during the winter months. The haul roads and access trails are used by the public for hiking, biking, cross country skiing, and snowshoeing. The public forest access roads, haul roads and some of the access and recreation trails are used by the NYS DEC for administrative access. See Appendix M: Maps for names and types of roads and trails. There are also many other unmarked trails connecting some of the access trails.

This Unit is oriented around Hemlock and Canadice Lakes. In order to protect the water supply, the objective at the time of purchase by the City was to obtain continuous ownership of the shoreline of both lakes. As noted elsewhere in this plan, the initial acquisition of these properties was done by the City of Rochester. Points of access to City property were apparently not considered essential with property purchase. As a result, large areas, such as along the west side of Hemlock Lake, have no direct access to a public road. Some land parcels were divided, with the City purchasing only a required minimum

distance of 200' from the lakeshore, but little acreage. Other parcels transferred more acreage, but access to the new City ownership was not obtained. Fortunately, some parcels purchased in their entirety provided access points along bordering state highways or town roads. The lack of continuous road frontage, or strategic points of access, is a limitation to property management.

Access is also limited by terrain. The narrow, lineal property on the sides of both lakes transects a large number of intermittent streams, many of which have created gullies of varying degrees. Some gullies cannot be crossed by a simple, conventional trail. Slope is also a factor as approximately one-third of the property exceeds slopes of 25%.

All town and county highways are assumed to exist as a result of a prescriptive easement. Stated another way, they were established by use, rather than through a specific legal dedication process, and there are no deeds conferring the right to construct them. Since these are prescriptive easements they are limited to the width actually occupied by the highway, subject to a 49.5 foot (3 Rods) maximum width. The easement is for highway purposes only; no right exists to "sub-let" the easement to utility companies.

All state highways were acquired through appropriation by NYS DOT. The deed from the City of Rochester to NYS DEC excepts these areas. The boundaries depicted in this plan for the state highways are reasonably accurate. However, prior to beginning projects which involve the state highways, reference should be made to the actual appropriation documents for the pertinent highway segment.

Rights of Way, Concurrent Use & Occupancy, and Deeded Exceptions

Hemlock Lake and Canadice Lake are part of the public water supply for the City of Rochester and other communities. The waters contained in the beds and banks of Hemlock and Canadice Lakes are regulated by the State of New York. The City of Rochester withdraws water (up to specified maximum amounts) under the terms and conditions of an Article 15 Water Supply Permit issued by NYS DEC. The City's water rights are currently limited to surface waters, with no rights reserved to withdraw water from any aquifers which might be located beneath state forest lands.

The deed from the City of Rochester to the People of the State of New York excepts and reserves easements as follows:

1) To the Town of Springwater Sewage District #1 to discharge treated sewage effluent, from their plant on Kellogg Road, into Hemlock Lake Inlet / Springwater Creek. The outflow is located on what is a now state forest land.
2) To three private owners along the east side of Canadice Lake for driveways to serve adjacent private lands.
3) For a water withdrawal point along the west side of Hemlock Lake. Water serves the Mission and the winery.
4) For the water intake structures as they currently exist within the bed and banks of Hemlock and Canadice Lakes.
5) A 60 foot wide easement for a 36 inch diameter water conduit, across state lands between Rix Hill Road and State Route 15A.

There is one permanent easement which provides access to this Unit beyond the town, county, and state highways. This easement is located on the west side of Hemlock Lake and proceeds easterly from

Marrowback Road to the state land boundary. The easement is improved by drainage structures and a crushed stone surface. However, access along this easement is limited to employees, permittees, etc. of the state. The terms of the easement did not include use by the general public.

Unless specifically authorized by permit, all motorized access by non-DEC personal on the haul roads beyond the gates on Hemlock-Canadice State Forest is prohibited. The only exception to this is a road use agreement in place for the use of the northerly end of the Canadice Lake haul road which allows joint use of the haul road by the City of Rochester, NYS DEC, and National Grid.

There are deeded exceptions for utility rights of way and easements as they may exist on the date of acquisition by the state. As part of our inventory efforts, we have created what we believe to be a fairly accurate GIS coverage of the utilities in place as of the summer/fall/winter of 2010. This is shown in Appendix M: Maps

Utility companies include:

- Electricity: Niagara Mohawk / National Grid
- Telephone: Frontier Communications
- Natural Gas: NYSEG / RG&E / National Fuel Gas

Towers

This part of New York State has the potential for generating electricity with windmills or the construction of towers for radio, cell etc. transmission, in the area of the Hemlock-Canadice Unit. There are currently no windmills, or applications for windmills, for power generation on the Hemlock-Canadice State Forest. NYS DEC does not have the legal authority to lease State Forests for the construction of windmills, new power lines, or commercial towers. However, this plan does not cover any actions or construction on any adjacent privately owned lands.

City of Rochester Facilities

NYS DEC did **not** acquire all of the real property owned by the City of Rochester in the Hemlock-Canadice Watershed. In addition to the above listed Rights of Way, Concurrent Use & Occupancy, and Deeded Exceptions, the City retained control of the water filtration plant, intake pipes on Hemlock and Canadice Lakes, the dams on Canadice Lake and Outlet, associated maintenance facilities and Hemlock Park. Facilities such as these are outside of NYS DEC's mandated program. Those facilities are not included in the new Hemlock-Canadice State Forest and activities taking place on those facilities are not covered by this plan.

In 2011 the city of Rochester sold off two additional parcels. The Town of Livonia acquired Hemlock Park, and the Hemlock Lake Union Agricultural Society, which runs the Hemlock Fair, acquired the field they had previously leased for parking for the Hemlock Fair.

Recreation

The Hemlock-Canadice State Forest provides an abundance of recreational opportunities within a one hour drive of metropolitan Rochester. The area was used for recreation prior to the City of Rochester acquiring the property, and it continues to be heavily used for recreation purposes. However, recreational use can be concentrated in certain areas and have seasonal variation.

We ask visitors to respect this very sensitive area as a source of public drinking water.

Many of the recreation facilities started out as farm lanes, skid roads, town roads, log landings, etc. After they were no longer used for the original purpose they were converted to recreational use. On occasion, as part of the active timber management, sections of multiple use trails, roads, parking lots, etc may need to be temporarily closed to public use.

Additional information can be found in the Public Recreation and Use section on page 100.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a USDA Forest Service developed scale of recreational settings, activities, and opportunities. This rainbow of opportunities ranges from an urban park to the primitive wilderness. NYS DEC does not follow the precise categories that the Forest Service does, and NYS DEC properties are not divided into the same categories, it is a useful guideline when considering recreational use and expectations of an area. State Forests fall near the primitive/wilderness end, in that it has much less development than Central Park in NY City, but more than can be found in most of the backcountry of Alaska.

In the past the City of Rochester managed the area at a ROS level between a typical NYS Park and a typical NYS State Forest. After the property became a State Forest a few small shifts in management took place to bring it in line with other State Forests, for example a permit was no longer required to visit the property, the storing of boats along the shoreline was no longer allowed, and the fields at the north and south ends were converted from leased corn and bean agricultural fields to grassland habitat.

The Forest Service web site at www.treesearch.fs.fed.us/pubs/6014 has additional information on the Recreation Opportunity Spectrum.

Recreation Opportunities Include:

- Fishing
- Hunting
- Trapping
- Hiking
- Canoe/ kayak/ boating
- Wildlife observation
- Mountain biking
- Snowmobiling (on marked trail only)
- Cross country skiing
- Snowshoeing
- Picnicking
- Photography
- Nature study
- Orienteering
- Running

Depositing or leaving rubbish or waste material is prohibited. Cutting, removing, or destroying any living, or standing dead trees or plants is prohibited. Camping and fires are **not** allowed on Hemlock-

Canadice State Forest. Hunting, trapping, and fishing are allowed during legal season; consult the NYS DEC Hunting and Trapping, and the Fishing Regulations Guides for seasons, hours, and bag limits.

Restricted Use Areas

It is unlawful to possess or operate a boat, to ice fish, to traverse the ice or water, or to fish from shore on;

- Hemlock Lake: north of the northerly boat launch, and between Boat Launch Road and Hemlock Lake.
- Canadice Lake; within the northernmost 500 feet of the lake

Hemlock and Canadice Lakes are a source of public drinking water for the City of Rochester and other communities, in order to protect this resource, part of Hemlock-Canadice State Forest and Hemlock and Canadice Lakes are restricted from public use. Activities in Hemlock-Canadice State Forest are subject to DEC's Rules and Regulations for the Use of State Lands, 6 NYCRR Part 190, as well as any other applicable state statutes, rules and regulations. In addition, specific regulations - §190.26 - have been developed by NYS DEC, mirroring those established by the City of Rochester, allowing many recreational activities on Hemlock-Canadice State Forest, but prohibiting uses that could threaten water quality.

The road easement located off of Marrowback Road does **not** include use by the general public.

See Appendix K: Special Regulations for the 6NYCRR §190.26, current as of the publication of this Unit Management Plan. They are also available on NYS DEC's web site at www.dec.ny.gov/regs/13943.html#13956 for the most current version.

Off-Road Vehicle Use

There are no designated Off-Road Vehicle (ORV) trails on this Unit. New York State Vehicle and Traffic Law prohibit All Terrain Vehicle (ATV) use on Public Highways which, by definition, also include Public Forest Access Roads, unless such roads are specifically designated for ATV use. ATV and ORV riding is not a specific program offered on Public Lands owned in fee and managed by the NYS DEC. Existing management actions, poor soils, conflicts with other uses, impacts on neighboring residents, safety concerns, maintenance costs and challenges, and existing issues with illegal ATV and ORV use were some of the factors which have prevented the NYS DEC from developing ORV or ATV trails in the past. However, people with qualifying mobility impairments who possess a valid permit from the NYS DEC may operate ATVs on specifically designated and signed accessible trails. See Access for Persons with Disabilities, page 48. For more information regarding ATV access to State Forest please refer to the Strategic Plan for State forest Management, found online at www.dec.ny.gov/lands/64567.html.

Boat Launches and Boating

The Hemlock-Canadice Unit has four unimproved boat launch sites. Three of them can be used for launching boats from trailers; one includes a short hand carry from the parking area. Only boat motors 10HP or less may be used, and only on boats 17 feet or less in length. Non-mechanically powered boats may be up to 24 feet in length.

- North Hemlock Boat Launch - Located on the east shore near the north end of Hemlock Lake, accessed from State Highway 15A, with room for vehicles with trailers to park.
- South Hemlock Boat Launch - Located on the east shore near the south end of Hemlock Lake, accessed from State Highway 15A, with room for vehicles with trailers to park. This launch is shallow, and in dry years is unusable.
- Canadice Boat Launch - Located on the east shore of Canadice Lake, accessed from Canadice Lake Rd, park along Canadice Lake Road.
- Canadice Canoe Launch - Located on the south end of Canadice Lake, a short walk from Canadice Lake Rd, with room for vehicles to park.

As part of an aggressive effort to prevent invasive species from entering and damaging New York water bodies, NYS DEC adopted regulations that require boaters to remove all visible plant and animal materials from boats, trailers and associated equipment, and to drain boats prior to launching at or leaving from DEC lands. This applies to all NYS DEC boat launches, fishing access sites and other NYS DEC lands where watercraft such as boats, kayak or canoes, can be launched into the water.

No Camping

Camping is **not** allowed on Hemlock-Canadice State Forest; however it is permitted on most other State Forests.

Hunting and Trapping

Hunting and trapping are valuable wildlife management methods and popular outdoor activities on the Unit (see the, Public Recreation and Use, Fish, Wildlife and Habitat, and Timber and Vegetation sections). For hunting, both small and big game opportunities exist, with white-tailed deer being the most popular hunted species. Ruffed grouse, woodcock, cottontail rabbit, grey squirrel, turkey, raccoon, and several varieties of waterfowl are favorite small game species pursued. For trapping, all the major furbearers of Western New York are present, including mink, muskrat, red and grey fox, raccoon, coyote, skunk, and opossum. Although no Hemlock-Canadice State Forest-specific harvest estimates exist for any hunted or trapped species on the Unit, DEC compiles and maintains estimates for most of the species mentioned on a Wildlife Management Unit (WMU), County, or Management Zone basis. Results for these larger areas containing the Hemlock-Canadice State Forest are shown in Appendix H: Wildlife Harvests and Hunting Use.

Hunting and trapping seasons span early September through late March, with the bulk of activity occurring October through December. All existing state regulations pertaining to hunting and trapping in WMU 8N, Livingston, and Ontario Counties apply to the Unit, with no additional restrictions, bag limit changes, or special permits required.

For many years, City of Rochester staff has maintained a count of deer hunter vehicles parked on opening day of the regular season as an index to deer hunting use on the area. The results of these annual user surveys are displayed in Appendix H: Wildlife Harvests and Hunting Use. While these data show year-to-year trends in deer hunter use, (and by extension, relative number of deer harvested on the area), perhaps their greatest use is in simply demonstrating the overwhelming popularity of deer hunting as a recreational activity on the Unit. As can be seen from a graphical representation of these data, (see Appendix H: Wildlife Harvests and Hunting Use) there is a strong correlation between the number of

hunter vehicles parked on the area opening morning and the Deer Management Permit (DMP) deer harvest in WMU 8N.

High deer populations can cause major impacts to understory vegetation and forest regeneration. Over browsing can negatively impact plant and animal species diversity and richness, and contribute to the establishment of unwanted invasive vegetation. High deer numbers also lead to increased local farm crop damage and higher deer-vehicle collisions on nearby roadways. Deer hunters perform a valuable service to the State and local communities by controlling deer numbers on the Unit, and the harmful effects they can cause.

As on all State Forests, permanent tree stands are prohibited on the Unit. Also prohibited is any equipment that damages trees, including screw-in steps, and eye hooks etc. However, a temporary tree stand or blind is allowed, provided that it does not injure any trees, is properly marked or tagged with the owner's name and address or valid hunting or fishing license number, and is placed and used during big game season, migratory game bird season, or turkey season, but no more than thirty days in one location per calendar year, per 6 NYCRR §190.8.

Fishing

Fishing opportunities within the Unit range from extremely limited, to a few very significant fishing sites. Most streams are small and do not provide much of a fishing resource, but a few streams provide very significant fisheries. Hemlock and Canadice Lakes are both unique and important fishing resources.

The most significant fishing resource streams within the Unit are Hemlock Outlet, Springwater Creek, Limekiln Creek, and Reynolds Gully Creek. Hemlock Outlet provides fisheries for largemouth bass and chain pickerel. Springwater, Limekiln, and Reynolds Gully creeks all provide spring fisheries for spawning rainbow trout that migrate from Hemlock Lake. These streams will also occasionally receive fall migrations of spawning brown trout. All three streams contain wild brook trout in their headwaters. Some of the small tributaries entering Hemlock and Canadice Lakes also provide a limited spring smelt dipping fishery.

Hemlock and Canadice Lakes are both unique resources because they provide much more shoreline access and small boat fishing opportunities compared to other Finger Lakes. During most winters these lakes also provide ice fishing conditions that allow anglers to fish for trout, rainbow smelt, and other species that cannot usually be fished for through the ice on other nearby lakes. The most commonly fished for species on Hemlock Lake include brown trout, lake trout, rainbow trout, black crappie, brown bullhead, chain pickerel, smallmouth bass, largemouth bass, sunfish, yellow perch and walleye. The most commonly fished for species on Canadice Lake include brown trout, lake trout, rainbow trout, rainbow smelt, brown bullhead, chain pickerel, smallmouth bass, largemouth bass, sunfish, and yellow perch. Both lakes are well known for above average sized lake trout.

Current stocking for Hemlock Lake includes 3,200 yearling and 6,600 fingerling lake trout annually. Rainbow trout were stocked in the past but are currently maintained through natural reproduction from Springwater and Limekiln Creeks. Walleye stocking has been permitted and conducted in the past by a local club. The most recent permitted walleye stocking was 800 fingerlings each year from 2006 through 2008. Current stocking for Canadice Lake includes 5,000 brown trout yearlings and 2,100 lake trout yearlings annually.

Trails

There are some designated recreation trails on the Hemlock-Canadice Unit, in addition to old roads, skid trails, and deer trails on the Unit to explore, a few of these trails are currently marked and mapped, others are not. All trails on the Unit can be used for walking, running, cross-country skiing, and snowshoeing. Motorized vehicle use is prohibited. See the list in Appendix D: Facilities and maps in Appendix M: Maps.

The Walnut Trail was initially part of a town road servicing cottages and business. As a result of its recent rehabilitation and maintenance, it is now a well-used walking track. A portion of the Bur Oak Trail is an abandoned section of the Hemlock Branch of the Lehigh Valley Railroad that used to bring visitors from Rochester to Hemlock Lake. In 1996 the City of Rochester reopened it and did additional trail work for the removal of timber. More improvements followed as part of a wetlands enhancement project conducted in cooperation with NYS DEC. Improvements included trail extensions into wetlands, old fields, and a stand of very large oak-hickory forest (the Bur Oak Loop). A southern extension that connects to Rix Hill Road was made by City crews as a third related project. Recreational hiking is the main use on a yearly basis. Trails such as the Green Ash Loop, Speckled Alder Loop, Root's View and Cattail Loop serve, primarily, for wildlife viewing and scenery appreciation.

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 applies to NYS DEC and requires, in part, that reasonable modifications must be made to its services and programs, 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 to NYS DEC. Since recreation is an acknowledged public accommodation program of NYS DEC, and there are services and activities associated with that program, NYS DEC has the mandated obligation to comply with the ADA, Title II and ADA Accessibility Guidelines, as well as Section 504 of the Rehabilitation Act.

The ADA requires a public entity to thoroughly examine each of its programs and services to determine the level of accessibility provided. The examination involves the identification of all existing programs and services and an assessment to determine the degree of accessibility provided to each. The assessment includes the use of the standards established by Federal Department of Justice Rule as delineated by the Americans with Disabilities Act Accessibility Guidelines (ADAAG, either adopted or proposed) and/or the New York State Uniform Fire Prevention and Building Codes, as appropriate. The development of an inventory of all the recreational facilities or assets supporting the programs and services available on the unit was conducted during the UMP process. The assessment may establish the need for new or upgraded facilities or assets necessary to meet ADA mandates. NYS DEC is not required to make each of its existing facilities and assets accessible. New facilities, assets and accessibility improvements to existing facilities proposed in this UMP are identified in the GOALS AND OBJECTIVES section.

Access for Persons with Disabilities

Wheelchairs are allowed anywhere pedestrians are allowed on state lands. The Federal/ADA definition of a wheelchair is:

Wheelchair - A manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor, or of both indoor and outdoor locomotion. This definition does not apply to Federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207 (c)(2).

Currently there are no trails or roads that meet universal access requirements on the Hemlock-Canadice Unit. In many cases the ground is not firm and stable enough, and/or the slope is too steep, and/or the path is too narrow.

While no ATV trails currently exist on this Unit, specific routes may be opened to allow ATV use by permitted persons with disabilities, pursuant to NYS DEC Commissioners Policy #3 (CP-3). This program is known as the Motorized Access Program for People with Disabilities (MAPPWD). A permit must first be obtained from NYS DEC. Individuals with qualifying disabilities may apply for a permit to operate an ATV or other vehicle on trails designated by the NYS DEC. For further information, contact the NYS DEC at 7291 Coon Road, Bath, New York 14810. Planned changes to the MAPPWD trails on the Unit are located in the Public Recreation and Use section of the GOALS AND OBJECTIVES chapter. (See Public Recreation and Use, Appendix D: Facilities and Appendix M: Maps of this plan or the Strategic Plan for State forest Management, found online at www.dec.ny.gov/lands/64567.html.)

Historic and Cultural Resources

The term cultural resource encompasses a number of categories of human created resources including structures, archaeological sites and related resources. NYS DEC is required by the New York State Historic Preservation Act (SHPA) (PRHPL Article 14) and SEQRA (ECL Article 8) as well as Article 9 of Environmental Conservation Law, 6NYCRR Section 190.8 (g) and Section 233 of Education Law to include such resources in the range of environmental values that are managed on public lands.

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 precontact Native American camps and villages to Euroamerican homesteads, cemeteries and graves as well as mills and other industrial sites. Such sites can be entirely subsurface 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 NYS DEC 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.

The quality of the site inventory information varies a great deal in all respects. Very little systematic archaeological survey has been undertaken in New York State, especially on public lands. Therefore all

current inventories must be considered incomplete. Even fewer sites have been investigated to any degree that would permit their significance to be evaluated. Many reported site locations result from 19th century antiquarian information, artifact collector reports that have not been field verified. Often very little is known about the age, function or size of these sites. This means that reported site locations can be unreliable or be polygons that encompass a large area. Should systematic archaeological inventory be undertaken at some point in the future it is very likely that additional resources will be identified. (For more information on historic and cultural resources, see Chapter 3 of the Strategic Plan for State Forest Management, found online at www.dec.ny.gov/lands/64567.html.)

Historic and 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. Should any actions be proposed which would impact these sites they will be reviewed in accordance with SHPA, and the Seneca Nation of Indians Tribal Historic Preservation Office will be consulted. Unauthorized excavation and removal of materials from any of these sites is prohibited by Article 9 of Environmental Conservation Law and Section 233 of Education Law. In some cases additional protection may be afforded these resources by the federal Archaeological Resources Protection Act (ARPA).

Archaeological Research

Any known archaeological sites located on this unit as well as additional unrecorded sites that may exist on the property may be made available for appropriate research. Any future archaeological research conducted on the property will require the 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.

Historic and Cultural Sites

The Hemlock-Canadice State Forest contains numerous cellar holes, barn foundations, mill sites, fencing, railroad grades and other features related to historic occupation. The largest concentration is in the location of a small hamlet called Dixon Hollow, which included houses and mills. The Dixon Hollow area was settled in the late 1820's, and gone by the 1920's having been sold to the City of Rochester.

NEEDS, ISSUES AND POLICY CONSTRAINTS

This plan strives to manage the diversity of the Hemlock Canadice Unit's biological and social resources for multiple use to serve the needs of the people of New York State. In order to manage the Hemlock-Canadice Unit for multiple use, NYS DEC must manage the ecosystem in a holistic manner while reconciling the many and sometimes conflicting demands on the ecosystem. In addition Hemlock and Canadice lakes are a direct source of public water for the City of Rochester and other communities and this will be considered relative to any actions in this Plan. This must be done within the framework of Strategic Plan for State forest Management, Environmental Conservation Law (ECL), Rules and Regulations, and NYS DEC policies and procedures.

Many issues, including public needs, form the basis for the objectives and management actions set forth in this plan. The NYS DEC recognizes that planning must be done today to ensure effective management in the future.

On the Hemlock-Canadice Unit, many different issues and needs form the basis for the objectives and management actions set forth in this plan. As the need for open space and outdoor recreation increased over the past years, so too have the facilities on state forests been modified and expanded to meet that demand. The DEC recognizes that the welfare of this area requires a "focus" towards the future. Planning must be done now to insure orderly and environmentally sound management in the future.

The ECL dictates that the lands within this unit be managed for ***"watershed protection, the production of forest products and recreation and kindred purposes".*** Within these constraints, a need exists for protection, goods, services, safe public water, and the perpetuation of open space.

In summation, a complex combination of needs, issues and constraints on these demands together with the inventory of available resources will form the basis for the goals, objectives, and subsequent management actions which comprise this plan. For more information regarding statewide management of State Forests please refer to the Strategic Plan for State forest Management at www.dec.ny.gov/lands/64567.html.

Funding

Currently NYS DECs Bureau of State Land Management has limited budget to manage all of NYS DEC lands.

Funding, when available, is primarily derived from:

- Capital construction account (State General Fund monies)
- Rehabilitation & improvement account (State General Fund monies)
- Stewardship - Special Revenue Other (SRO) account. State forests only. Note: The primary source of revenue for the SRO account is from commercial sales of forest products on State Forests.
- Environmental Protection Fund (EPF). This account is primarily funded from real estate transfer tax and other appropriations by the legislature. Appropriations from this fund may be used for a wide variety of projects including habitat enhancement for plants and animals, recreational

facilities and forestry improvements such as pre-commercial thinning, artificial regeneration, and control of invasive species.

- Conservation Fund. Wildlife Management Areas only. A state fund consisting primarily of income from the sale of sporting licenses, fines from penalties from fish and wildlife law violations, sale of products off lands administered by the Division of Fish, Wildlife and Marine Resources, and Return a Gift to Wildlife donations. Revenues attributable to the sale of oil and gas leases from Wildlife Management Areas are deposited into the Conservation Fund.
- Wildlife Restoration Program Funds. These are federal funds commonly referred to as Pittman-Robertson Funds. This is a federal program established from money received from excise taxes on the sale of sporting guns and ammunition. Use of land purchased, or activities funded, are federally regulated to certain activities.
- Sportfish Restoration Program Funds. These are federal funds commonly referred to as Dingell-Johnson Funds. This is a federal program established from money received from excise taxes on the sale of fishing equipment, and motorboat and small engine fuels. Use of land purchased, or activities funded, are federally regulated to certain activities.

Regional allocations from these accounts must be shared by all NYS DEC lands within the region. There is no specific budget established to manage an individual site. Funding is distributed based on priorities for all areas within the region. Tasks listed in the work schedule in this plan are contingent upon available funding and commitments associated with higher priority projects within the region.

Cooperative partnerships using the Adopt-A-Natural-Resource-Program or Volunteer Stewardship Agreements with private conservation organizations or other interested parties, or through Temporary Revocable Permits issued to municipal or county agencies can be used to complete projects on the Hemlock-Canadice State Forest. These partnerships are a valuable supplemental source for providing needed services.

Projects may also be accomplished via services in lieu of payment during commercial sales of forest products. These services are limited to the specific location and certain activities where the sale occurs.

Current Known Illegal Use

Regular patrols are made by law enforcement officials such as Forest Rangers, Environmental Conservation Officers and even local Sheriff Deputies of the Hemlock-Canadice Unit, and all other NYS DEC lands. But with the limited resources available it is difficult to stop all illegal activities such as:

- ATV and dirt bike use
- Off road driving
- Dumping / littering
- Vandalism
- Construction of permanent blinds and/or tree stands
- Harvest of ginseng and protected plants
- Cultivation of marijuana
- Poaching
- Underage drinking
- Boundary line encroachments / trespass
- Non-permitted use of state land

Whenever possible, fines or other punishments as the law allows are imposed. As money and other resources allow the damage is fixed, dumping is cleaned up and illegal plants are removed.

Policy Constraints

The laws, regulations, and policies listed below provide broad guidelines within which this plan is prepared. The Environmental Conservation Law of the State of New York is available to the public at local libraries, NYS DEC offices, from private vendors, and at www.dec.ny.gov/regulations/regulations.html on the internet.

Special Regulations for Hemlock-Canadice State Forest

Please remember that this is a very sensitive area because Hemlock and Canadice Lakes are a direct source of public water for the City of Rochester and other communities. As a result special regulations for this state forest were written. See Appendix K: Special Regulations for the 6 NYCRR §190.26, current as of the publication of this Unit Management Plan. They are also available on NYS DEC's web site at www.dec.ny.gov/regs/13943.html#13956 for the most current version.

Proposed changes to 6NYCRR 190.26 – Hemlock Lake, Canadice Lake and Canadice Outlet

To protect this unique water resource, human body contact has, historically, been kept to a minimum. This policy of minimal contact has been beneficial for the public water supply and, presumable, for other components of this resource. Water quality concerns, specifically contamination, dictate that human body contact with water in Hemlock and Canadice lakes, along with Canadice outlet, be held to an absolute minimum. We hope that all users consider their actions in light of this mandate.

It is understood, and accepted, that paddling a canoe or netting a fish may cause some incidental contact. Wading is an issue that was specifically omitted from the regulations for Hemlock Canadice State Forest due to the many people who step in the water to then get into a canoe, kayak or boat. Fisherman or hunters who are wearing waders in the water are not a large concern and has been an accepted practice. Other activities such as SCUBA diving, where there is body contact with the water, are not acceptable. A pet in the water is also not acceptable. However, use of dogs for hunting waterfowl is accepted since the control of waterfowl, especially geese, inhabiting the lakes benefits water quality.

See Appendix K: Special Regulations for the 6 NYCRR §190.26, current as of the publication of this Unit Management Plan. They are also available on NYS DEC's web site at www.dec.ny.gov/regs/13943.html#13956 for the most current version.

The following are proposed changes to 6NYCRR 190.26, a process that is separate from the Unit Management Planning process:

- Subsection 4) add - SCUBA dive and float
- Subsection 12) add - and kept out of the water except when lawfully hunting game
- Subsection 15) Wade, except when accessing a boat/kayak/canoe or when wearing wader/hip boots.

State Laws

- Environmental Conservation Law
- State Finance Law
- State Historic Preservation Act (SHPA) - Article 14 PRHPL
- State Public Health Law – Title 10 Section 125.1

Environmental Conservation Law (ECL)

- ECL Article 8 - Environmental Quality Review
- ECL Article 9 - Lands and Forests
- ECL Article 11 - Fish and Wildlife
- ECL Article 15 - Water Resources
- ECL Article 23 - Mineral Resources
- ECL Article 24 - Freshwater Wetlands
- ECL Article 33 - Pesticides
- ECL Article 51 - Implementation of Environmental Quality Bond Act of 1972
- ECL Article 71 - Enforcement

New York Code Rules and Regulations (6NYCRR)

- Title 6
- Chapter I - Fish and Wildlife
- Chapter II - Lands and Forests
- Chapter III - Air Resources
- Chapter IV - Quality Services
- Chapter V - Resource Management Services
- Chapter VI - State Environmental Quality Review
- Chapter VII- Subchapter A
  - Implementation of EQBA of 1972
- Chapter X - Division of Water Resources

NYS DEC Policies

- Strategic Plan for State Forest Management
- Public Use
- Temporary Revocable Permits
- Motor Vehicle Use
- Timber Management
- Unit Management Planning
- Pesticides
- Prescribed Burns
- Inventory Guidelines
- Acquisition
- Road Construction
- Motor Vehicle Access for People with Disabilities Policy (CP-3)
- Best Management Practices (Water quality)

- General Freshwater Wetlands Permit for Wildlife Management Area Management Activities
- Bureau of Fisheries Fish Stocking Policies
- Archaeological Site Protection
- Archaeological Research
- Volunteer Stewardship Agreements
- Adopt a Natural Resource
- Memorandum of Understanding with BLM for FYO 2004/2005 (leasing of gas wells)
- Draft ATV Policy for Public ATV Access to Recreation Programs
- Special Management Zones
- Plantation Management on State Forests
- Rutting Guidelines
- Retention on State Forests
- etc.

Federal Law

- Americans with Disabilities Act
- Federal Wetland Law 404 - Water quality
- Federal Land Policy and Management Act of 1976 (FLPMA)
- National Environmental Policy Act of 1969 (NEPA)
- General Stormwater SPDES Permit.
- etc.

Summary of Identified Issues

As part of the unit management planning process, NYS DEC is committed to active citizen participation. To achieve that involvement, adjacent property owners, local government officials, media and others potentially interested in the management unit were identified and placed on a mailing list. While public comments are accepted at any time, the formal citizen participation process began in September 2010, when an introductory letter was sent to those identified on the Hemlock-Canadice Unit Management Plan mailing list. This letter briefly described the lands identified in the Unit Management Plan and potential topics to be covered by the plan. It also asked for verbal or written comments related to the Hemlock-Canadice Unit Management Plan. A public scoping meeting was held October 26, 2010, at the Town of Springwater Firehall. Public comments and staff-identified issues have been summarized below. See Appendix A: Public Comment for a complete list of public comments received as a result of the September 2010 meeting announcement letter.

The summary below each category is a combination of all public comments. In many cases, individual comments have been combined. Others are divided into different categories.

Access

Access to Hemlock Canadice State Forest is necessary to ensure both public use and land management. From logging to hunting, bird-watching to maintenance, safe access by all users of the state forests is an essential element of management. It is NYS DEC policy to provide appropriate public and operational access to the Hemlock Canadice Unit. Restrictions on access may positively contribute to the natural character of state lands.

The following is a summary of public comments received related to access:

General Access

Make Hemlock and Canadice accessible for disabled hunters ■ open access paths that are presently locked on each point so that the disabled and elderly can walk to the water's edge ■ provide scooter access of approximately four foot open access ■ allow enhanced access ■ additional access to mobility impaired hunters and fishermen ■ limit access to area north of Canadice Lake.

Do not improve hunting access ■ continue access to boaters with 10hp engines ■ keep public access in its current state ■ make parking areas along the lakes accessible with proper signage ■ additional public access could cause controversy ■ continue access for hikers ■ build accessible rest areas along the shores of both lakes ■ improve parking at launch sites to keep cars off of vegetation ■ maintain parking areas ■ maintain in a natural state, with minimal public access.

Evaluate existing access areas (upland and water) for needed improvements such as drainage, road and or parking surface, and ease of entry and access to the land ■ move gate posts at the entrance to north and south boat launch trail slightly across so motorized scooters for the handicapped would be possible ■ limit access with gates, warning signs and new DEC sign signifying Forest Protection category.

Roads/Trails

No road building ■ no paving ■ no mowing ■ no pavilions ■ or no beach development ■ use existing forest road and trail system ■ do not develop new roads ■ do not allow motorized vehicles on footpaths or access roads ■ do not allow roads to be carved into the surrounding hills or around Hemlock Lake ■ do not improve roads or trails on the north end.

Improve access roads and launch area for emergency rescue operations at south end of Hemlock Lake ■ construct and maintain several loop trails within the unit ■ construct foot path and bike path on east side of lake from end to end (no motorized vehicles) ■ put in a rope bridge across creek at old bridge area ■ improve trails ■ allow 4-wheelers and snowmobile travel ■ maintain current hiking trails ■ continue to mow the footpaths currently mowed by Rochester ■ develop snowmobile trails and cross country skiing trails ■ clear and re-open old lake roads (West Lake road on Canadice).

Hill and Valley Riders, Inc. are working on an existing trail that leads into Hemlock ■ add lakes access roads to the snowmobile trails currently maintained by the Honeoye Snowmobile Club ■ Clarify status of Boat Launch Road from Rix Hill Road South ■ change the speed limit to 40-45mph on Canadice Lake Road from Purcell Hill Road to Johnson Hill Road.

Staff identified issues:

The real property of this Unit is oriented around Hemlock and Canadice Lakes. In order to protect the water supply, the objective at the time of purchase was to obtain continuous ownership of the shoreline of both lakes. As noted elsewhere in this plan, the initial acquisition of these properties was done by the City of Rochester. Points of access to City property were not deemed essential with the property purchase. As a result, large areas, such as along the west side of Hemlock Lake, have no direct access to a public road. Some land parcels were divided, with City purchasing only a required minimum distance of 200' from the lakeshore, but little acreage. Other parcels transferred more acreage, but access to the new City ownership was not obtained. Fortunately, some parcels purchased in their entirety provided access points along bordering state highways or town roads. The lack of continuous road frontage, or strategic points of access, is a limitation to property management.

The City of Rochester had numerous "wire" gates across old access roads/skid trail entrances. Due to safety concerns these were all removed shortly after acquisition by NYS DEC. These locations will be monitored for damage, and NYS DEC reserves the right to construct gates to limit motorized access to state lands when public safety issues occur, or damage to the infrastructure or other resources is likely.

The City traditionally mowed the trails and roads two times each summer, lack of money and staff may limit NYSDEC's ability to continue such frequent mowing. This mowing could be accomplished by partnering with groups under the Adopt-A-Natural-Resource-Program (AANR) or Volunteer Stewardship Agreements (VSA), within the constraints of the rules and regulations for the Hemlock-Canadice State Forest. See also the Cooperative Agreements and Public Recreation and Use sections.

The south end of Canadice Haul Road and adjacent ditch/creek is not stable in its current configuration, and requires frequent maintenance to remove excess gravel deposited in the ditch/creek to stop the water from flowing over and eroding away the haul road.

Vegetation Management

Plant communities are by nature dynamic and ever changing. Young stands of trees get older, and species composition changes with time. Disturbances from fire, wind, insects, disease, timber harvest, and other land use practices have been an important part of the history of New York forests and have determined the composition and structure of todays forests. By applying different forest management or silvicultural practices, land managers can affect change in vegetative types and stages and associated use by wildlife. The production of forest products is a clearly stated goal in the Reforestation Law of 1929 and is consistent with the proposed management actions in the Hemlock-Canadice Unit.

The demand for forest products has been reflected in a steady increase in prices paid for timber in recent years. This is especially true for hardwood sawtimber and veneer. The value of standing red oak sawtimber, for example, has increased six-fold since 1975. The demand for fuelwood and for softwood sawtimber has remained constant. The demand for pulpwood has never been strong in this part of the state. Hemlock-Canadice Unit needs to be managed to prevent damage from fires, insects and diseases. (See also pages 251 through 256 of the Strategic Plan for State Forest Management.)

The following is a summary of public comments received related to vegetation management:

Protection

Give it the highest level of protection, preservation in the forest categories ■ classify the majority of the lands acquired under highest protection category for State Forest ■ do not designate as a Forest Preserve ■ no logging ■ keep it “forever wild” as a wild forest ■ do not allow timber harvest ■ keep Hemlock Lake’s west shores forever wild ■ do not allow logging or log roads ■ preserve and manage the forest so areas planted with pine stands for conservation can revert back to a more natural condition ■ do not allow heavy equipment, saws, harvesting or timbering in proximity of the lakes ■ manage it for wildlife and hunting and use good silvicultural technique ■ link these forests with preserves at the Cumming Nature Center and wildlife management areas south of Honeoye Lake to create an even larger remnant of the original wild forest ■ establish broad no forest management buffer zones around streams and lakes’ shorelines.

Logging

Prepare an inventory of trees and plants for the site ■ inventory stands of apple trees and enhance these areas by pruning ■ identify unique habitats or ecosystems ■ state how “non-forested” tracts of land will be managed.

Continue the City’s policies ■ do not allow fragmentation of the Hemlock Canadice State Forest ■ limit timber harvest ■ use sustainable logging ■ use best management practices during timber harvest ■ control invasive plants. The large mature specimen trees associated with the wetland/ upland southeast of the Cleary Road / Blank Road intersection should not be considered for harvesting.

Allow discretionary wood cutting ■ no clear cutting of forests should take place ■ continue to manage lands using a variety of silvicultural techniques ■ severely restrict logging on Hemlock lands ■ lease land for maple syrup production ■ manage as an uneven-aged northern hardwood forest ■ set long rotations to achieve a mature forest at time of harvest ■ use a 2000 yard set back from the lakes and

watershed streams and no logging on slopes greater than 10 degrees ■ ensure forester is onsite during timber harvest.

Develop cutting unit sizes for even-aged managed stands that will provide the greatest benefits to the wildlife resources ■ use even-aged forest management with an emphasis on regeneration of aspen stands using short rotations to address the habitat needs of ruffed grouse, American woodcock and other species ■ control logging to increase the wildlife diversity ■ logging should be restricted from mid- to late March to prevent an impact on migrating spotted salamanders at the north at the northwest corner of Hemlock Lake ■ do not overlook the need to have pre-green up quality nest site habitat available for wild turkey hens given the timing of their egg laying in early-mid April for first nest attempts.

Use herbicides, prescribed fire, even and uneven aged timber harvest, and forest thinning ■ do timber stand improvements ■ selectively harvest mature trees and sell timber; use money from sales to improve Hemlock Canadice unit ■ timber management to 480a standard.

Create a participatory educational working forest of 100 acres; it would include experiments and harvests under the direction of an accredited forester, planting and pruning, work on wildlife habitat, wetlands conservation, and trails; maple syrup program, deer exclosures and wildlife viewing stations ■ set aside areas that prohibit logging, gas well drilling or other similar resource degrading use ■ leave a few, small acreages of "forever wild" forest ■ DEC may not be able to oversee timber harvest adequately ■ do not add layers of public process before administering timber harvesting operations ■ use existing forest access roads for timber harvesting.

Agriculture

Permit continued agriculture to benefit the local economy ■ provide wildlife habitat ■ manage them for grassland management to benefit bird species ■ minimize fertilizer contamination and ensure low erosion ■ provide quality grass and legume cover in these areas will enhance insect abundance and attract turkey broods during late spring and early summer.

Invasive Species

Include plan to control invasive species ■ include invasive vegetation, like Russian Olive, management ■ save the ash and oak trees that are being stripped of leaves every year by caterpillars.

Staff identified issues:

Because so much of the Hemlock-Canadice State Forest is in forest vegetation, maintaining areas of open grass and brush, as well as the creation of early successional seedling-sapling stands, is necessary to ensure habitat requirements and continued forest production. Unique plants need to be encouraged and protected, as well as to be aware of exotic and invasive plant species, such as giant hogweed, zebra mussels and purple loosestrife, etc.

There are a lot of ash trees on Hemlock-Canadice State Forest. If Emerald Ash Borer (EAB) arrives and kills all of them, the forest composition will be significantly changed, especially in the forested wetlands. NYS DEC staff will monitor the situation, and follow the best available science, but ultimately there may be little that can be done, except, watch and see what happens.

Water Resources

The Environmental Conservation Law (ECL) dictates that the State Forests within the Hemlock-Canadice Unit be managed for watershed protection. This is also clearly consistent with sound conservation practices and public desires. Best Management Practices for water quality are used for all silvicultural practices on state lands. These require specific conservation practices which protect soils and water quality during timber harvest. Well managed water resources have multiple benefits, including safe drinking water, quality fish and wildlife habitats, aesthetically pleasing sites, ground water protection, and flood water retention. (See also pages 107 through 114 of the Strategic Plan for State Forest Management.)

The following is a summary of public comments received related to water resources:

Ensure that water quality is primary use and other uses such as recreation are secondary and evaluated as to its impact on the water supply ■ NYS forest management plan should be written with protection of drinking water as the primary goal ■ protect the upland watershed as the source of drinking water for over 200,000 people ■ filtration of Hemlock water by Hemlock plant is not enough to ensure safe, pure drinking water for Rochester in the future ■ use Rochester city water quality codes as the primary standard for protection and multiple use of the watershed ■ field inspect wetlands for boundary accuracy ■ provide additional wetland enhancement and creation ■ control erosion in stream and gullies that feed both lakes ■ use erosion control, retention ponds and wastewater treatment for water management.

Staff identified issues:

Staff identified the need to continue to follow Best Management Practices for water quality, comply with Special Management Zone rules, as well as the additional special §190.26 regulation (see Appendix K: Special Regulations) that apply to Hemlock-Canadice State Forest.

Wildlife and Fish Management

The Division of Fish and Wildlife is charged by Environmental Conservation Law to protect and maintain New York's rich and diverse ecosystems. The amount and quality of different habitats will result in different amounts and health of the wildlife and fish species living in them.

The following is a summary of public comments received related to wildlife and fish management:

Identify rare, threatened, and endangered species and habitats present on the state forest and address management actions to protect ■ enhance these resources using the Natural Heritage Program and other competent sources of information ■ field reconnaissance surveys for biological inventories should be set on a schedule.

Wildlife habitat preservation should take precedence over hunting and fishing demands ■ turn the area north of Canadice Lake into an animal and bird sanctuary ■ Keep north end of Canadice Lake outlet a very limited access and wildlife preserve area ■ do not allow diminishment of beavers on the north side of the dam at Hemlock Lake ■ expand protection of the bald eagle to a 1000 foot setback

from the water's edge of both lakes ■ control deer and bear populations ■ protect predatory birds such as eagles and hawks ■ protect songbirds.

Use an ecosystem management style using antler restriction ■ hunting should be allowed to reduce large animal populations to ecologically healthy levels ■ stock more in both lakes ■ open north end fishing access ■ allow fishing, walleye stocking and a variety of fish for anglers ■ do not allow commercial or charter fishing.

Staff identified issues:

Staff identified the need to actively manage threatened and other species and associated habitats through enforcement, habitat management, monitoring, and research, and to comply with guidance concerning High Conservation Value Forests (HCVF) found in the Strategic Plan for State Forest Management. This includes the historic and continued presence of bald eagles, stocking of game such as pheasants and fish, monitoring of fish for toxic substances, and monitoring and dealing with exotic invasive species such as emerald ash borer.

Public Recreation and Use

One goal of DEC management is to provide suitable opportunities for the public enjoyment of compatible recreational pursuits in a natural setting. DEC is charged under Environmental Conservation Law with guaranteeing that the widest range of beneficial uses of the environment is attained without unnecessary degradation or other undesirable or unintended consequences. The public has an undeniable stake in identifying both beneficial uses and undesirable consequences. The recreational use of State Forest land is a clearly stated goal in the Reforestation Law of 1929 and is consistent with the proposed management actions in the Hemlock Canadice Unit Management Plan.

The demand for open space is increasing as well as a demand for access to public land for non-consumptive uses of the forest environment such as nature study, cross-country skiing, bicycling, primitive camping, and hiking. The demand for consumptive use of the forest resources such as hunting, fishing and trapping remains constant.

The following is a summary of public comments received related to public recreation and use:

ATV/Snowmobile Use:

Do not allow snowmobiles in the forest for recreational purposes ■ allow snowmobiles on property ■ allow 4 wheelers ONLY to retrieve deer ■ do not permit ATVs or snowmobiles on or near the lake ■ no jet skis or water skiing ■ a few snowmobiles would be helpful for cross country skiing to keep snow packed ■ no snowmobiles, ATV's or recreation vehicles.

Boating:

Allow boats to remain chained and locked, overnight, off shoreline ■ end the practice of storing boats at the boat ramp locations ■ keep current boating restrictions ■ restrict the type of craft and boat size ■ boating on the lake should be restricted to canoes, kayaks, and fishing boats with electric motors with the long term goal to remove motorized access to the lakes for recreation ■ allow canoes and kayaks, no sailboats ■ maintain horse power limit ■ prohibit motor boats on one of the two lakes and

create a "paddle only" lake ■ no speedboats, water ski, or float planes ■ keep current 16ft ■ 10hp boat restriction ■ allow some allowances of minimal water contact while launching self-propelled craft ■ eliminate length restrictions on self propelled craft ■ do not allow engines on Canadice Lake ■ limit engine size to 25hp on Hemlock Lake ■ restrict size of boat engines ■ restrict sound level of motors ■ no boats with motors.

Boat Launch:

Install a second boat launch on Canadice Lake ■ grade and level a larger area for boat, canoe, sailboat, or kayak launching ■ make two-way traffic access launch sites ■ recent road improvements at the north end of the Hemlock launch made it difficult to park, backup, and walk for purposes of launching ■ allow small boat and canoe storage and make a provision for a waiver or variance through the Commissioner to use with controls such as "within 500 feet of the launch sites" or "set back from the waters high water edge by 25 feet."

Do not improve boat launches ■ do not need an elaborate boat launch ■ improve boat launch for deep water access at south end of Hemlock Lake for emergency and recreational use ■ add a boat ramp to reduce silt and mud from entering lake ■ provide a separate launch areas for trailer boats and canoe/kayak users ■ canoe and kayak uses "tie up the launch" taking too long to load and unload ■ enforce the designated canoe and kayak launch area at the south end of Canadice Lake.

Water depth at the launch on both lakes needs to be deepened ■ move the boat launch at the south end of Hemlock Lake north a few hundred yards into deeper water ■ design separate boat and canoe ■ kayak launches with a park like setting with picnic tables and chairs at the canoe site ■ build a boat dock ■ establish a daily launch fee ■ establish mooring docks ■ piers for boaters at the launch sites.

Camping/picnicking:

Do not allow public camping, tent /trailer/ etc. ■ allow shoreline campfires using dead wood, in a pit less than 4 feet in diameter ■ improve pavilion ■ allow campfires and camping ■ allow limited camping (campfires, etc) in specific places such as the head of Canadice Lake ■ continue the no camping ■ no campfire rules ■ no large picnics ■ allow limited primitive camping in certain areas, at least 150 from the lake (similar to some reservoirs.) ■ allow picnic privileges with a take in - take out rule, no trash cans ■ if primitive camping is permitted, ensure proper law enforcement and maintenance which would not be affected by budgetary concerns ■ allow picnicking in Hemlock North Park ■ do not develop (no restrooms, campsites, etc.)

Hiking/Biking:

Construct bridges over the ravines for hiking purposes and to convert the eastern side into a hiking trail after the dirt road ends ■ construct a multi-use hiking and mountain biking trail along the hillside on the east side of Hemlock Lake ■ allow only passive recreation use such as trails for hiking and skiing ■ develop former road beds surrounding the lakes as trails for walking and bicycling ■ create a trail from the Village of Livonia to Hemlock Lake and circle the lake ■ expand the Canadice trail used for bikes to the east side of the lake ■ separate hunting and hiking trails ■ maintain hiking trails and develop new trails ■ promote more multi-use trails and or water access ■ do not mow the existing foot trails in the forest ■ put in a bike lane on the east roadside ■ add a bike lane on Canadice Lake Road ■ segregate foot, bike, and ski trails from trails for motorized vehicles ■ use the Larry Canute Memorial park as the primary trail head ■ connect north and south boat launch trails on Hemlock Lake ■ use Best

Management Practices for all trail construction and maintenance ■ logging roads should be used as hiking trails ■ do not allow mountain biking ■ allow mountain bikes permitted on hard pack trails ■ extend Rob's Trail to Hemlock Lake ■ create no new trails.

Horses:

Allow horseback riding on certain designated trails ■ segregate horse trails from other trails ■ open up Hemlock-Canadice for horseback riding where the terrain is suitable ■ form a linking trail system for horseback riding and hiking ■ do not allow horseback riding.

Hunting:

Use the land for hunting and fishing ■ add hunting restrictions and that hunters be aware of houses bordering this state land ■ restrict some state land on both lakes for hunting in areas where residents live and recreational parties have cottages/camps ■ not "all" the land should be open for "firearms" hunting due to safety issues ■ allow bowhunting only in certain areas ■ it is not safe to allow public hunting onto land that is only 200 feet "deep" ■ shotgun deer hunters need to be respectful of private, posted property ■ allow bow hunting and restrict gun to areas by permit only ■ allow hunting to control deer population ■ hunters should remove guts ■ maintain hunting and fishing without requiring special permits like are needed in some state parks ■ create wildlife safety zones in a few selected areas where hunting pressure and land usage create safety hazards for land owners during deer season ■ allow bow hunting only on both lakes ■ do not put any special hunting or fishing regulations in place other than those already in place to protect public drinking water ■ improve the safety conditions during deer season ■ prohibit hunting within 100 yards of designated trails ■ create "off limits" areas for other recreation activities during hunting season.

Swimming:

Maintain the no swimming regulations ■ do not allow swimming or any body contact with water ■ ban swimming and immersion in the water and enforce it ■ allow swimming be allowed with some restrictions (e.g. not within ½ mile of boat launches.) ■ allow swimming in Canadice Lake.

Enforcement:

Enhance enforcement ■ DEC needs to patrol the property on occasion to keep violators at bay ■ state how enforcement will be carried out ■ clarify if the city or state will enforce the regulations ■ need more patrolling during hunting season ■ train volunteer DEC rangers to help maintain forest ■ establish a citizen based Watch Dog Group to provide stewardship and protection of the area ■ increase staff to monitor and protect upland watershed lands ■ explore alternative stewardship for wildlife monitoring, trail maintenance and citizen enforcement ■ contract with City of Rochester for monitoring and enforcement.

Other:

Continue the free use with permit ■ keep all rules and regulations set forth by the city of Rochester ■ use the St. Regis Canoe Area as a model from which to create an even wilder recreational resource ■ limit recreation consistent with the purposes of the State Forest vs. State Park ■ clarify what is meant that dogs must be "controlled" or on a leash ■ post signs prominently ■ make brochures available at kiosk ■ add kiosk at south boat launch ■ allow public to cut fallen trees for fire wood in managed and

supervised cut zones ■ regulate all allowed human activity for absolute minimal impact ■ mark state land at intervals ■ put up a port-a-potty at boat launch and an outhouse on trail ■ establish and encourage an active nature education for area ■ establish an easier way to find and navigate Recreation section of the NYS DEC website to include downloadable .PDF file type maps.

Staff identified issues:

There is clearly a lot of interest in the recreation potential for this Unit. Balancing the desires of the different, and often conflicting, user groups with the requirements for clean public water, healthy ecosystems, habitats, and timber production will be challenging.

The City traditionally mowed the trails and roads two times each summer, lack of money and staff may limit NYSDEC's ability to continue such frequent mowing. This mowing could be accomplished by partnering with groups under the Adopt-a-Natural-Resource Stewardship Program (AANR), Volunteer Stewardship Agreements (VSA) or Temporary Revocable Permit (TRP), within the constraints of the rules and regulations for the Hemlock-Canadice State Forest. See also Cooperative Agreements and Access sections.

Oil and Gas Leasing

Under Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law NYS DEC has leased other state lands on behalf of the State for exploration, production and development of oil and gas on State lands.

The following is a summary of public comments received related to oil and gas leasing:

Concerns and opposition to mineral extraction/drilling/hydro fracturing/gas leasing/transmission /bulldozers/oil or natural gas exploration /commercialization or resource development on state forest lands within the Finger Lakes region ■ degradation of wildlife and recreational resources and increase susceptibility to invasion by non-native species and diminish water quality and lead to fragmentation of the forest.

Staff identified issues:

It is NYS DEC policy to recommend excluding operations in surface areas with sensitive habitats (stream banks, wetlands, steep slopes, rare communities etc.) or intensive recreational use.

Cooperative Agreements

State funding to optimally maintain the Unit often falls short of what is desired. There is a need to identify additional funding and actively search out cooperative agreements and partnerships to maintain roads and trails and other facilities in the Hemlock-Canadice Unit.

NYSDECs formal cooperative programs, called the Adopt-a-Natural-Resource Stewardship Program, and the Volunteer Stewardship Agreements, encourages individuals and groups to undertake activities that meet management needs of state owned natural resources. Multiple benefits of such partnerships have been identified; serving as a means to complete work that helps preserve, maintain and

enhance natural resources at minimal cost to the New York State. It is also an opportunity for organizations, groups and individuals to show willing support for conservation efforts, large and small. Such efforts may involve the cleanup of vandalism, litter pick up, establishment or maintenance of trails, providing interpretive services for school groups and other citizens, management of fish and wildlife habitats and other positive benefits to the site and natural resources.

As of the writing of this plan there are currently two individuals and three volunteer groups under Volunteer Stewardship Agreements or Adopt-a-Natural-Resource agreements; The Nature Conservancy (TNC) – Rob's Trail; Hill and Valley Riders (aka HVR Snowmobile Club) – Hemlock Snowmobile Trail; and Springwater Trails – Pine, Spruce Loop and Redbud Trails.

The following is a summary of public comments received related to cooperative agreements:

Connect the lakes and the villages of Springwater and Hemlock with trails ■ cooperate with the Town of Springwater for trail connection ■ explore alternative stewardship for wildlife monitoring, trail maintenance and citizen enforcement.

Staff identified issues:

Work with existing VSA and AANR groups, and encouraging other groups to sign up for Volunteer Stewardship Agreements (VSA) activities, within the constraints of the rules and regulations for the Hemlock-Canadice State Forest.

Open Space Conservation

New York State has been a leader in recognizing the value of open, undeveloped land and began a formal Open Space Conservation program in 1990. The comprehensive Open Space Plan has been revised every three years since 1992 to adapt to shifting conservation priorities. In June 2009, Governor Paterson approved a plan prepared by DEC and the Office of Parks Recreation and Historical Preservation, entitled, "2009 New York State Open Space Conservation Plan." It provides an integrated statewide strategy for land conservation by sustaining New York's ecological integrity and rich biodiversity. NYS DEC will consider the purchase of selected parcels from willing sellers when funding becomes available.

The following is a summary of public comments received related to open space conservation:

Acquire additional lands in the watersheds of Hemlock and Canadice Lakes as funding and opportunities permit, especially where holdings are sparse ■ expand this holding to include greater acreage from the lake edges and other watershed lands ■ expand the State Forest by an additional 5000-8000 acres ■ extend conservation practices to private lands on Bald Hill ■ DEC should have right of first refusal for purchase of private land ■ DEC should be funded to purchase selected properties of strategic importance that expand the State Forest, so it ultimately connects Canadice and Hemlock lakes ■ sign over property for a trade on a tax break ■ acquire more land or protecting bordering lands through conservation easements ■ purchase more land to the east side of Canadice Lake to protect the water quality and improve bird habitat ■ acquire additional land to connect Hemlock and the Bristol Hills' Reynolds Gully watershed ■ south and east side of Canadice Lake where City's ownership is narrow.

Continue to pay taxes to Livonia, Conesus, and other towns on the acreage now in the state's ownership ■ allow landowners contiguous to the Hemlock watershed and state forest to donate their land in exchange for a tax write off or some other form of tax relief ■ continue the "PILOT" [payment in lieu of taxes] program for tax payments ■ DEC should provide incentives to landowners to develop easements ■ buy out existing gas leases or purchase gas exploration easements ■ have a tax benefit for conservation practices (similar to 480a).

Staff identified issues:

Large areas of the Unit, such as along the west side of Hemlock Lake, have no direct access to a public road. Some land parcels were divided, with the City of Rochester purchasing only a required minimum distance of 200' from the lakeshore, but little acreage. Other parcels transferred more acreage, but access to the new City ownership was not obtained. Fortunately, some parcels purchased in their entirety provided access points along bordering state highways or town roads. The lack of continuous road frontage, or strategic points of access, is a limitation to property management. Certain parcels will be considered for purchase if they improve access; consolidate public ownership by eliminating in holdings; enhance recreational opportunity; protect significant ecological area, including HCVFs; or resolve other issues. It should be clearly understood that NYS DEC intends to acquire these parcels from willing sellers as funding becomes available.

Aesthetics

In addition to providing open space and a place to experience wildlife and wild land, public lands should also be pleasing to the eye and soul. Scenic vistas, the use of natural materials, and attention to quality design and maintenance are important components of effectively managing the Hemlock Canadice Unit. The challenge is to attract users to the site without destroying what has drawn them there in the first place. There is a strong demand for natural areas which present visually appealing landscapes.

The following is a summary of public comments received related to aesthetics:

Hemlock and Candice must be protected from private development ■ protect the viewscape ■ do not allow industrial (cell towers, windmills, radio towers) or commercial development on watershed lands, water, or resources above, upon, or below these current NYS owned or regulated lands ■ post rustic-looking signs at Canadice Lake.

Staff identified issues:

Staff recommends that garbage pickup continue from state land, and encourage "Pack it in, Pack it out" and "Leave no trace". At acquisition from the City of Rochester there where large numbers of boats that have been left on the shores of the two lakes for decades, this is no longer allowed under NYS regulations, and the boats were removed in 2011.

Overall Management

The Hemlock-Canadice Unit Management Plan is different than most Unit Management Plans, in that Hemlock-Canadice State Forest was acquired by NYS DEC in 2010, however the property had been in public management for over a century under the City of Rochester's control. As such, there is no

history of management by NYS DEC, but the public has a history of expected use and overall management.

The following is a summary of public comments received related to overall management:

Use the Natural and Historic Preservation Area category as it well describes the unique nature of the Hemlock-Canadice lands ■ maintain a strong partnership with the City to protect the water ■ include a map that provides a better perspective of where in NY State the area is located ■ keep 6NYCRR and 190.26 parts A and B in their entirety ■ create a Conservation District to provide an integrated approach in managing the state forest and its contiguous lands with the focus on Hemlock Canadice watershed ■ form a Little Finger Lakes Management Committee to recommend management policy to regional DEC ■ create a comprehensive master plan for district with land use designation and zoning in two counties plus two more towns to include woodland, water, and wildlife and agriculture management ■ update the book "Hiking the "Little Finger Lakes" ■ keep it fee free ■ include a schedule and description of the specific improvements so projects could be completed as money becomes available ■ re-visit the plan every 2 to 5 years ■ the meeting was poorly timed because it was during hunting season ■ post notice of future meetings.

Staff identified issues:

This plan does not, and cannot, apply to private land beyond the borders of the Hemlock-Canadice State Forest. The changes in rules and regulations between the different ownership of the City of Rochester and NYS DEC have resulted in some confusion for users. As stated earlier, balancing the desires of the different, and often conflicting, user groups with the requirements for clean public water, healthy ecosystems, habitats, and timber production will be challenging.

Cultural Resources and Historic Preservation

A walk in the woods will often reveal objects from past users of the area. These artifacts, such as stone walls, glass bottles or flint arrowheads should be left where they are. The illegal removal or destruction of historic or archaeological resources is a continual problem.

The following is a summary of public comments received related to cultural resources and historic preservation:

No public comments were received related to cultural resources and historic preservation.

Staff identified issues:

Under City of Rochester ownership the settlement known as Dixon Hollow has been studied by archeology classes led by Prof Krumrine from St. John Fisher College. This has continued under NYS DEC, after the required permits from NYS DEC, New York State Museum and the Office of Parks, Recreation and Historic Preservation were attained.

GOALS AND OBJECTIVES

Vision

The vision of this plan is to ensure the biological integrity, improvement and protection of the Hemlock-Canadice Unit. This shall be done within the multiple use concept of management, which strives to serve the needs of the people of New York State by providing a broad based, biologically diverse ecosystem. Management will be considered over a broad geographical area, not only to ensure the biological diversity and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide, including the protection of the public drinking water for the City of Rochester and other communities.

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 legal mandate enabling the Department of Environmental Conservation to manage state forests for multiple use is located in Article 9, Title 5, of the Environmental Conservation Law. Under this law, state forest lands shall be "forever devoted to reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber, and for recreation and kindred purposes".

As stated earlier, it is the policy of NYS DEC to manage state forests for multiple use to serve the needs of the people of New York State. This management will be carried out not only to ensure the ecological enhancement and protection of the forest ecosystem, but also to optimize the many benefits to the public that forest land provides. Management of state forests will be directed toward those activities which will enhance the resources of the land. They will be carried out in a manner which reflects the land's capability for these uses and strives to optimize the benefits of state forests to the public.

NYS DEC lands within Hemlock-Canadice Unit are unique compared with most private properties in the surrounding landscape. Private landowners have differing management objectives and property size is generally much smaller. State lands provide large expanses open to public recreation. State land management planning horizons extend over a very long time frame. This allows for a commitment to provide healthy and diverse ecosystems and to manage and enhance unique vegetative types.

To achieve the vision, this plan will provide specific management goals with measurable planning objectives. The objectives will be augmented and supported by a plan of action and a timetable. We have chosen, for planning purposes, to separate these into categories, while recognizing that they are interrelated.

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 NYS DEC incorporates accessibility for people with disabilities into the planning, construction and alteration of recreational facilities and assets supporting them. This Unit 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, NYS 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 the Hemlock-Canadice Unit Management Plan, to determine appropriate accessibility enhancements. NYS DEC is not required to make each of its existing facilities and assets accessible so long as the NYS DEC's programs, taken as a whole, are accessible.

New facilities, assets and accessibility improvements to existing facilities or assets proposed in this Unit are identified in several of the tables found in this chapter.

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

Management Objectives and Actions

For easier reading, the remainder of this chapter has been divided into sections by topic, although admittedly many objectives and/or actions are interrelated and could be found under more than one section.

Each topic includes a Management Objectives and Actions table, in which each action has been given a priority code and an estimated cost for the 10 year plan period.

Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Please remember that this is a very sensitive area because Hemlock and Canadice Lakes are a direct source of public water for the City of Rochester and other communities.

Estimated 10 year Cost:

The figures for the 10-year costs are *estimates* for budgetary planning purposes. Actual costs are determined at the time the action takes place. As required by New York State Policy, lowest acceptable bid will be used for all state contracts. Budgeted amounts are not directly allocated to these individual action costs, and actual amount received is likely to be much less than the total amounts indicated in the table. See the Funding section on page 50 for further discussion on budgeting for this and other State lands under NYS DEC management.

Priority codes:

C=Critical, Necessary to ensure public health and safety; To stabilize structures so as to not lose the money and time invested in them; Mandated by legislation.

H=High, Necessary for public use, and/or to improve habitat or other natural resources. Often this will be for new projects.

L=Low, Important for the enhancement of public use, habitats or other natural resources.

Access

The management goal for access is to maintain an infrastructure system sufficient to manage the Unit's natural resources and provide for public use of the area. Access is a basic necessity for both public use and land management. The existing public road infrastructure provides adequate public access throughout most of the Unit.

In order to protect the water supply, the objective at the time of purchase by the City was to obtain continuous ownership of the shoreline of both lakes. Points of access to the property were apparently not considered essential with property purchase. As a result, large areas, such as along the west side of Hemlock Lake, have no direct access to a public road. Some land parcels were divided, with City purchasing only a required minimum distance of 200' from the lakeshore, but little acreage. Other divided parcels transferred more acreage, but access to the new City ownership was not obtained. Fortunately, some parcels purchased in their entirety provided access points along bordering state highways or town roads. The lack of continuous road frontage, or strategic points of access, is a limitation to property management.

Access is also limited by terrain. The narrow, lineal property on the sides of both lakes transects a large number of intermittent streams, many of which have created gullies of varying degrees. Some gullies cannot be crossed by a simple, conventional trail. Slope is also a factor as approximately one-third the property exceeds slopes of 25%.

Roads

Some portions of the town roads are seasonal and are not maintained for winter travel. Other roads have been officially abandoned; others have not been maintained in years. This lack of maintenance means large portions of this State Forest are not accessible, except by foot. Some have continued to have vehicle traffic, others have not. (When a road is officially abandoned it may revert to whoever owns the property it crosses, subject to any outstanding deed restrictions.).

Two fords are used for crossing streams within the Hemlock Canadice Unit, both on roads presumed to have been abandoned. The first is on the northern section of the North Hemlock Haul Road, south of the gate at the north boat launch. The second is on the South Hemlock Haul Road, north of the gate at the south launch. Traffic on both of these sections is light (in terms of vehicle numbers) and intermittent in nature. The fords are fully appropriate in these cases.

The southern end of Canadice Haul Road and its adjacent ditch/creek is not stable. The creek crosses under Canadice Lake Road, and then makes three right-angle turns in very short order. The water gains speed, until the last turn where it flattens out, making a sharp left turn into the wetland and in the process

deposits most of the gravel the water had been carrying. That gravel fills the ditch/creek and needs to be dug out on a regular basis or soon the water will be flowing across the haul road. This is especially a problem during storm events. As of the writing of this plan, the final solution has not been decided on, but changing the path and/or flow of the creek and/or hardening and/or raising the road level, will be needed to avoid constant maintenance and/or losing the use of that section of Canadice Haul Road.

As previously noted in the right of way section, the DEC owns an administrative access right of way extending from Marrowback Road (a town highway) to the western boundary. Please see Rights of Way, Concurrent Use & Occupancy, and Deeded Exceptions, on page 41 for a full discussion of this right of way.

Parking

In some areas there is a need for additional parking to alleviate safety problems which occur when users park on existing road right-of-ways.

There are 21 parking areas on Hemlock-Canadice State Forest, ranging in size from one vehicle to 20 vehicles. See Appendix M: Maps for their location and names. Many of them could use a fresh layer of gravel or the addition of rock curbing. With the exception of the North Canadice Lot and the Canadice Overlook lot, all of the parking areas along Canadice Lake Rd should be evaluated for redesign to create additional safer space for parking.

Area Signs and Gates

As this is a new state forest, area signs are newly erected at the following areas:

- Mission Road – south of Blank Road intersection
- State Route 15A – south of the hamlet of Hemlock
- State Route 15A – north of the hamlet of Springwater
- Canadice Lake Road – south of the intersection with Canadice Haul Road.
- Purcell Hill Road – near intersection with Canadice Haul Road and Parking Lot.

As these are newly constructed signs, with very rugged standards, it is to be expected that they will last through this plan period.

Construction of gates restricting motor access to haul roads and access trails will continue. The costs to upgrade haul roads for public access are prohibitive. Access restrictions are needed to maintain the "backwoods character" of the land as well as protecting sensitive areas.

The City of Rochester had numerous “wire” gates across old access roads/skid trail entrances. Due to safety concerns these were all removed shortly after acquisition by NYS DEC, these locations will be monitored for damage, and NYS DEC reserves the right to limit access to state lands when public safety issues occur, or damage to the infrastructure or other resources is likely.

The City of Rochester’s “farm” gates and some of the “wire” gates have been replaced with standard NYS DEC saloon style gates. This style has two sets of gates and hinges, each gate is smaller which reduces the weight on each post and minimizes the issues caused by the post shifting from the weight. On trails or roads with high recreational use a gap will be left between the two gates allowing for easier access by users, but still limiting motor vehicle access.

Boat Launches

Four boat launches provide access to Hemlock and Canadice Lakes, two on each lake. For further information on these launches see Public Recreation and Use on page 100 and Recreation on page 42.

Boundary Line

There is approximately 80 miles of boundary line for this unit, including 22 miles of shoreline. In addition there is approximately 24 miles of road frontage on public roads. Road frontage on public roads is generally signed but not painted.

Current policy is to repaint the blazes and re-sign these boundaries every five to ten years to clearly delineate state forest lands. Given the amount of boundary to maintain, staff is suggesting that 20% of boundary be painted each year. Road frontage should be posted as needed. Signs along the roads tend to disappear more quickly than boundary signs out of the public eye. Hence, the road frontage signs will probably need more frequent replacement.

Staff identified several known issues with boundary line encroachment or trespass. A re-survey of boundaries in question will need to be done in these cases, and will serve as first priority for the survey crew's time.

Table 9: Management Objectives and Actions for Access

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Identify need for additional access	1.0	Evaluate site(s)	As Needed	H	40 Work Days
		1.1	Receive public comments	On-Going	C	40 Work Days
		1.2	Solicit public comments	Every 10 yrs (as part of the UMP process)	C	14 Work Days
2	Maintain roads	2.0	Inspect culverts	Annually or after weather damage	L	50 Work Days
		2.1	Replace culverts on about a 25 year interval, or when failure occurs.	Average of 5 culverts per year or after weather damage	C	$4,000 per culvert
		2.2	Public Forest Access Roads - grade and maintain surface.	Minimum of every 2 years, or after weather damage.	H	$2,000 per mile

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
		2.3	Haul Roads - grade and maintain surface.	Minimum of every 5 yrs, or after weather damage.	H	$2,000 per mile
		2.4	Mow road right of way	At least annually.	H	200 Work Days
		2.5	Canadice Haul Road – stabilize the creek adjacent to the south end of the road.	As soon as possible	C	Unable to predict costs.
3	Construct roads	3.0	None proposed	Not in this plan period	L	
4	Construct additional parking	4.0	Evaluate and redesign parking lots per above.	One per year	L	$7k to $10k per lot
5	Maintain parking areas	5.0	Litter removal	At least annually.	C	60 Work Days
		5.1	Maintain all parking areas	Every 5 yrs	C	$30,000
		5.3	Maintain informational signs	Annually	C	$6,000
		5.4	Mow all parking areas	Annually	H	25 Work Days
6	Control access	6.0	Locate and construct gates per above.	Year 1 and 2	C	5 Work Days and $6,000 per gate
		6.1	Maintain gates and signs	Annually	H	10 Work Days
		6.2	Enforce NYS DEC policies	On-Going	C	
7	Identify state property boundary lines.	7.0	Paint and post boundaries - 20% per year.	Annually	H	27 Work days and $10,000
		7.1	Identify and resolve boundary encroachment issues.	ASAP	C	Unable to predict costs.
		7.2	Survey and blaze boundaries.	When encroachment issues are discovered, or line evidence disappears.	C	Contracted out - $4,500 to $5,500 per mile. NYS DEC surveyors – 12 to 15 work days per mile

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
		7.3	Repair and replace area signs as they are vandalized or fade.	On-Going	L	$500 per sign

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

There may be additional work in this category that is not foreseen at this time. Development of new or additional facilities will only be under taken after due consideration in the Unit Management Planning process.

Timber and Vegetation Management

Plant communities are, by nature, dynamic and ever-changing. Young stands get older and species composition changes with time. Management of vegetation can accelerate or slow down these inevitable changes in vegetative types and stages. The Hemlock-Canadice Unit Management Plan strives to maintain a balance of vegetative types and vegetative stages, the purpose of which is to enhance species diversity and abundance.

Hemlock-Canadice State Forest surrounds Hemlock and Canadice Lakes, which are direct source of public drinking water for the City of Rochester and other communities. A healthy, diverse forest will provide long-term protection for the water supply, and resist disturbances that could impact water quality. It will be resilient from the disturbances that will inevitably occur.

Staff has identified management objectives which strive to maintain a balance of vegetative types and stages. This balance is intended to enhance biodiversity, produce healthy and sustainable forest resources and enhance wildlife habitat diversity.

The Hemlock-Canadice Unit is characterized by a variety of vegetative types. Northern hardwood forests predominate on the north facing slopes and oak-hickory forests occupy the south facing slopes. Past man-made disturbances have created even more diversity. Many of the formerly agricultural fields for example have reverted back to “pioneer” forest types comprised of aspen, red maple and white pine.

The identification of large, unfragmented forested areas, also called matrix forest blocks, is an important component of biodiversity conservation and forest ecosystem protection. One of those forest blocks is adjacent to the Hemlock-Canadice Unit Management Plan Area. See Chapters 2 and 6 of the Strategic Plan for State Forest Management at www.dec.ny.gov/lands/64567.html.

The identification of large, unfragmented grassland areas, also called Grassland Focus Areas, is an important component of biodiversity conservation and grassland ecosystem protection. One of these Grassland Focus Areas overlaps with the north and west side of Hemlock-Canadice State Forest.

The identification of large, unfragmented wetlands is an important component of biodiversity conservation and wetland ecosystem protection. See the Watershed and Wetlands Protection section for additional information.

Commercial Timber Sales

The primary method used to influence the timber and vegetation on State Land is the commercial sale of timber. See the current timber and other vegetation in Table 7: Vegetative Types and Stages for the Hemlock-Canadice Unit, is located on page 30 in the Timber and Vegetation section.

Timber resources include hardwood and softwood sawtimber, pulpwood, and firewood. Some of the factors affecting timber demand on the Unit include timber value, distance to markets, timber species and quality, the availability or scarcity of similar timber in the area, international trade policies and market demand.

The demand for timber on the Unit is part of the larger regional timber market which is part of the global market for wood products. For example - a hardwood tree grown and cut on the Unit's State Forests are often purchased by local loggers or sawmills, sawn into lumber at a mill within the region, and may eventually end up in a consumer product sold in Europe, Asia, or South America. The United States is a large part of the global market and has the highest per capita wood consumption of any nation on the planet. Wood products have been essential to the development of our country and continue to be an essential need of our society. As worldwide population continues to increase and the economies of other countries develop, there will be a continued long term increase in the global timber demand.

At the local scale, there is a somewhat different demand for wood products. While many local loggers supply larger mills with hardwood logs, lesser valued products such as hemlock or larch logs and firewood can be profitably cut and sold to local markets. Hemlock and larch are often sawn by small local band mills for use in barn construction. Firewood is cut by individuals for their own use or for resale to home owners.

The authority to sell forest products from NYS DEC administered lands is provided by the Environmental Conservation Law. To perpetuate the growth, health, and quality of the forest resources, the Department has implemented a sustained yield timber management program for State Forest lands.

The program is governed in part by a Timber Management Handbook (2011) which includes both policies and guidelines to insure that management is carried out in a deliberate and professional manner. The Timber Management Handbook directs and regulates the practice of timber management on NYS DEC lands. This handbook contains technical references, as well as direction on regulation, allowable cutting, silvicultural systems and procedures. For further discussion of Commercial Timber Sales, see Chapters 2, 3 and 6 in the Strategic Plan for State Forest Management.

Other sources of direction for NYS DEC timber and vegetation management activities includes the Strategic Plan for State Forest Management, Commissioner's policies, Division directives and the guidance and thresholds established in the State Forest Commercial Sales Program Environmental Impact Statement (EIS). All timber management activities that may be carried out on this unit will comply with these guidelines and directives, as authorized under the Environmental Conservation Law. Direction is also given in the NYS DEC publication Best Management Practices for Water Quality, and the Management Rules for Special Management Zones, Plantation Management on State Forests, Rutting Guidelines, and Retention on State Forests.

Forest areas being considered for timber harvesting are prioritized based on the following criteria, in order of importance:

1) Adequate access

2) Present and future forest health concerns;
3) Current distribution of vegetative stages within the unit management plan area and surrounding landscape, including the Ecoregion habitat Gaps as per the Strategic Plan for State Forest Management;
4) Wildlife considerations;
5) Ability to regenerate stands (if a regeneration harvest);
6) Priority needs of management proposals that must be implemented from other unit management plans;
7) Market conditions; and
8) Potential growth response of stands to treatment.

By law, any trees to be removed in a harvest must be designated, and paid for, prior to removal. Designation is made by NYS DEC forestry staff. After designation is completed, a fair market appraisal is conducted. No products may be sold at less than the fair market value. Forest stands are prioritized for treatment based on the criteria outlined above, and the desired future conditions identified by this Unit Management Plan. Prioritization is done by NYS DEC forestry staff, with input by wildlife staff.

The Environmental Conservation Law requires that different procedures are employed based on the appraised value of a timber sale. Sales that are appraised greater than $10,000 are called revenue sales and sales that are appraised at less than $10,000 are known as local sales. The New York State Comptroller must approve revenue sale contracts. The Regional Forester has the authority to execute local sale contracts. All sales valued at more than $500 (and those less than $500 which are thought to have substantial public interest) are publically advertised and competitively bid. Law requires that forest product sales can only be awarded to the highest responsible bidder. The Regional sub-office in Bath maintains a mailing list of prospective bidders for forest product sales. Those interested in receiving bid information should contact the Bath office or visit www.dec.ny.gov/lands/69749.html for a list of currently advertised and recently closed bids.

Depending upon the sale, there may be an opportunity to use up to 50% of the appraised value for in kind services that enhance state facilities, improve habitat, or otherwise serve the goals of the harvest, such as establishing regeneration within the sale area. An assessment of the potential will be done with each and every sale of forest products for the impact and possible enhancement. Potential enhancements include; a layer of gravel on a haul road, trail, or public access road, relocation of a trail or road for better placement, conversion of a skid trail to a recreation trail through grading and water control measures, creation of informal or formal parking areas by placement of the log landings, construction of small dug out ponds, installation of vehicle control barriers and other possible work as opportunity presents itself.

Green 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, NYS DEC 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, NYS DEC 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.

NYS DEC 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.

Inventory

Division guidance requires that a forest inventory be conducted every 10 years and whenever stands are changed by any silviculture operation or by the forces of nature. Forest inventory is the critical task in the vegetation management planning process, as it forms the basis for all science based vegetative management decisions in this plan.

Forest inventory is accomplished by a statistical analysis of stands. Samples are taken from random locations (called plots) within each stand. Information collected during a forest inventory includes, among other items, tree and shrub species and size, forest type, tree density, forest health issues, topography, drainage, previous management, and site limiting factors. The required number of plots for each stand varies according to the variability of the stand, subject to a minimum number.

Hemlock-Canadice State Forest was inventoried by NYS DEC shortly after it was acquired from the City of Rochester, during the summer and winter of 2010. The data gathered was used to create the Table 7: Vegetative Types and Stages for the Hemlock-Canadice Unit, as well as several maps located in Appendix M: Maps, and the Appendix F: Timber Management for this Unit Management Plan.

During the inventory process notes are made and GPS data taken on areas that fall into Special Management Zones, protection forest, historic sites, waterfalls and other interesting natural features. (See Special Management Zones, Retention on State Forests, and Rutting Guidelines, Protection Forest, Archaeological and Historic Resources and Appendix G: Glossary)

Current and Future Vegetation Types and Stages

As noted above, the management objective is to strive to maintain a balance of vegetative types and stages. Presently, the Hemlock-Canadice State Forest does not have a balanced mix of vegetative stages, but does have an adequate mix of vegetative types.

In timber the different stages are divided into three size classes, seedling/sapling is up to 5 inches in diameter, pole timber is 6 to 11 inches and sawtimber is 12 inches and up. The most recent forest inventory data shows there is an over abundance of sawtimber size timber making up about 51% of the acreage: the next most common is in the pole timber size at about 40%, and the seedling/sapling size with only a small fraction of about 2%. About 3% is classed as grass or brushy openings; and less than 1% was in the small pond category. The wetland category makes up about 16% of the land acreage, but most of that is forested wetland and overlaps with the pole and sawtimber categories. See also page 30 - Table 7: Vegetative Types and Stages for the Hemlock-Canadice Unit, and Appendix M: Maps.

For a better distribution of stages, seedling/sapling acres should be created, primarily out of the stands currently of sawtimber size. It is to be expected that, at least some of the pole sized stands will move to the sawtimber size class as a result of tree growth.

There are opportunities to create some seedling/sapling acres by treating pole timber areas, but this must be done with discretion to avoid reducing the total number of pole timber acres by a significant amount. It is expected that some of the acreage listed as plantation sawtimber will be converted to hardwood seedling - sapling during this planning period, either through management actions or natural processes.

Stand composition and vegetative type are influenced by many things. For this forest the most important factors would be:

1. Site capability
2. Seed source
3. Past management
4. Deer Density

Please note that it is impossible to predict exactly what our percentages of the various types and stages will be at the end of this plan period. This is due to two factors:

1) The significant role played by natural forces in the type and stage exhibited by any stand.
2) The fact that most tree species do not lend themselves to management over a 10 year period. In some cases it may require 40 - 50 years before the results of any given management action can be adequately assessed.

Success in this objective will be measured simply by an increase in seedling/sapling acres.

There is a low percent of grassy/brushy openings, about 3.1%. This is less than ideal, but the steep hillside or wetland terrain of the Unit does not lend itself well to adding additional acres of grassy/brushy openings. Over the 10 years of this plan that amount should be increased to 3.5%, or an

additional 28 acres. Existing grassy/brushy fields should not be allowed to convert to seedling/sapling, which means they will need to be mowed, brush-hogged, or burned on a regular basis.

Old Growth Forest

The NYS DEC Bureau of State Land Management has adopted the following definition for Old Growth forests.

Old-Growth Forest - The definition of "Old-Growth Forest" involves a convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth, however, it is the presence of all of these factors that combine to differentiate "Old-Growth Forest" from other forested ecosystems. These factors include:

An abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring (1) canopy gaps formed by natural disturbances creating an uneven canopy, and (2) a conspicuous absence of multiple stemmed trees and coppices. Old growth forest sites typically (1) are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; (2) show limited signs of human disturbance since European settlement; and (3) have distinct soil horizons that include definite organic, mineral, illuvial accumulation, and unconsolidated layers. The understory displays well developed and diverse surface herbaceous layers.

NYS DEC staff have not found any sections of Hemlock-Canadice State Forest that meet the above criteria. It does have stands of big trees, stands with old trees, and stands with big old trees. The City of Rochester purchased land previously used for farming and cottages, and ample evidence of this still exists in the form of old stone walls, foundations and wire fence along the hill and lake side. From the water the hillside appears to be an unbroken canopy of trees, all about the same height, a classic sign of second growth of trees. In addition, many of the plantation trees qualify as old trees, in that a two year old seedling that that was planted by the City of Rochester in 1902 would be 112 years old in 2012.

NYS DEC is not implying that only Old Growth Forests are worthy of inclusion in State Forest Protection Areas, instead, the intent is to establish a consistent, science based approach to identify and classify old growth stands. NYS DEC staff will continue to protect areas other than old growth including sites where there are rare or endangered species, unique natural communities or areas where long term protection can promote greater biodiversity in the landscape. See Appendix F: Timber Management and Appendix M: Maps.

As time passes, and with no further human disturbance of the stand of trees, it is possible to gradually revert to a state similar to old-growth. This is a century's long process; however there are areas of this Unit that this may eventually happen to.

Silviculture

When managing forests, foresters employ two silvicultural systems to mimic natural disturbance patterns and promote biodiversity, even-aged and all-aged management.

Even-aged Management

Trees in an even-aged stand originated at approximately the same time, either naturally or by planting. They grow, are cared for, may undergo various intermediate cuttings during their development, and they are ultimately removed in one or more major harvest cuts after which a new stand is released or established. Consequently, such a stand has a beginning and an ending time.

Even-aged management systems are important because they create young forests that are necessary for the survival of many plant and animal species. They favor the establishment of shade intolerant and mid - tolerant tree species such as cherry, oak, and ash. These species have some of the highest timber and wildlife values.

Even-aged management favors the establishment of many of the hard mast species that are critically important to wildlife. Over the years, the availability of hard mast producing trees has declined in the landscape, as a result of diseases which have severely impacted American Beech, Butternut, and American chestnut trees.

Actions taken under even - aged management systems might include:

1) thinnings of young stands (likely to be non - commercial)
2) intermediate cuts of middle aged stands (usually commercial)
3) actions aimed at regenerating stands (generally commercial)
    a) shelterwood (either two cut or three cut)
    b) seed tree
    c) final harvest (clear cut)

All-aged Management

The all-aged management system differs from the even-aged system in several ways. Instead of maintaining one dominant age condition in the stand, this system establishes and maintains many age groups ranging from seedlings and saplings to very large, mature trees.

All-aged management uses two different harvesting methods: single tree selection and group selection.

Single tree selection is used to maintain an unbroken forest canopy as desired in the all-aged forest areas. The single tree selection system removes individual trees throughout a forest stand, thereby minimizing disturbance to the forest canopy. The small openings created by single tree selection limit the amount of sunlight that can penetrate to the forest floor. As such, the single tree selection system encourages long-lived shade tolerant tree species such as sugar maple, and eastern hemlock.

Group selection removes small groups of trees, in an attempt to mimic natural disturbance regimes. Group sizes will vary depending on the species group being managed. As group size increases, the differences between this system and an even - age system begin to blur.

Current and Future Management

Due to the current vegetative types, stages, and species assemblages presented by these forests, we expect that the even - age system will continue to be the primary silvicultural system applied over most

of this unit during this planning period. Note that this is only for this planning period, and may change as vegetative types and stages change.

A variety of silvicultural techniques will be used to manage the forests within this unit, including:
1) converting even-age stands to all-aged stands (where site and species assemblages are favorable)
2) thinning and regenerating, even-aged stands
3) establishing protection areas to maintain and enhance diversity
4) protecting ecologically sensitive areas such as stream banks, wetlands, and steep slopes from intensive management.

Oaks and American chestnut are native tree species on the Hemlock-Canadice Unit. However, in many locations historical management or disease have discriminated against these species. The objective is to maintain and enhance well-adapted, native species in the Unit by using the most current silvicultural knowledge.

Difficulties with regenerating oak, conifer and other shade-intolerant and mid - tolerant species, have led to shade tolerant species such as Sugar and Red Maple becoming well-established. The presence of shade tolerant species will challenge the land managers' abilities to meet the overall vegetative goals of balancing forest types and stages.

The establishment of oak stands on these forests came about due to an unusual set of circumstances, which will be rather difficult to reproduce. When the time comes to regenerate these oak stands it may be necessary to use techniques (such as prescribed fire, scarification, pesticide, etc.) which are not well known in this area. Outreach to user groups (and the general public) will be critical in explaining the science behind these techniques, why they are required, and why it is critical to reproduce the existing oak stands. In some cases additional forms, plans, and/or SEQR may be required.

See also the discussion under Even Aged Management, above.

See Appendix F: Timber Management for a stand by stand listing of commercial timber sales planned for the 10 years of this Hemlock-Canadice Unit Management Plan. Appendix M: Maps includes maps of the planned commercial treatments. Over the 10 years of this plan, 2.6% of the land area is scheduled for regeneration; this is less than the 10% that would ensure an even progression of age classes into the future. However, the acres of inadequate access, intensive recreational use, limited staff, steep hillsides, and/or wetland terrain of the Unit do not lend itself well to timber harvesting on all of the land area. Some of the shortfall will be made up on other state forests and private lands on a state wide basis, but not all, for many years now, the timber in New York State been growing faster than it is being cut down and utilized. Intermediate/thinning cuts have been scheduled on 7.2% of the Unit.

Appendix F: Timber Management does not include any pre-commercial treatments for any stands. Pre-commercial is a stand treatment when the trees are too small to sell for profit, requiring the payment of someone to do the work. In addition, properly trained volunteers, or prison work crews, can also do the work. When prison work crews are available, or money to contract for work is available, the stands will be evaluated, starting with the ones in the seedling-sapling and pole timber sizes.

Special Management Zones, Retention on State Forests, and Rutting Guidelines

All silvicultural actions taken under this Unit Management Plan are also constrained by the Strategic Plan for State Forest Management, and policies for Special Management Zones, Forest Retention Guidelines, and Rutting Guidelines. Additional information available at: www.dec.ny.gov/lands/64567.html

The Special Management Zones establishes zones around specific features (intermittent streams, vernal pools, wetlands, etc.) where management must be modified as compared to what is permissible in the general forest zone. The actual configuration of the zones can only be done during sale layout, following field reconnaissance, which is beyond the scope of this plan. See also the Fish and Wildlife Habitat and the Watershed and Wetlands Protection sections for further details. In 2006 a new forest inventory system was implemented, which allows identification of areas receiving special management considerations.

The Retention on State Forests is a strategy for conserving biodiversity in stands managed for timber production. Retention and recruitment of snags, cavity trees, coarse woody debris (CWD), fine woody material (FWM) and other features will advance the structural and compositional complexity necessary for conserving biodiversity and maintaining long term ecosystem productivity.

The Rutting Guidelines provide a tool to assist NYS DEC staff when conducting a timber harvest or Temporary Revocable Permit (TRP) on State Forests. A well planned and laid out access system, utilizing appropriate best management practices (BMPs), concentrates site disturbance, soil compaction, and rutting to these limited corridors while protecting water quality and overall site productivity of the general harvest area.

Protection Forest

Per the Timber Management Handbook protection areas receive special consideration whenever management activities, of any kind, are planned which may impact these areas. Examples include:

1) seasonal harvest limitations,
2) restrictions of type and/or size of harvesting equipment,
3) special considerations for access.

Some protection areas are managed specifically to restrict or prohibit management activities. These practices may also be employed on other areas not designated as protection forest whenever site or vegetation protection is needed. Examples include: poorly drained soils, slopes over 15%, presence of historical or archeological features, recreational use, wildlife considerations, and preparation for forest regeneration. As might be expected from the landscape position, wetlands are a large proportion of this forest. Wetlands do represent unique habitat types, and require special management zones.

As part of the 2010 inventory process, the Hemlock-Canadice Unit had 3,147 acres designated as protection forest. This includes stands that are forested, forested wetland and wetland, and is about 47% of the land area. See Appendix M: Maps.

Plantation Management

Most of the conifer plantations on this unit were planted between 1902 and the start of World War II. Most of the existing plantations on the Unit are reaching their biological maturity. On most sites tree crowns are thinning and many stands are experiencing mortality. Natural succession within these maturing plantations is likely to follow one of two very different pathways.

The first would be characterized by slow decline of the existing softwood overstory and a gradual release of the current crop of young seedling/sapling hardwoods in the understory.

The second would be characterized by the existing softwood overstory being removed by a single catastrophic event (i.e. ice storm, heavy late season snow, unusual wind event, aggressive insect attack, etc.). This pathway would result in a much more rapid release of species in the understory.

The composition of the understory is the key in both cases. Note that, particularly in the case of the second scenario, if the understory is dominated by shrub species, a forested stand may not be the result. Rather a shrub savannah may result which might (depending on site factors) slowly succeed to a young hardwood stand.

In both scenarios there is also the possibility that, if site factors are favorable, some of the softwood species from the original plantation may participate in the new stand. Anecdotal evidence suggests that we should expect this, at least through the seedling - sapling stage. Long term persistence of these species on these sites may be somewhat less likely. Data regarding this type of situation has not been gathered long enough to have much information on the likely outcome. See also the discussion relating to desired conifer component for this management unit.

The objective for managing these plantations should be to try to mimic the first scenario. The stand is thinned to a density which will allow the establishment of desirable tree species in the understory of the stand. This treatment is later followed by the removal of the rest of the softwood overstory, once the number of new, young, trees in the understory is sufficient to assure a new stand.

While this is the primary objective, it is recognize that, in spite of these efforts, there will be those situations where nature will take its course and the second scenario will be played out. Once the catastrophic event occurs, the decision on salvaging the remaining woody material on the site will need to be made. This will be done on a case by case basis, depending on site and regeneration factors. It is impossible for us to estimate, at this time, the acreage which could be involved in salvage operations.

In all cases efforts will be needed to comply with the recently issued forest retention standards regarding the type and number of trees to be retained when doing this type of work.

Legacy Plantations

This is a unique State Forest, in contrast to most State Forests; the CCC was not active during the planting process in this case. Tree planting is believed to have begun in about 1902 and been complete by 1940. This work was carried out by City of Rochester crews. In recognition of this unique legacy, the NYSDEC has designated several of the existing softwood plantations as “legacy plantations”.

Although no living creature lives forever, these plantations will be grown beyond economic maturity and maintained for as long as possible. Every effort will be made to not deliberately regenerate these stands, although thinning to improve the health of the trees will occasionally occur.

Conifer Component

Forest ecologists have identified conifers as an important component of the ecosystem. The establishment of conifers through planting has created a significant conifer component on these forests. About 20% of the Unit is in conifer plantations, and about 10% of the Unit is in natural conifer stands.

Staff has not identified softwood plantations on this unit which serve as a habitat niche for native wildlife species. Most of the plantations do not occur on soil types which are conducive to success by plantation conifer species. Therefore, the plan is not proposing to replant any plantations. The better course is to allow these areas to succeed (either through management intervention or by natural forces) to native, natural, vegetation. This may, or may not, include a significant conifer component.

For the purposes of this plan a natural conifer stand is any stand where the conifer species compose more than 33% of the stand, and it was of natural origins, not planted. Care must be taken to assure that the natural conifer stands reproduce to type; no conversion of natural conifer stands should occur as a result of management actions. In many cases, particularly as regards stands dominated by Eastern Hemlock, this will amount to a modified all – aged treatment.

Stand regeneration efforts in these cases may stretch over a number of years. Staff has not attempted enough work in these kinds of situations to be able to state with assurance exactly how long this might take, but 30 years is probably a fair estimate.

Sugar Maple Sap

The tapping of hard (sugar) maple trees for the production of maple syrup and sugar is a long standing traditional forest product of the northern hardwood forest. Traditionally sap was collected in individual buckets at each tap, but modernized production uses a system of tubes connecting many trees to a centrally located collection tank.

The tapping of trees does no long term damage to the tree health, but does reduce the quality of the lumber produced due to discoloration of the wood. More sap is produced from a tree with many branches and leaves, but clean, knot-free wood is produced from trees with few lower branches, thus any one stand of hard maple can be managed for better maple syrup production or better lumber production, but not both.

Stands or collection of road side trees which do not have the potential for successful production of quality lumber or are reserved from harvesting could be considered for tapping. At this time the procedures for this process are under review, but portions of stands B-15, B-20 and A-35 are considered suitable for tapping.

Grass and Brush Management

Grasslands are one of the most important parts of biodiversity, and these dynamic habitats are home to a significant community of bird species, including the threatened Henslow's sparrow and northern harrier hawks. Due to changing land-use patterns, natural vegetative succession, and development,

grasslands are fragmenting and disappearing. The Grassland Focus Areas were determined by analyzing the 2nd New York State Breeding Bird Atlas data for grassland birds for the entire state. To further refine the focus areas, NYS DEC conducted point counts during the spring and summer of 2005.

There is a low percent of grassy/brushy openings, about 3.1%. Over the 10 years of this plan that amount should be increased to 3.5%, or an additional 28 acres. Any one grassy opening should be 4 acres, or more, in size. The timing on clearing to create these openings will depend on funding, because of this, an exact year of action has not been picked.

Existing, and future, grassy and brushy opening will need to be maintained, or they will revert to forest. Grass needs to be mowed at least every 3 years, and brush hydro-axed about every 5 years. If it isn't mowed or burned the grassland converts to brush and then the brush grows into trees. The clock can be set back even more by converting brush to grass, which if the funding becomes available, may be done.

Applying lime and/or fertilizer can enhance the health of grasses over invasive plants such as spotted or brown knapweed, pale swallow-wort, burdock or goldenrod. A more expensive option for fields that have little or no grasses left growing is to use standard agricultural practices to return it to grassland. This includes mowing, plowing, tilling, and herbicide application and seeding. Additional paperwork, such as an herbicide application plan and SEQR are required prior to applying herbicide.

Fire can also be used to maintain an area in grasses. Most warm-season type grasses grow the best following a fire. The soil heats up earlier in the spring with the black ash left after a burn, and the ash also provides a source of readily available nutrients for the growing grasses. Additional paperwork, such as a burn plan and SEQR are required prior to doing a controlled burn.

Grassland acres are created out of timber acres by removing the woody plants, including stumps and roots, and planting grass seed. The soil pH will be tested, and if money is available, lime may be applied prior to seeding. Best Management Practices will be used to control erosion.

Wetland and Ponds

There is a very large acreage of wetland on the Hemlock-Canadice Unit, about 13% is forested wetland and about 3% is open/shrub wetland. There is a much smaller acreage of small pond habitats, less than 1%. See the Fish and Wildlife Habitat and the Watershed and Wetlands Protection sections for further details.

Forest Health Threats

DON'T MOVE FIREWOOD! New York State regulations prohibit firewood from being brought into New York unless it has been heat treated to kill pests. The regulation also limits the transportation of untreated firewood to less than 50 miles from its origin. Many other states have similar restrictions on firewood transportation across state boundaries. The reason for this is other than their own feet and wings, the primary way exotic invasive pests spread is by hitching a ride on un-treated firewood or shipping containers. Per the 6 NYCRR §190.26, charcoal and campfires are <u>not</u> allowed on Hemlock-Canadice State Forest.

Some level of insect, disease and natural disaster are recognized as being a beneficial factor in shaping our vegetation. Various endemic and epidemic occurrences of insect, diseases, fires and storms

periodically impact the vegetative communities of New York State, including the Hemlock-Canadice Unit. The professional foresters of NYS DEC will continue to observe the effects of these factors which influence the vegetation on the unit. Native insect species such as Pear Thrips and Fall Cankerworms are cyclic in population and may be expected to impact vegetation at some time in the future as they have in the past. By closely monitoring these outbreaks management actions may be able to lesson undesirable impacts.

However, invasive exotic insects, fungi, animals, or plants can cause big problems. Some exotics, such as chestnut blight, and beech bark disease, invaded years ago, and have all but exterminated the chestnut and beech tree. The hope is to avoid this again, by closely monitoring for new arrivals, and if possible eliminating them from North America before they can spread. At the time of this writing, infestation of introduced insect invaders posing threats to New York's forests include: Emerald Ash Borer, Sirex Wood Wasp, Hemlock Woolly Adelgid, and the Asian Longhorned Beetle.

Insects, fungus, wind, ice or snow storms can all cause unexpected but devastating damage to stands of trees. In the event of such widespread damage occurring, a salvage cut may be the best action. A salvage cut removes the dead and/or dying trees, and functions as a regeneration cut on an even aged management that Mother Nature initiated. This cannot be scheduled at this time, but has the potential to completely re-arrange the cutting schedule in Appendix F: Timber Management. If this happens, there is the potential to be a lot more acres regenerated.

Invasive plants are also crowding out native species. Current exotic invaders include Purple Loosestrife, Buckthorn, Honeysuckle, Garlic Mustard, Giant Hogweed, Multiflora Rose, and Japanese Knotweed. Unfortunately, there are many more that are not listed here. As money and time allow, they will be monitored, and when found, management actions taken. Depending on the species and location, actions could include prescribed burns, pesticides, or mechanical removal.

Integrated Pest Management

The application of control methods will be determined using Integrated Pest Management (IPM). IPM is a science-based decision-making process that guides land managers when investigating a pest situation. The IPM approach determines the most appropriate and cost effective management solution for the specific pest situation. IPM includes identification of the pest, understanding the use and significance of a site or the importance of protecting unique resources, and education of the people involved. IPM also establishes pest tolerance levels and monitoring protocols. Then, with the help of technical experts and on a case–by-case basis, NYS DEC foresters develop an effective, site specific and low risk strategy to manage the pest. This includes altering conditions which attracted pests to the site in the first place. IPM often involves changing human behavior as well.

The following priorities will guide the application of control methods with varying degrees of environmental impacts. The most impactful methods hold the lowest priority and will not be applied unless all higher priority methods are not effective. Low priority methods will be applied in concert with higher priority methods in order to increase effectiveness. As new technologies are developed, they will be incorporated into management actions following appropriate review and assessment.

1. Silvicultural Remedies

   Changes in forest composition and structure may create conditions that are less favorable to some invasive species.

2. Hunting
   Invasive and nuisance species can be kept in balance within the ecosystem by applying hunting as addressed within the Deer Management section of the Strategic Plan for State Forest Management.
3. Mechanical Control
   Digging, pulling or cutting may be effective in altering site conditions to control invasives and directly controlling some plant species.
4. Grazing
   Although many invasive plants may be resistant to applied scientific grazing, this method may be appropriate for some species. Grazing on State Forest lands would require the availability of an agricultural partner along with staff and funding resources.
5. Biological Control
   Biological control is the science of reconnecting invasive plants with the specialized natural enemies that often limit their density in their native ranges. The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) is responsible for controlling introductions of species brought into the United States for biological control of plants, in accordance with the requirements of several plant quarantine laws, the National Environmental Policy Act, and the Endangered Species Act. Petitions for release of plant biological control agents are judged by a Technical Advisory Committee, which represents the interests of a diverse set of federal and other agencies. (Van Driesche, et al. 2002)
6. Herbicide Treatment
   All pesticide/herbicide use will conform to guidelines identified in the Active Forest Management section of the "Strategic Plan for State Forest Management".

Emerald Ash Borer

Exotic invasive species from other continents can cause serious forest health threats. One such threat currently causing concern is the Emerald Ash Borer (EAB) (*Agrilus planipennis*). A native of Asia, it was first detected as a well established infestation in Michigan, USA and Ontario, Canada in 2002. In 2009 it was detected in New York, and in 2010 found in northern Livingston County and central Steuben County. Every year since more EAB infestations have been found, and unfortunately additional ones are expected in the future.

EAB infests all species of ash (*Fraxinus* spp.), and has devastated millions of ash trees in North America. Adult beetles leave distinctive D-shaped exit holes in the outer bark of the branches and the trunk. Adults are roughly 3/8 to 5/8 inch long with metallic green wing covers and a coppery red or purple abdomen. They may be present from late May through early September but are most common in June and July. Signs of infection include tree canopy dieback, woodpecker damage, yellowing, and browning of leaves.

Current efforts are pointed toward delineating the infestation area and slowing the insect's spread to other parts of the state. NYS DEC current planning is contained in a document called the Emerald Ash Borer Management Response Plan a.k.a. The SLAM Document (SLow Ash Mortality), the goal of which is to keep as many ash trees alive as long as possible, in as much of New York State as possible, for as long as possible. Additional information can be found at: www.dec.ny.gov/animals/7253.html including a PDF of the SLAM Document.

If (or when) EAB gets established in the area it will change the look of large sections of Hemlock-Canadice State Forest. White or green ash is the number one tree species in 17 stands, and the number

two species in 31 additional stands, for a total of about 2,340 acres, or about 20% of the State Forest. Most of these acres are on the wetland areas of the state forest. Many of the hillside stands have a much smaller percentage of ash, but very few have no ash trees at all. Some of the lowland areas have so very few other tree species that the primary tall vegetation left will be brush and standing dead ash snags

Giant Hogweed and Japanese Knotweed

Giant Hogweed is an invasive exotic plant that can cause severe skin and eye irritation, painful blistering, permanent scarring and blindness. It can grow up to 14+ feet tall and has huge leaves and large showy clusters of white flowers. It is a native of the Caucasus Mountain region between the Black and Caspian Seas. It was introduced to Europe and the United Kingdom in the late nineteenth century and to the United States in the early twentieth century as an ornamental garden plant, and is now in the wild in Western and Central New York.

State wide this plant is being tracked and eliminated where possible. If you see this plant, *don't touch it*! Additional information is available on www.dec.ny.gov/animals/39809.html. It has infested the Hemlock-Canadice Unit, at various locations along Springwater Creek. As of the writing of this plan, the primary control method has been herbicide spraying. In the future physical removal may be attempted.

Japanese Knotweed was originally imported as a garden plant in the 1880s, for its green foliage and August-blooming flowers. Instead, it spreads like crazy, growing quickly along forest edges, stream banks and disturbed areas. Growing to 10 feet tall, it spreads over large areas with dense growth and crowds out native plants. Once mostly found on the valley floor it is increasingly found on the hill tops. It is resistant to many herbicides, and easily re-sprouts from roots or stems when cut or mowed. Nevertheless, NYS DEC staff is attempting to minimize its impact on the Hemlock-Canadice Unit.

White Tail Deer and Feral Swine

White tailed deer are a native species that has a higher population level on the landscape than what was around historically. Deer love to eat young tree seedlings, and by doing so, play a major role in the success or failure of establishing young forests, particularly those comprised of shade-intolerant species such as oak or cherry. In accordance with established procedures used by NYS DEC to determine deer management decisions, a reduction in the number of deer on the landscape by liberal harvest via hunting is encouraged.

The term feral swine is often used to describe all swine species that are living unconfined in the wild. The definition often includes domestic pigs or pet pigs that have been released or escaped captivity, Eurasian boar (wild boar native to Europe and Asia also called wild boar, razorback, and Russian boar) and hybrids of the two. Feral Swine are a highly adaptable, destructive, non-native species. Feral swine have the potential to become permanently established if action is not taken immediately.

Due to their destructive feeding behavior feral swine have the potential to have a major impact to wild fauna and flora including forest regeneration.

For further information on management of nuisance wildlife see the Fish and Wildlife Habitat section.

Sirex Wood Wasp and Hemlock Woolly Adelgid

Often, stands that are stressed by overcrowding become susceptible to forest health threats. One forest health threat in that category is the Sirex wood wasp (Sirex Noctilio). The Sirex wood wasp is a devastating pest of pine plantations. It is native to Europe and Asia and has destroyed millions of pines in Australia, South America and South Africa. In September of 2004, a Sirex wood wasp was discovered in a research trap in Fulton, New York. An expanded trapping effort in 2006 confirmed the presence of Sirex in most counties in western New York.

Utilizing literature from around the world, NYS DEC has developed management direction in regard to dealing with the Sirex wood wasp. The literature suggests that dominant trees with a good crown ratio in managed/thinned stands experienced very little to no damage from Sirex. Unhealthy, suppressed and over-crowded trees in unmanaged stands, on the other hand, experienced mortality rates of up to 65% over a three year period in one study. As the infestation in New York is still young, we do not yet know what the impacts will be. Therefore, silvicultural management options, at this point in time, do not include consideration for liquidation cuts or work to convert stands to a non-pine species composition, unless this is a management objective for other valid silvicultural reasons. Periodic, judicious application of thinning operations to maintain stand densities at levels recommended in applicable stocking guides for optimum growth is currently NYS DEC's approach to silviculture in consideration of the potential threat of Sirex.

One aggressive insect pest which preys on the Eastern Hemlock tree is the Hemlock Woolly Adelgids (HWA). The HWA (Adelges tsugae) is native to parts of Asia and was first discovered in New York in 1985. It is in the family Adelgidae, which is related to aphids. The adelgid uses long mouthparts to extract sap and nutrients from hemlock needles, this prevents free growth, causing needles to discolor from deep green to grayish green, and to drop early. The loss of new shoots and needles seriously impairs tree health, resulting in death of the hemlock after several years.

To battle the hemlock-killing insects, a team of entomologists from Cornell University, U.S. Forest Service (USFS) and University of Massachusetts-Amherst are releasing Laricobius nigrinus beetles into a stand of HWA infested hemlocks. L. nigrinus beetles are native to the Pacific Northwest, where the black, 3-millimeter-long beetle keeps HWA in check by preying on them. No predators to the HWA live in the northeast United States, as a result the HWA spread unchecked, killing many hemlocks. HWA avoids predators by growing in the winter, but L. nigrinus beetles also feed and grow during winter. The beetle has been studied for a long time, and it only feeds on adelgids, and will only successfully reproduce on a diet of HWA.

On November 8, 2013 staff from Cornell University, with the assistance of NYS DEC and City of Rochester staff, released 450 L. nigrinus on the southwest shore of Hemlock Lake at 12:30pm. The beetles were released on the lower branches of 4 trees on the lake shore. All release trees had very heavy current year infestation. The weather was overcast skies with snow flurries; wind about 5 to 15 mph, 36 degrees F. If L. nigrinus fails to control the spread of this insect, the earlier discussion on maintaining a 10% conifer component becomes a moot point, and all staff will be able to do is to watch as the forest composition changes.

Table 10: Management Objectives and Actions for Vegetation

See page 156 - Appendix F: Timber Management for a schedule of stands and management actions, and on page 220- Appendix M: Maps and Table 7: Vegetative Types and Stages for the Hemlock-Canadice Unit are located on page 30.

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Maintain knowledge of forest stands.	1.0	Perform State Forest inventories	Every 10 years	C	110 Work Day's
2	Maintain healthy vegetation	2.0	Practice Integrated Pest Management	On-Going	C	Unable to predict future pest problems. A new invasion could greatly increase the cost.
		2.1	Manage deer population to reduce damage to the low growing vegetation (understory).	Annually	H	Accomp-lished by hunting license sales, producing brochures, etc.
		2.2	If widespread damage occurs, evaluate the damaged stands for salvage cut, or other management action.	After damage occurs.	C	Unable to predict costs.
		2.3	Deal with invasive exotic plants or animals. Specific actions will be based on species and location, but include prescribed burn, pesticide and mechanical removal.	After invasive is found.	L	Unable to predict costs.
		2.4	Mechanical or herbicide removal of Giant Hogweed.	Annually	L	100 Work Days and
		2.5	Herbicide removal of Japanese Knotweed.	Annually	L	100 Work Days and

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
3	Protect water and soil quality	3.0	During Timber and Vegetation Management, follow Special Management Zones, Retention on State Forests, and Rutting Guidelines and other Best Management Practices (BMP's) for water quality per NYS DEC's "Timber Management Handbook"	On-Going	C	See 5.0, 6.0 and 6.1
		3.1	Designate stands into the Protection Forest category that have factors that require special considerations. 3,145 Acres on 35 stands designated as protection forest in 2010 inventory (47% of the land area)	On-Going	C	See 1.0
		3.2	See also "Watershed and Wetlands Protection" and/or "Fish and Wildlife Habitat"	On-Going	C	--
Strive to maintain a healthy balance of vegetative types and stages by developing the following vegetative balance:						
4	Grassy / Brushy	4.0	Create about 28 acres. (increase of 0.4% of land area)	By year 10	L	$2,000 per acre

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
	Openings (204 current acres, plus 28 additional acres)	4.1	Maintain current 130 acres located on 4 stands of grassy openings by mowing or burning on a minimum of a 3 year rotation (2.0% of land area)	Mow grassy openings prior to April 15, or after July 15. Mow 1/3 of grassy acreage each year, or entire acreage at least every three years. Any burns will take place March-May when favorable conditions are present.	H	$200 per acre to mow. $100 per acre to burn.
		4.2	Maintain 74 acres located on 4 stands of brushy openings with a 5yr rotation of hydro-axing. (1.1% of land area)	Every 5 yrs.	H	$300 per acre
		4.3	Reclamation of grassy openings using standard agricultural practices, including mowing, plowing, tilling, herbicide application and seeding.	When grassland habitat converts to undesirable vegetation.	L	$400 per acre
5	All Age silviculture – about a 20 yr cutting rotation	5.0	Stand entry on 0 acres located on 0 stands (None for this plan period)	See schedule, Appendix F: Timber Management	L	--
6	Even Age silviculture, Natural hardwood at about a	6.0	Regenerate 177 acres located on 9 stands over 10 years (2.6% of land area)	See schedule, Appendix F: Timber Management	H	177 to 885 Work Days

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
	100 yr rotation Plantation softwood at about a 75 yr rotation	6.1	Thin/intermediate cut 482 acres located on 22 stands over 10 years (7.2% of land area)	See schedule, Appendix F: Timber Management	H	482 to 2,405 Work Days
7	No Access - For one or more reasons, some stands cannot be accessed with modern logging equipment, even though some of them could be treated.	7.0	If access improves through additional acres being purchased, or new types of logging equipment is developed, these stands will also be evaluated for silvicultural activities. 1,477 Acres on 16 stands (22.1% of the land area)	After access improves.	H	2 Work Days per 100 acres evaluated.
8	Pre-commercial thinning	8.0	If funding or staffing becomes available, the seedling/sapling and smaller pole size stands will be evaluated for pre-commercial thinning.	When funding and/or staffing are available.	L	1 Work Day per 100 acres evaluated
		8.1	Implement "pre-commercial thinning" or silvilcultural activities in "no access" stands, After evaluation per 7.0 and 8.0, add to schedule, Appendix F: Timber Management.	After 7.0 or 8.0	L	
9	Roads, ponds, wetlands etc.	9.0	Maintain per "Maintenance and Facilities Management" and/or "Fish and Wildlife Habitat" and/or "Public Recreation and Use"	On-Going	H	--
10	Maple Tapping	10.0	Tap hard (sugar) maple trees in 70 acres located on 3 stands.	On-going	L	0-100 Work Days

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Watershed and Wetlands Protection

The Reforestation Law of 1929 mandates watershed protection as one of the most basic goals of the state forest system, and the history of this unit has been one of active and comprehensive protection of its watershed. Various and assorted aquatic and wetland habitats exist including two major lakes, four State-protected freshwater wetlands, 40 Federally-protected wetlands, three trout streams, and numerous smaller streams, tributaries, ponds, and vernal pools. The lack of shoreline development on Canadice and Hemlock Lakes, coupled with past water protection efforts by the City of Rochester have contributed to the current high level of water quality, and a natural setting that is unique among the Finger Lakes. NYS DEC is committed to maintaining this distinction and will work cooperatively with the City to assure this. To facilitate this NYS DEC and City staff will communicate or meet on a regular basis. In the event of severe weather, or other events that pose an immediate threat to water quality in the opinion of the NYS DEC or City staff, NYS DEC and the City will work cooperatively to effectively remediate the situation, including the utilization of City repair crews, if needed.

Compliance with the New York State Freshwater Wetlands Act (ECL Article 24) and the Water Resources Law (ECL Article 15, Title 5) is required by NYS DEC when conducting management activities or construction projects that involve regulated activities within protected wetlands, water bodies, or streams. Special Management Zones, Retention on State Forests, and Rutting Guidelines combined with Timber Harvesting Guidelines which are mandatory for all silvicultural practices on state lands, require specific conservation practices which protect soils and water quality. The ECL dictates that, among other purposes, State Forests be managed for watershed protection, and sound conservation practices and public desires.

Regulated activities within protected wetlands, streams and water bodies include such things as clear-cutting vegetation and construction of ponds or road crossings. Normal maintenance and repair of existing structures is generally exempt from permit requirements. Well-managed water resources have multiple benefits, including quality fish and wildlife habitats, aesthetically pleasing sites, groundwater protection, floodwater retention, and various recreational activities.

Since many of the water resources of the area are concentrated in the flatter portions of the unit, there is a need to identify areas that both have potential, and also need, additional water resources. Over time these new aquatic features will be integrated into the Units upland areas. This will mainly be accomplished by the construction of small dug out ponds, often as a result of or in conjunction with the harvest of forest products. See also Fish and Wildlife Habitat and Timber and Vegetation Management.

Table 11: Management Objectives and Actions for Watershed and Wetlands

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Protect water and wetland resources	1.0	Utilize Best Management Practices (BMPs) for water quality on timber sales, recreation facilities, and any other construction.	On-Going	C	Part of the planning and con-struction process.

Management Objectives	Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
	1.1	Control erosion through proper road and trail maintenance.	See Access and Maintenance and Facilities Management	C	--
	1.2	Comply with the Water Resources Law, Freshwater Wetlands Act, and Federal wetlands regulations	On-Going	C	--
	1.3	Identify areas with potential and need for additional water resources	On-Going	L	Part of other actions
	1.4	Construct new water features in upland areas	See Fish and Wildlife Habitat	L	Up to $10,000 per each.
	1.5	Maintain communications with City of Rochester Water Supply staff	On-Going, but at least annually	C	Min. of 10 Work Day's
	1.6	Follow Objective 3 in Table 10: Management Objectives and Actions for Vegetation	On-Going	C	Part of other actions

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Fish and Wildlife Habitat

The fish and wildlife habitat goals for the unit are to maintain and enhance habitat for fish and wildlife species and to provide public access for activities including hunting, fishing, trapping, hiking, bird watching and other compatible outdoor recreational pursuits.

Management for birds and mammals will largely be driven by the age of the specific forest stand and its species composition. Most of the area is dominated by pioneer hardwoods which are largely in the sawtimber size/age class. Efforts toward achieving a balance of age classes should continue, so wildlife species diversity and abundance are maintained. This includes establishing new forests by regeneration methods such as shelterwood or clear cutting as well as maintaining and encouraging older age classes via thinning. All can be accomplished by continued attention to harvest of forest products. Natural conifer stands are an important component of the predominantly hardwood stands in the unit and should receive consideration to insure that they remain as a component in future stands.

A significant portion of the forest is conifer plantations. Though such stands are used by fewer wildlife species than more diverse forest stands, conifers do provide important habitat for many species. Vegetative management should encourage the conversion of plantations to naturally stocked stands of greater diversity. A white pine and hemlock component in natural hardwood stands greatly enhances wildlife habitat.

There is a robust diversity of amphibian and reptile species on Hemlock-Canadice State Forest. Management efforts include creation of dugouts for breeding and activity centers as well as protection of sensitive shallow pools in swamp and bog sites. Protection of all wetland environs should enhance these species as well as others.

Many species of wildlife, from turkeys to salamanders, require sufficient water resources. Although a number of seasonal streams and water holes can be found, a large portion of the forest is lacking water and wetland environs. Inventory of existing sources will help identify areas with the greatest need. Dug-outs will be created as opportunity arises.

Wild ring-necked pheasant populations have been declining since the 1970's and pheasants currently exist in very low densities in Western NY, including the Hemlock-Canadice State Forest. In order to maintain the rich tradition and recreational value of pheasant hunting, statewide NYS DEC raises and releases approximately 30,000 adult pheasants annually, mostly on State-owned lands, but also on some private lands that allow public access for pheasant hunting. On Hemlock-Canadice State Forest there are currently about 130 acres of grassland habitat in nine fields at the north and south ends of Hemlock Lake that are stocked with adult pheasants just prior to and during the fall hunting season.

Threatened and Endangered Species

Threatened and endangered species exist on portions of the Hemlock-Canadice State Forest. Efforts to identify, improve and/or create critical habitats need to continue.

Native Grassland Birds

Grasslands are an important and yet increasingly rare habitats across New York State. These dynamic habitats are home to many types of birds and other wildlife, including the endangered Short-eared Owl and the threatened Henslow's Sparrow and Upland Sandpiper. Due to changing land-use patterns, natural vegetative succession, and development, grasslands are fragmenting and disappearing.

Habitat loss and degradation have resulted in sharp declines in grassland bird populations in New York since 1966, according to Breeding Bird Survey (BBS) data. See Appendix B: Animals of the Hemlock-Canadice Unit Management Plan Area for a list of the birds from the 2000-2005 NYS Breeding Bird Atlas blocks that overlap the Hemlock Canadice Unit. They include Henslow's Sparrow (-14.7% annual change), Grasshopper Sparrow (-9.0% annual change), Vesper Sparrow (-8.5%), Horned Lark (-5.1%), Eastern Meadowlark (- 5.0%), Savannah Sparrow (-2.4%), Northern Harrier (-2.5%), and Bobolink (-0.3%). The net result has been an astounding 80-99% decline in abundance of each species in just four decades. These species, especially Henslow's Sparrow, Grasshopper Sparrow, Short-eared Owl and Eastern Meadowlark are area-dependent species, meaning that they need large unbroken expanses of grasslands to thrive and reproduce.

The New York State Grassland Focus Areas are parts of New York State that are of special importance to grassland birds, and these focus areas were determined by analyzing the data from the 2000-2005 Breeding Bird Atlas (BBA) blocks for grassland birds across the entire state. To further refine the focus areas, NYS DEC conducted point counts during the spring and summer of 2005. In this way important geographical areas for rare grassland birds have been identified. One of the Grassland Focus Areas overlaps with the northern end and a smaller portion on the west side of the Hemlock-Canadice Unit. See Appendix M: Maps.

Providing the correct mix of grass height, plant species, and thatch depth is a bit of a balancing act. Whereas upland sandpipers require very short grasses, Henslow's sparrows require taller vegetation with a mix of forbs. Bobolinks and savannah sparrows, two fairly common grassland birds, have less stringent habitat requirements. For this reason, a best management practice for grasslands management is to have a three-year mowing rotation which provides a variety of grass heights and composition. On the Hemlock-Canadice Unit grassland and open areas are relatively rare on the area and will be maintained whenever possible. Establishment of such habitat could occur when opportunities arise through timber management or other permitted activities. See Grassland Focus Areas, and the Grass and Brush Management section of Timber and Vegetation Management for further details.

To learn more about protecting grassland birds on private lands visit http://www.dec.ny.gov/pubs/32891.html and for information on the Landowner Incentive Program Habitat Protection Project.

Bald Eagle

A threatened species whose history is closely tied to the Hemlock-Canadice watershed is the bald eagle, *Haliaeetus leucocephalus*. Hemlock-Canadice State Forest has played an important role in the bald eagle success story, in that at one point Hemlock Lake was the location of the last known pair of bald eagles nesting in New York. New York's Bald Eagle Restoration Project (1976-1988) undertook an unprecedented effort - to bring back a breeding population of eagles to New York by importing young birds from other states and hand rearing them to independence (a process known as hacking). During this project, nestling bald eagles were also brought to Hemlock Lake to enhance the production of the nest when the pair had difficulty successfully breeding.

Thanks to long standing cooperation between NYS DEC and the City of Rochester, descendents of that pair continue to nest here. Monitoring of eagle nesting at Hemlock is a continuing, long-term project with NYS DEC. Special management restrictions apply to the nesting areas chosen by bald eagles. Within the unit a floating sanctuary is established to define the perimeter of the nesting zone. It is the responsibility of NYS DEC Division of Fish, Wildlife and Marine Resources (NYS DEC DFWMR) to designate boundaries of any changed nesting location.

The bald eagle is protected by both state and federal laws. The Bald and Golden Eagle Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA) protect bald eagles at the federal level, while the Endangered Species Act (ESA) (Article 11 of the Environmental Conservation Law) protects the bald eagle as a threatened species at the state level. New York State generally follows the National Bald Eagle Management Guidelines (U.S. Fish and Wildlife Service, May 2007) as minimum protection for nesting bald eagles. Any permanent impacts (i.e. clearing or road construction) are prohibited within 330 feet of the nest. Temporary impacts that include loud machinery or vehicles are prohibited within 660 feet of the nest tree during the breeding season including courtship, nest building, egg laying/incubation, hatching/rearing young, and fledging (December through August). At minimum, and to be compliant with federal laws, the federal guidelines will be followed including establishing the 330 and 660 foot buffers.

Although it goes beyond what is federally required, establishing a 1640 foot buffer (Natureserve) around the nest trees should be adequate for most activities and it is our goal to prevent negative impacts to the nesting eagles on the Hemlock-Canadice State Forest. NYS DEC shall maintain any existing forested or natural areas within the 1640 foot buffer around nest trees. In addition, in the case where nests are blown down or otherwise destroyed by the elements, NYS DEC will continue this protection

around the nest site for up to three years to facilitate reoccupation of the territory. At the time of writing this plan, NYS DEC DFWMR is currently in the process of writing the New York State Bald Eagle Management Plan. Management of bald eagles on Hemlock Canadice State Forest will be consistent with recommendations and guidelines in the state plan.

Fish

Hemlock and Canadice Lakes contain shallow near shore waters as well as deeper off shore waters. Both lakes become thermally stratified during the summer and early fall, leading to a wide variety of water temperatures. Shallow waters will warm up while deeper waters will remain cold throughout the summer. The variety of water temperatures and depths in these lakes support cold and warm water fish species. Management of cold water species such as lake trout, rainbow trout, landlocked Atlantic salmon, and brown trout involve stocking, fishing regulations, and habitat improvement. Walleye utilize both warm and cold water habitat. NYS DEC will continue to assess the suitability of these lakes for walleye stocking based on the condition of the rest of the fishery. Warm water species such as largemouth bass, smallmouth bass, black crappie, chain pickerel, yellow perch, bluegills, and pumpkinseeds are self sustaining and are managed primarily through fishing regulations. The fisheries of both these lakes depend on forage which should also be monitored regularly.

For further discussion of Fish and Wildlife issues, see Chapters 2 and 3 of the Strategic Plan for State Forest Management.

Nuisance wildlife

Special attention to deer management is warranted given the ability of high white tail deer populations to negatively impact vegetative species diversity, as well as the major role they play in the success or failure of establishing young forests, particularly those comprised of shade-intolerant species such as oak or cherry. In accordance with established procedures used by NYS DEC to determine deer management decisions, a reduction in the number of deer on the landscape by liberal harvest via hunting is encouraged.

Hemlock and Canadice Lake both have a growing population of resident Canada geese. Canada geese are a valuable natural resource that provides recreation and enjoyment to many. However, resident Canada geese can cause problems including public health concerns for drinking water supplies, overgrazing grass areas, accumulations of dropping and feathers on lawn areas used by people, nutrient loading to water bodies, aggressive behavior by nesting and brood-rearing birds, and safety hazards near roads. Geese may also cause problems for nearby landowners when birds move off state land and onto other properties.

To minimize the potential impact of geese on state and nearby private lands, efforts should be made to stabilize or reduce the resident goose population as necessary on the unit. To accomplish this, a multi-faceted approach will be necessary, including such measures as the posting of “No Feeding Waterfowl” signs near problem areas, the promotion of goose hunting (where legal) on the area, and reproductive inhibition via the treatment of nests to prevent hatching.

The term feral swine is often used to describe all swine species that are living unconfined in the wild. DEC's goal is to eradicate feral swine from New York's landscape. Feral swine in New York can have tremendous negative impacts on native plants, native wildlife, livestock, agriculture, and humans including:

- Eurasian boars eat hard mast (acorns and other nuts) and directly compete with deer, bear, turkey, squirrel and waterfowl for food.
- Eurasian boars consume the nests and eggs of ground nesting birds and reptiles.
- Eurasian boars will kill and eat fawns and young domestic livestock.
- Eurasian boars will eat almost any agricultural crop as well as tree seeds and seedlings.
- Their rooting and wallowing habits destroy crops and native vegetation, cause erosion, and negatively affect water quality.
- Eurasian boars have razor sharp tusks and can be aggressive toward humans and their pets.
- Eurasian boars carry and can transmit several serious diseases including swine brucellosis, *E. coli*, trichinosis, and pseudorabies to livestock and /or humans. Some of these diseases, if introduced to domestic swine, can decimate the pork industry.

Prior to 2014, hunting feral swine (Eurasian Boars) in New York was allowed. Recent experience however, has shown that indiscriminate hunting, as illogical as it sounds, is actually counter-productive in helping the problem. Feral swine often travel in groups numbering 20 or more. Shooting individual pigs as opportunities arise is ineffective as an eradication method, often causing remaining animals to disperse permanently, and thus expand into unoccupied habitat. To eliminate this possibility, DEC in 2014 made the hunting of feral swine illegal. This regulation also prohibits possession, sale, transport or marketing of live Eurasian Boars as well as disturbing traps set for wild boars by managing authorities

A few feral swine have been reported in the general geographic area covered by this Unit, but no reports from Hemlock-Canadice State Forest as of the writing of this plan.

Table 12: Management Objectives and Actions for Fish and Wildlife Habitat

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Manage habitats for endemic wildlife species and public use	1.0	Conduct all forms of woody vegetation management to achieve balance forest structure.	On-Going	H	See Timber and Vegetation Management
		1.1	Develop and maintain up to 10 small ponds and dugouts to act as amphibian activity centers.	Average of 1 per year.	L	Up to $10,000 per each.
		1.2	Manage conifers in natural forests	On-Going	L	See Timber and Vegetation Management
		1.3	Maintain and enhance grassland habitats by mowing and/or burning	At least every three years.	H	See Timber and Vegetation Management

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
		1.4	Protect and enhance rare plant and animal communities	Annually	C	30 Work Days
		1.5	Convert plantations to natural communities	On-Going	H	See Timber and Vegetation Management
		1.6	Identify, protect, and improve habitat for threatened/ endangered species, see also objective 5.	On-Going	C	Unable to predict costs.
		1.7	Survey for, identify, protect, and improve habitat for Species of Greatest Conservation Need (SGCN)	On-Going, or as funding is available	L	Unable to predict costs.
		1.8	Monitor invasive exotic plants or animals. Specific actions will be based on species and location, but include prescribed burn, pesticide and mechanical removal.	After invasive is found. (see Timber and Vegetation Management)	L	Unable to predict costs.
2	Encourage public use to enjoy wildlife resources	2.0	Assist local groups in utilizing and protecting wildlife resources	Annually	L	Unable to predict costs.
		2.1	Work with local and governmental groups to enjoy wildlife habitat under the Volunteer Stewardship Agreements or Adopt-a-Natural-Resource Program	See Public Recreation and Use	H	Unable to predict costs.
		2.2	Stock pheasants for public hunting in suitable field habitat.	Annually (Depending on State Game Farm production schedules and bird availability.)	L	10 Work Days and $30,000
3	Manage fish populations to conserve native	3.0	Survey cold water fish population to evaluate stocking program and natural reproduction.	At least every five years.	H	30 Work Days

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
	species as well as provide public use through angling.	3.1	Survey warm water fish population to evaluate current fishing regulations and assess current fishing opportunities.	At least every 10 years.	H	20 Work Days
		3.2	Continue angler diary program to evaluate angling success.	Annually	L	100 Work Days
		3.3	Survey forage fish population using hydroacoustics and/or netting.	At least every five years	H	15 Work Days
		3.4	Stock Hemlock and Canadice Lakes with fish, as needed per 3.0 and 3.1 above	Annually	H	50 Work Days and $14,00 0
4	Manage and reduce resident Canada goose populations and other nuisance wildlife populations .	4.0	Post "No Feeding Waterfowl" signs	Year 1	C	5 Work Days
		4.1	Conduct goose population control as necessary.	Annually	C	20 Work Days
		4.2	See action 2.1in the Timber and Vegetation Management section - Manage deer population to reduce damage to the low growing vegetation (understory).	Annually	H	--
		4.3	Remove feral swine from the landscape. (No public hunting allowed.)	When found	H	Unable to predict costs.
5	Manage and increase Bald Eagle populations	5.0	Monitoring of bald eagle nesting site(s).	Annually	C	
		5.1	Establishment of a floating sanctuary around the active nest site.	Annually	C	

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Public Recreation and Use

One goal of the NYS DEC is to "Connect New Yorkers to Nature" by providing suitable opportunities for the public enjoyment of compatible recreational pursuits in a natural setting. Recreational use, especially fishing and hunting, is a dominant and important use of the state forest comprising the Hemlock-Canadice Unit. Dispersed recreation will continue to be encouraged over almost the entire Unit. See also Recreation page 42.

Hemlock and Canadice Lakes are a source of public drinking water for the City of Rochester and other communities. In order to protect this resource parts of Hemlock-Canadice State Forest and Hemlock and Canadice Lakes are restricted from public use. Activities in Hemlock-Canadice State Forest are subject to DEC's Rules and Regulations for the Use of State Lands, 6 NYCRR Part 190, as

well as any other applicable state statutes, rules and regulations. In addition, specific regulations - §190.26 - have been developed by NYS DEC, mirroring those established by the City of Rochester, allowing many recreational activities on Hemlock-Canadice State Forest, but prohibiting uses that could threaten water quality.

See Appendix K: Special Regulations for the 6 NYCRR §190.26, current as of the publication of this Unit Management Plan. They are also available on NYS DEC's web site at www.dec.ny.gov/regs/13943.html#13956 for the most current version. Changes proposed to this special regulation are located in Policy Constraints on page 52.

Use is variable by season and location, but can be characterized as intensive at the four boat launch sites. Outside of the boat launches, recreation is extensive rather than intensive and many people have voiced a strong desire for this to continue. Hemlock Lake and Canadice Lake have miles of unbroken forest along the shoreline, which provides a remote experience to those who desire some degree of solitude.

Development of new or additional facilities will only be undertaken after due consideration through the unit management planning process. Other than facilities specified in this Unit Management Plan, stewardship activities will be limited to maintenance and rehabilitation of existing facilities.

One goal is to provide suitable opportunities for public enjoyment of compatible recreational pursuits in a natural setting. Under Environmental Conservation Law, NYS DEC is charged with managing for a wide range of beneficial uses that can be attained without excessive environmental degradation or undesirable consequences. The public has a role in identifying both beneficial uses and undesirable consequences. Recreational opportunities will be planned from a perspective of possibilities available throughout Region 8. For a list of facilities available on the Hemlock-Canadice Unit see Appendix D: Facilities and Appendix M: Maps.

Wildlife-related recreation, including wildlife viewing, hunting, fishing and trapping, is a dominant and important use of the Unit. Users are encouraged to adhere to ethical standards and consideration for other recreationalists.

Under current State Forest policy, day use picnicking is an acceptable recreational use. No picnic tables are provided on Hemlock-Canadice State Forest. However, Hemlock Park, which is owned by the Town of Livonia, does have a picnic area and is located at the north end of Hemlock Lake. This plan does not cover any activities taking place at Hemlock Park.

Camping, charcoal and campfires are not allowed on Hemlock-Canadice State Forest.

DON'T MOVE FIREWOOD! New York State regulations prohibit firewood from being brought into New York unless it has been heat treated to kill pests. The regulation also limits the transportation of untreated firewood to less than 50 miles from its origin. Many other states have similar restrictions on firewood transportation across state boundaries. The reason for this is other than their own feet and wings, the primary way exotic invasive pests spread is by hitching a ride on un-treated firewood or shipping containers. Per the 6 NYCRR §190.26, charcoal and campfires are not allowed on Hemlock-Canadice State Forest.

No trash facilities are provided, please don't litter – if you carry it in, carry it out. Leave the State Forest as you would like to find it.

A geocache may be placed on state forest land, provided that it is labeled with the owner's name and address and installed in a manner that does not disturb the natural conditions of the site or injure a tree.

In the past the City of Rochester has received complaints about the occasional flying of radio controlled airplanes over the lakes. However, no one mentioned them during the initial comment period for this plan. (See Appendix A: Public Comment) At this time, no additional regulations or other changes are proposed, although the situation will be monitored and addressed if needed.

Many of the recreation facilities on this, and other state forests, started out as farm lanes, logging skid road, railroads, town roads, log landings, etc. After they were no longer used for the original purpose many were converted to recreational use. Occasionally, forest product sales may affect recreational facilities. Depending upon the sale, there may be an opportunity to enhance the recreational facility. Potential enhancements include: relocation of a trail, conversion of a skid trail to a recreational trail by grading and installing water control measures, creation of parking areas, installation of vehicle control barriers and other structures. An assessment of impacts and possible enhancements will be done with each and every sale. As part of the active timber management, sections of multiple use trail, roads, parking lots, etc may need to be temporarily closed to public use.

At the time of acquisition, the City of Rochester had one small kiosk on each lake, and a large sign in and kiosk near the filtration plant. The City removed the one near the filtration plant in 2011 and under contract with NYS DEC in 2012 will place larger kiosks at all four boat launches and two trail heads.

Fishing and Boating

Fishing and boating opportunities within the Unit are one of the main reasons for public use of the Hemlock-Canadice State Forest; consult the NYS DEC Fishing Regulations Guide for state wide seasons, hours, and creel limits. Hemlock and Canadice Lakes are both unique and important fishing resources.

It is unlawful to possess or operate a boat, to ice fish, to traverse the ice or water, or to fish from shore on: Hemlock Lake - north of the northerly boat launch, and between Boat Launch Road and Hemlock Lake; and on Canadice Lake - within the northernmost 500 feet of the lake.

Most streams are small and do not provide much of a fishing resource, but a few streams provide very significant fisheries. The most significant fishing resource streams within the Unit are Hemlock Outlet, Springwater Creek, Limekiln Creek, and Reynolds Gully Creek. Some of the small tributaries entering Hemlock and Canadice Lakes also provide a limited spring smelt dipping fishery.

Hemlock and Canadice Lakes are both unique resources because they provide much more shoreline access and small boat fishing opportunities compared to other Finger Lakes. During most winters these lakes also provide ice fishing conditions that allow anglers to fish. Both lakes are well known for above average sized lake trout.

Historically the City of Rochester allowed boats to be stored along the shorelines of both lakes. This storage of personal property is not allowed on State Forests, per 6 NYCRR §190.8, and in August 2011 all remaining boats were removed by NYS DEC.

To help stop invasive species from contaminating the lakes, please; do not launch boats at Hemlock and Canadice lakes within five days of boating on other waters, wash down your boats after removing them from other water, check your trailer and propellers, and do not "bring" any water from other lakes or streams. As part of an aggressive effort to prevent invasive species from entering and damaging New York water bodies, NYS DEC adopted regulations that require boaters to remove all visible plant and animal materials from boats, trailers and associated equipment, and to drain boats prior to launching at or leaving from DEC lands. This applies to all NYS DEC boat launches, fishing access sites and other NYS DEC lands where watercraft such as boats, kayak or canoes, can be launched into the water.

In an effort to combat the introduction and spread of invasive aquatic species - Invasive Species Disposal Stations have been installed at many DEC boat launches and fishing access sites. Eventually disposal stations will be provided at all DEC boat launches on waters containing invasive species. The goal of these stations is to provide a dedicated location for anglers and boaters to dispose of invasive species clinging to their fishing and boating equipment. The stations also serve as a billboard encouraging users to carefully inspect their equipment and remove and properly dispose by hand of any invasives found. These simple actions are the most effective way to combat the spread of invasives from water to water.

Hemlock Lake Boat Launches

Hemlock Lake has two gravel boat launch sites, one at the north end of the lake and one at the south end of the lake. Both locations can be used to launch boats from trailers or car-top on a first-come, first-serve basis. Parking is not allowed at the actual launch site, but parking is available within a very short walk.

The North Hemlock Boat launch is located at the end of a Livonia town road. The location is good, and no immediate maintenance needs have been discovered.

The South Hemlock boat launch is located at the end of a Public Forest Access Road, maintained by NYS DEC. It is also located in shallow water and in some years by late-summer the water level has dropped too low for boats to be launched from it. An obvious solution is to move the launch north to deeper water. The hillside into the lake is steep, and the haul road heading north from the existing boat launch is too narrow for regular two way traffic of vehicles, especially those towing boat trailers. It would require tree removal and earthmoving equipment to widen and improve the Haul Rd into a Public Forest Access Rd, and to flatten out an area to provide parking at a new boat launch location.

As of the writing of this plan a new location has not been picked. The first step is to scout and see if a better location is available. A good location needs to be far enough north that the water is deeper, has a reasonable grade from road to lake, and enough area of gentle slopes for parking lot(s) and turn around to be constructed. If a reasonable spot can be found, then funding must be secured before construction can begin. If it is moved the old boat launch will be blockaded and allowed to revert back to cattail or other natural vegetation. The adjacent parking lot will remain, but the port-a-john, gate and kiosk will be moved to the new location.

Several years ago the City of Rochester placed large boulders along the boat launch ramps, which both helped delineate the launching site and reduced the movement of the gravel. Maintenance primarily consists of grading and occasional additions of gravel to the road in and ramp.

Canadice Lake Boat Launches

Canadice Lake has two launches, a hand carry canoe launch near the south end, and near the mid-point a gravel boat launch. The gravel boat launch is not restricted to trailered boats only, car-top boats may also be launched from that location. Both locations have parking located road side, a short walk from the boat launch site.

The hand carry canoe launch has some minor amounts of erosion occurring on the trail down to the shore and the shoreline, this will be monitored for further degradation and if necessary erosion control structures built to stabilize it.

Several years ago the City of Rochester placed large boulders along the boat launch ramp, which both helped delineate the launching site and reduced the movement of the gravel. Maintenance primarily consists of grading and occasional additions of gravel to the road in and ramp.

During the initial public scoping meeting, held fall of 2010, many comments expressed a desire for Canadice Lake to be a motor-free lake, with use restricted to canoes, kayaks, rowboats and other non-motorized boats. However, at this time the regulations will not be changed to further restrict use of Canadice Lake. The primary purpose for such a restriction is noise aesthetics, but closing it would not result in a motor-free experience. Canadice Lake Road, a town road, runs very close to the eastern shore and provides a regular source of motor noise from passing vehicles. In addition, closing the lake would cut off use by a large contingent of traditional users. The lake is about 3 miles in length, long enough for small engines to be used.

Hunting and Trapping

Hunting and trapping are allowed during open seasons, with the correct license and tags; consult the NYS DEC Hunting and Trapping Guides for state wide regulations, seasons, hours, and bag limits. Available game varies depending on the habitat available; see the Timber and Vegetation Management and Fish and Wildlife Habitat sections for information on plans for maintaining and modifying the currently available habitats.

Wild ring-necked pheasant populations have been declining since the 1970's and currently exist in very low densities in Western NY, including the Hemlock-Canadice State Forest. In order to maintain the rich tradition and recreational value of pheasant hunting, NYSDEC raises and releases state wide approximately 30,000 adult pheasants annually, mostly on State-owned lands, but also on some private lands that allow public access for pheasant hunting. Currently the grassland habitat on Hemlock-Canadice State Forest located in the fields at the north and south ends of Hemlock Lake are stocked with adult pheasants just prior to and during the fall hunting season. As of the writing of this plan, pheasant season in WMU 8N runs from Mid October to the end of February. Both cocks and hens are legal targets, and the daily bag limit is two birds of either sex. In addition, pheasants are released on the area prior to the special statewide Youth Pheasant Hunt which in Western NY currently exists on a weekend in early October, before the start of the regular pheasant season. Junior hunters taking part must be between the ages of 12 and 15, and be accompanied by a licensed adult hunter, however only the licensed junior hunter may carry a firearm and take pheasants.

Permanent tree stands are prohibited. However, a tree stand or blind is allowed, provided that it does not injure any trees, is properly marked or tagged with the owner's name and address or valid hunting or

fishing license number, and is placed and used during big game season, migratory game bird season, or turkey season, but no more than thirty days in one location per calendar year, per 6 NYCRR §190.8.

In addition, on Hemlock-Canadice State Forest all animal entrails must be disposed of more than 100 feet from any waterbody or water course.

Trails

Public Forest Access Roads, Haul Roads and Recreational Trails combined with existing logging skid roads and utility lines form an excellent network to access recreational opportunities. Parking areas, informational signs and maps help identify and promote public enjoyment and compatible uses. See also Access, Appendix D: Facilities, and Appendix M: Maps.

All trails on Hemlock-Canadice State Forest can be used for hiking, biking, snowshoeing, and skiing, with two short sections also designated as snowmobile trail. As a multiple use trail, different users must follow some basic trail etiquette rules in order to minimize conflicts. Basic trail etiquette includes: respect other trail users, pass on the right, bikers yield to hikers, and stay on marked trail (please do not cause damage by heedlessly trampling trailside vegetation).

On Hemlock-Canadice State Forest snowmobiles are only allowed on designated snowmobile trails - two short sections of the Hemlock Snowmobile Trail/HVR-5 trail are located on the north end of the state forest. The Hemlock Snowmobile Trail/HVR-5 currently ends in Hemlock, snowmobilers out of the Livonia area have indirectly asked about connecting into it. This would involve mostly crossing private land, and getting permission to cross is the responsibility of the clubs. If necessary short sections could cross the northern most part of the Unit, however the City of Rochester's water pipeline ROW will not be used as a snowmobile trail.

Snowmobile trails in New York State open after big game season ends in each zone, as long as the ground is snow covered. Snowmobiles are also allowed to cross the Unit on town roads that the town has opened to use by snowmobiles. Please contact the individual towns to find out which roads are open to snowmobiles.

Some sections of trail are in poor repair, having either erosion issues, or are muddy. A systematic evaluation of the trail system needs to be undertaken to prioritize the needed repairs. The majority of the trails follow old farm lanes, town roads or skid trails, which is not always the best location for a dirt recreation trail. It is not uncommon for the resulting trail to be quite steep, which makes erosion control difficult, and travel uncomfortable for users.

The Nature Conservancy (TNC) (www.nature.org) owns property that connects across the top of Bald Hill, on this property is a trail called Rob's Trail, with a loop on the relative flat of the top and a spur trail down across Hemlock-Canadice State Forest to the Canadice Haul Road. This trail is maintained by TNC under an Adopt-a-Natural-Resource Agreement (AANR) with NYS DEC. Some sections of the trail down to Canadice Lake should be re-routed to a less-steep grade and the existing trail abandoned and stabilized against further erosion. Constructing a connecting a trail westward across more TNC and State Forest property down to Hemlock Lake would be a challenge to lay out and construct, but is a possibility.

In the 1800's Hemlock Lake had a road along its eastern shore, sections of which are still in use on the north and south ends of the lake, unfortunately much of the middle has eroded into the lake and no

longer exists. Several people suggested re-open it as a trail, but the sections missing, plus the steep hillside terrain, results in a very challenging project. However, if the connecting trail is constructed it will likely run at least some of the way on this old road.

Springwater Trails, Inc. maintains Pine Trail, Spruce Loop and Red Bud Trail, located off of Wheaton Hill Rd, under an AANR. They have also asked about connecting these trails to other trails within the Town of Springwater, which is a possibility.

The southern end of Walnut Trail currently ends at a steep ravine, plus has several other steep creek crossings which could be improved. It is a very nice walk already but could be improved by connecting to the parking on Mission Rd and/or extending it farther south along the shoreline of Hemlock Lake.

In all cases, trail construction and maintenance would need to be done under an amended Volunteer Stewardship Agreements (VSA) and/or Temporary Revocable Permit (TRP). Any trail would need to follow trail Best Management Practices to control erosion, with the exact location approved by the Regional Forester or his designee. NYS DEC does not have the authority to authorize trail construction across private land; the organization planning the trail is responsible for acquiring permission prior to constructing to the boundary line.

The City of Rochester usually mowed the center of the trails in the spring, and again in summer. The City will continue to do this maintenance work under the current contract with NYS DEC. When possible, NYS DEC Operations staff will help with these maintenance responsibilities. Our intent is to mow the roads and trails at least annually. NYS DEC's Volunteer Stewardship Agreements (VSA) program will be used to partner with local groups or individuals to assist in the maintenance of trails and other recreation facilities on this and other state forests. (See also Access and Maintenance and Facilities Management)

Several comments requested horse trails, or opening existing trails to horse use. This is currently forbidden under both the Public Health Law and 6 NYCRR §190.26. In addition the long linear layout of the state forest, steep hillsides, poor soils, and concentrated points of public use leave little room to fit in a horse trail system. Horseback riding is available on the Six Nations Trail System, located on Sugar Hill and Goundry Hill State Forests in Schuyler County. This will continue to be NYS DEC's primary horse trail system for Region 8, and horse trails will not be added to Hemlock-Canadice State Forest.

ATV/ORV Trails

Off-Road Vehicle (ORV) or All Terrain Vehicle (ATV) trails will not be developed on this Unit. A number of factors have contributed to this decision. As stated in NYS DEC's Strategic Plan for State Forest Management, ATV riding is not a program offered on State Forests. The development of ATV access can be considered under this policy if it is necessary to provide access to programs and activities on the Unit. In addition, the special regulations for this unit, 6 NYCRR §190.26, forbid the use of ATV's. The large amount of current recreational use of many sections of the Hemlock-Canadice State Forest would result in conflict with ATV use. In addition, soil conditions, long linear layout, and steep slopes on this Unit are unsuitable for ATV use. Current illegal ATV activity has occasionally created management and maintenance challenges.

In the event another entity is establishing a legitimate public ATV trail system on lands adjacent to a State Forest, and a State Forest is needed to serve as a connecting link, or in the event that a State Forest road or trail could serve to connect already designated ATV trails open to the public, DEC will evaluate

and consider the proposal. Any such trail proposal must comply with state law, department policy and regulations. If it is determined to be environmentally compatible, a connecting trail could be established on the State Forest. This would be dependent on the availability of sufficient funds to establish and maintain a sustainable trail. The State Forest based connector trail, if approved, must follow the shortest environmentally acceptable route available.

The inclusion of a connector trail in a UMP and the subsequent establishment of any such trail could only occur if it does not compromise the protection of the natural resources of the Unit, significantly conflict with neighbors of State Forests, nor interfere with other established recreational areas. Such designation shall only occur through the amendment or adoption of a UMP or another process which provides similar opportunities for public review and comments and full SEQRA review of the proposed designation.

Any connector trails that are constructed or designated will be monitored to ensure that legal use does not lead to illegal off-trail use within State Forest lands or on neighboring private property. Should illegal use increase significantly adjacent to any connector trail, that trail will be subject to closure.

Trails for People with Disabilities

Wheelchairs are allowed anywhere pedestrians are allowed on state lands. The Federal/ADA definition of a wheelchair is:

Wheelchair - A manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor, or of both indoor and outdoor locomotion. This definition does not apply to Federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207 (c)(2).

Currently there are no trails or roads that meet universal access requirements on the Hemlock-Canadice Unit. In many cases the ground is not firm and stable enough, and/or the slope is too steep, and/or the path is too narrow. Too steep a slope can be difficult to change, but firm and stable conditions can be created in many locations. If money becomes available for upgrading, the existing trails and roads will be evaluated for improving universal accessibility.

While no general ATV trails currently exist on Hemlock-Canadice State Forest, on a statewide basis specific routes have been designated as a Motorized Access Program for People with Disabilities (MAPPWD) trail, pursuant to NYS DEC Commissioners Policy #3 (CP-3). Prior to use, individuals with qualifying disabilities must apply and receive a permit to operate an ATV, or other vehicle, on trails designated by the NYS DEC. Not all routes are open to all types of vehicle, and some are open only seasonally for MAPPWD use. For further information, visit www.dec.ny.gov/outdoor/2574.html or contact the NYS DEC at 7291 Coon Road, Bath, NY 14810. (See Appendix D: Facilities and Appendix M: Maps)

Currently no trails on the Hemlock-Canadice Unit are MAPPWD routes. Following the final approval of this UMP the North and South Hemlock Haul Roads will be designated as MAPPWD route and opened for truck/car, but not ATV use, by persons with a CP-3 permit. They will remain gated, but those with a current permit will be able to obtain a key.

Table 13: Table Management Objectives and Actions for Public Recreation and Use

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Identify additional recreation needs.	1.0	Receive public input.	On-Going	C	250 Work Days
		1.1	Monitor use patterns	On-Going	L	150 Work Days
		1.2	Solicit public input.	Every 10 years	C	14 Work Days
		1.3	Evaluate user satisfaction from comments received.	On-Going	H	14 Work Days
2	Coordinate with volunteer groups, and other agencies/ municipalities through the use of Cooperative Agreements, Volunteer Stewardship Agreements, or Adopt-a-Natural-Resource Agreements, to construct and/or maintain existing and/or future recreational facilities	2.0	Identify resources and/or volunteer groups to form additional partnerships.	On-Going	L	10 Work Days
		2.1	Assist the various VSA or AANR adopting organizations and individuals in maintenance and enhancement of the trails and other recreation facilities on Hemlock-Canadice State Forest	On-Going	H	10-100 DEC Work Days
		2.2	Work with VSA sponsors' to locate and construct connecting trails to provide a more connected trail system.	As sponsors get organized	H	5-50 DEC Work Days
		2.3	Encourage rehabilitation of trail sections that are unsuitable for existing use.	On-Going	H	5 Work Days
		2.4	Provide resources or utilize opportunities as needed to maintain and enhance existing trail(s)	On-Going	C	10 Work Days
		2.5	Minimize conflicts between user groups	On-Going	H	40 Work Days
		2.6	Discourage illegal use of motorized vehicles.	On-Going	H	40 Work Days

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
		2.7	Work with snowmobile club(s) to connect the existing Hemlock Snowmobile Trail north and west to the Livonia area.	As sponsors get organized	H	5-10 Work Day's
3	Determine feasibility and/or compatibility of proposed additional recreational opportunities.	3.0	In house review of proposed projects	As Needed	L	40 Work Days
		3.1	Add proposed projects to the Hemlock-Canadice UMP by amendment. (This includes a 30 day public comment period.)	As Needed	L	30-300 Work Days
		3.2	Negotiate and enter into VSA agreements with sponsoring volunteer groups.	As Needed	H	5 Work Days per VSA agreement
4	Provide additional recreational opportunities. Including maintaining and improving access for persons with disabilities.	4.0	Construct and maintain new facilities as supported by the UMP.	By year 10	H	See specific action.
		4.1	Provide technical support for volunteer groups.	As Needed	L	Unable to predict costs.
		4.2	Construct barriers to discourage motorized use of skid trails and abandoned roads after logging operations.	If damage is anticipated or observed on the skid trail or road.	C	$1- 4,000 per location. Usually will be part of a sale contract.
		4.3	North and South Hemlock Haul Roads will be added to the state wide list of MAPPWD trails - car/truck use only.	Year 1	H	1 Work Day
		4.4	Construct an Invasive Species Disposal Station at each boat launch.	Year 1	H	$4,000
		4.5	Evaluate and improve some trails/roads to greater universal accessibility	On-Going	C	Highly variable

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
5	Advocate wildlife-based recreation	5.0	Encourage bird watching, hunting, fishing, trapping etc. according to New York State regulations.	On-Going	L	Unable to predict costs.
		5.1	Stock pheasants for public hunting in suitable field habitats.	Annually (Depending on State Game Farm production schedules and bird availability.)	L	10 Work Days and $30,000
		5.2	See also Fish and Wildlife Habitat	On-Going	H	--
6	Maintain existing and future recreational facilities.	6.0	See also Maintenance and Facilities Management, and Access	On-Going	H	--
		6.1	Scout new location for South Hemlock Boat Launch.	Year 1	L	2 Work Days
		6.2	Procure funding and construct new South Hemlock Boat Launch, including closing the old one.	After 6.1 is successful	L	$75,000
		6.3	Monitor erosion of Canadice Canoe Launch (and other launches). Do any stabilization required.	Annually	L	15 Work Days
		6.4	Mow and/or trim brush back on trails.	At least annually.	H	250 Work Days
		6.5	Remove blowdown from trails	As needed	H	Part of 6.4
		6.6	Stabilize or repair recreational trail issues such as mud or erosion using Best Management Practices.	After issues are discovered and when funds or volunteers are available	H	$0-$100,000 Cost will vary depending on issue.

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
7	Increase awareness of public recreation opportunities	7.0	Provide brochures and maps for users at kiosks, NYS DEC offices, and NYS DEC web site.	Check at least monthly	H	25 Work Days
		7.1	Place and maintain kiosks or signs at high use parking areas and boat launches.	By year 10	H	$5,000 and 15 Work Days per each
		7.2	Update maps and brochures to reflect new facilities/trails/acquisitions	As Needed (At least every 5 yrs)	H	10 Work Days
		7.3	Update kiosks	Annually or as needed	H	10 Work Days
8	Enhance visual appeal	8.0	Establish a litter-free environment by promoting carry in/carry out policy.	On-Going	H	Unable to predict costs.
		8.1	Remove litter from state land.	At least Annually	H	See Access
		8.2	Remove any additional boats or other personal property.	As needed.	C	30 Work Days
		8.3	Trim 2 scenic vistas of Canadice Lake on the Canadice Haul Road	Year 1 and 5	L	5 Work Days

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Maintenance and Facilities Management

The goal is to maintain the facilities on the unit to ensure its integrity, character, safety and protect the public drinking water supply for the City of Rochester and other communities. This must be done with the limited money and staff resources that are available. It is the policy of the NYS DEC to use staff and money resources in the most efficient and effective way possible, and to encourage the use of volunteers to maintain facilities when possible. See also the Access and Public Recreation and Use sections for additional facilities information.

This part of New York State has the potential for generating electricity with windmills or the construction of towers for radio, cell etc. transmission, in the area of the Hemlock-Canadice Unit. There are currently no windmills, or applications for windmills, for power generation on the Hemlock-Canadice Unit. NYS DEC does not have the legal authority to authorize the construction of windmills, or commercial towers, on the lands covered by this Unit Management Plan. Therefore, legislation would need to be passed authorizing such use before any tower construction could take place. This plan does not cover any actions, or construction, on any adjacent privately owned lands.

NYS DEC did **not** acquire all of the real property owned by the City of Rochester in the Hemlock-Canadice Watershed. The City retained control of the water filtration plant, intake pipes on Hemlock and Canadice Lakes, the dams on Canadice Lake and Outlet, associated maintenance facilities and Hemlock Park. In 2011 the city of Rochester sold off two additional parcels. The Town of Livonia acquired Hemlock Park, and the Hemlock Lake Union Agricultural Society, which runs the Hemlock Fair, acquired the field they had previously leased for parking for the Hemlock Fair. Facilities such as these are outside of NYS DEC's mandated program. As such, they were not included in the new Hemlock-Canadice State Forest and activities taking place on those grounds are not covered by this plan.

At the time of acquisition in 2010, NYS DEC and the City of Rochester entered in a two year maintenance contract with three one-year extensions possible. Under this contract, at NYS DEC direction, City staff continued most of the maintenance on Hemlock-Canadice State Forest. As of the writing of this plan it is anticipated that the contract will be extended until the allocated funds have been expended. Under this contract City staff changed out the boundary line signs, replaced gates, mowed the grass, built the new kiosks and maintained the roads.

Table 14: Management Objectives and Actions for Maintenance and Facilities Management

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Maintain constructed ponds / potholes (In consultation with the Division of Water, Dam Safety Unit)	1.0	Inspect for problems.	Annually	C	10-20 Work Days
		1.1	Repair dikes, control boxes, etc	As Needed	C	Highly variable $1,000 to $10,000 per each
2	Solicit volunteer groups to help maintain facilities (see also Public Recreation and Use)	2.0	Promote Volunteer Stewardship Agreements (VSA)	On-Going	L	See Public Recreation and Use
		2.1	Enter into agreements with volunteer groups.	On-Going	L	See Public Recreation and Use
3	Maintain existing and future facilities. (see also	3.0	Identify needed maintenance	On-Going	C	10 Work Days
		3.1	Do the needed maintenance, as money allows.	On-Going	C	See Public Recreation and Use

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
	Public Recreation and Use)	3.2	Enhance law enforcement efforts.	On-Going	C	Unable to predict costs.
		3.3	Continue current contract with the City of Rochester until allocated funds have been expended.	Annually	H	
4	Maintain existing and future roads. (see also Access)	4.0	Identify needed maintenance	On-Going	C	10 Work Days
		4.1	Do the needed maintenance, as money allows.	On-Going	C	See Access
		4.2	Enhance law enforcement efforts.	On-Going	C	Unable to predict costs.
		4.3	Continue current contract with the City of Rochester until allocated funds have been expended.	Annually	H	

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Land Acquisition

New York State has been a leader in recognizing the value of open, undeveloped land. The Hemlock-Canadice Unit is one of the largest blocks of relatively undeveloped public land in the Finger Lakes Region and is an important wild land resource.

The acquisition of land by NYS DEC in New York State is guided by the New York State Open Space Conservation Plan. The Open Space Conservation Plan serves as a blueprint that identifies the priority projects, policies and programs that will enhance land acquisition from willing sellers for the future. The plan, issued jointly by NYS DEC and the Office of Parks, Recreation and Historic Preservation, relies heavily upon the input of Regional Advisory Committees, local governments and the public. The Open Space Conservation Plan is updated every three years, as required by law. In 2009 NYS DEC and the NYS Office of Parks Recreation and Historical Preservation issued a plan, entitled, "New York State Open Space Conservation Plan". (www.dec.ny.gov/lands/317.html) The plan brings together: 1) an objective analysis of the States resources; 2) the knowledge and insight of professionals inside state agencies; and most importantly, 3) the informed and valuable ideas of the public, local government and the private sector. The plan defines which open space priorities and guidelines for public land acquisition will be followed on the Hemlock-Canadice Unit.

New York State may acquire land by donation; fee title purchase; easement, purchase of some of the rights such as development and recreation; or land swap by action of the New York State Legislature.

In the case of the Hemlock-Canadice Unit, one of the state's primary partners in land acquisition, The Nature Conservancy, has acquired significant acreages around the Hemlock-Canadice State Forest (see Appendix M: Maps). It seems reasonable to assume that, at least some, of this property might be offered to the state for acquisition at some point in this planning period.

Should the above situation occur, the priorities for acquisition from The Nature Conservancy are also outlined on the map in Appendix M: Maps.

NYS DEC will consider parcels if they; they improve access; consolidate public ownership by eliminating in holdings; enhance recreational opportunity; protect significant ecological area, especially within Forest Matrix Blocks; are scenically important; contain threatened or endangered species; are of exceptional historical or cultural importance; improve watershed protection; or resolve other issues. It should be clearly understood that the NYS DEC intends to acquire these parcels only from willing sellers as funding becomes available.

Table 15: Management Objectives and Actions for Land Acquisition

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
1	Provide improved access to the Unit.	1.0	Identify land acquisition needs that improve access to state forest.	On-Going	L	Unable to predict costs.
		1.1	Acquire desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
2	Consolidate public ownership by eliminating in holdings	2.0	Identify land acquisition needs, which simplify the NYS DEC's boundaries.	On-Going	L	Unable to predict costs.
		2.1	Acquire desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
3	Enhance recreational opportunity .	3.0	Identify land acquisition needs, that improve recreational opportunities	On-Going	L	Unable to predict costs.
		3.1	Acquire desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
4	Protect significant ecological areas, especially within Forest Matrix Blocks.	4.0	Identify land acquisition with significant ecological areas, especially within Forest Matrix Blocks.	On-Going	L	Unable to predict costs.
		4.1	Acquire by fee simple or easement desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
5	Are scenically important;	5.0	Identify land acquisitions that are scenically important.	On-Going	L	Unable to predict costs.
		5.1	Acquire desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
6	Contain threatened or endangered species;	6.0	Identify land acquisition with threatened or endangered species.	On-Going	L	Unable to predict costs.
		6.1	Acquire by fee simple or easement desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
7	Are of exceptional historical or cultural importance	7.0	Identify land acquisition with exceptional historical or cultural importance.	On-Going	L	Unable to predict costs.
		7.1	Acquire desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
8	Improve watershed protection	8.0	Identify land acquisition which improves watershed protection.	On-Going	L	Unable to predict costs.
		8.1	Acquire by fee simple or easement desired properties from willing sellers as funding permits.	On-Going	L	Unable to predict costs.
9	Resolve other issues, such as split mineral estate.	9.0	Identify issues	On-Going	L	Unable to predict costs.
		9.1	Attempt to resolve such issues	On-Going	L	Unable to predict costs.

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

Mineral Resources

On all State Forests, gas well drilling, pipelines, and related road development must be in compliance with Governor and Commissioner directives, State Forest Tract Assessments, the Strategic Plan for State Forest Management (2011), the Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (1992), and the Supplemental Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (SGEIS), any other relevant documents produced after the publication of this Plan, and this Unit Management Plan.

Any party desiring to procure minerals, rocks or oil & gas resources, or other uses of the mineral estate such as in the case of gas or liquid storage in geological formations, from the mineral estate under state lands, must have a lease contract to those minerals from the State of New York. The party must also have a Temporary Revocable Permit (TRP) from the state to access the surface estate during operations. These leases and permits must be obtained before starting any operations.

It is NYS DEC policy to recommend excluding operations in surface areas with sensitive habitats (stream banks, wetlands, steep slopes, rare communities etc.) or intensive recreational use.

For history and information on oil, gas and mining in the area, see the Mineral Resources section on page 25.

Management of Mineral Resources

Any activity involving the procurement of oil and gas resources and/or storage of gas and liquids in the subsurface on state lands is administered by the NYS DEC Division of Mineral Resources. The procurement of minerals and rocks (inorganic substances), including the solution mining of minerals (such as salt) on these same state lands are administered by the Office of General Services. All activity associated with mining minerals and rocks, solution mining of minerals and oil & gas drilling, including production, are regulated by the NYS DEC Division of Mineral Resources, including the issuance of mining permits and drilling permits.

The surface estate of these state lands is managed through the NYS DEC Division of Lands and Forests. In the event the surface estate is to be used in the evaluation and/or extraction of mineral resources from state lands, a Temporary Revocable Permit (TRP) must be obtained from the NYS DEC Division of Lands and Forests prior to conducting any operations. It should be noted that if the mineral estate is under a lease agreement, only the lessee, or entities authorized by the Lessee, will be issued a TRP for these purposes.

As previously stated, *protecting water quality is the most important function of this property*. Furthermore, In December 2014 the Governor and the Commissioners of the Department of Health (DOH) and DEC announced that the DOH had completed its public health review of NYS DEC's SGEIS on the Oil, Gas and Solution Mining Regulatory Program and recommended that high-volume hydraulic fracturing should not move forward in New York State. Therefore, consistent with the reason for state acquisition of the property, and the findings enumerated in the Final SGEIS, no drilling for oil or gas will be allowed on Hemlock-Canadice State Forest for the duration of this UMP.

The many unique characteristics such as steep slopes, adjacent water bodies, wetlands and the fact that the lakes provide water to many municipalities support such an action. While more traditional (vertical) drilling activities are or have been historically allowed on state lands (via the separate, generally applicable process described in the Strategic Plan for State Forest Management (2011)) due to the unique properties of this forest, NYS DEC has decided to also commit to not allowing vertical drilling for oil or gas to occur on this state forest for the period covered by this UMP. Even without this commitment, it was extremely unlikely that any other drilling would have been allowed on these lands. This property has many unique characteristics such as steep slopes, it remains the primary water supply for the City of Rochester, State and Federally regulated wetlands exist on parts of the property, portions of the state lands are of limited width to provide a reasonable setback from shorelines and one of the primary purposes of purchasing this land was to ensure public ownership and provide access for various public recreational purposes. NYS DEC also considered the public pronouncements made at the time of acquisition that it would endeavor to provide stewardship of this property with a similar approach to land management as that used by the City of Rochester during the many decades of its ownership. Given all of the above factors, together with the strong sentiment expressed by local residents during the public comment phase of the UMP process, NYS DEC determined that it is appropriate to make this explicit commitment in the UMP.

Pipeline Development

Since no extraction of oil and gas will be allowed, no additional pipeline development will be allowed.

Procedures for Mineral and Rock Procurement

Under Article 7 of the New York Consolidated Laws / Public Lands, if a party wishes to explore and/or procure minerals and/or rock (including salt) from state lands they must be issued a permit, consent, or lease from the General Services Office. Prior to operations, a Mining Permit or Drilling Permit in the case of solution mining, must be obtained from the Division of Mineral Resources and a Temporary Revocable Permit (for access and use of land) must be obtained from the Division of Lands and Forests. Mining operations are regulated by the Division of Mineral Resources.

There are no mining contracts, permits, or operations on any areas in this unit management plan. Under Article 7 of the New York State Consolidated Laws, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, current department policy is to decline any commercial mining application(s) pertaining to any lands covered by this unit management plan.

Surface Use for Evaluation of Mineral Resources

In the event a party desires to use the surface estate to conduct geophysical (such as a seismic survey), geochemical and/or surface sampling procedures on NYS DEC lands after leasing they must first obtain a Temporary Revocable Permit (TRP) for the access and use of state lands. Only the lessee, or parties authorized by the lessee, can be issued a TRP for these purposes. A TRP can be applied for through the NYS DEC Division of Lands and Forests, 7291 Coon Road, Bath, New York 14810.

For further information contact the NYS DEC Mineral Resource staff, 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.

For further discussion of Mineral Resources, see Chapter 5 of the Strategic Plan for State Forest Management.

Table 16: Management Objectives and Actions for Mineral Resources

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
1	Do not issue any oil or gas drilling permits. Do not issue commercial mineral or rock mining permits.	1.0	Decline any nomination that includes Hemlock-Canadice State Forest.	As Needed	H	Unable to predict costs.

Archaeological and Historic Resources

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. Should any actions that would impact these resources be proposed 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 the Education Law.

The archaeological sites located on this land unit as well as additional unrecorded sites that may exist on the property may be made available for appropriate research. 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, and the Seneca Nation of Indians Tribal Historic Preservation Office at 716-945-9427.

Under City of Rochester ownership the settlement known as Dixon Hollow has been studied by archeology classes led by Professor Krumrine from St. John Fisher College. This has continued under NYS DEC, after the required permits from NYS DEC, New York State Museum and the Office of Parks, Recreation and Historic Preservation were attained.

Table 17: Management Objectives and Actions for Archaeological and Historic Resources

Management Objectives		Mgt. Action No.	Management Actions	Frequency of Action*	Priority Code (Pg. 69)	Estimated 10 yr Cost (Pg. 68)
1	Preservation of historical and archaeo-logical resources	1.0	Avoid any activity which may disturb any historical and/or archaeological resources.	On-Going	C	Unable to predict costs.
		1.1	Comply with state historic preservation act.	On-Going	C	Unable to predict costs.

Management Objectives		**Mgt. Action No.**	**Management Actions**	**Frequency of Action***	**Priority Code** (Pg. 69)	**Estimated 10 yr Cost** (Pg. 68)
		1.2	Consultation with the Seneca Nation of Indians Historical Preservation Office.	On-Going	C	Unable to predict costs.

*Factors such as budget and staff constraints, wood product markets, and forest health problems may necessitate deviations from the scheduled management activities.

PUBLIC INVOLVEMENT

Initial Mailing

Hemlock-Canadice Unit Management Plan's citizen participation activities commenced with an initial mailing on **September 27, 2010** and public meeting **October 26, 2010,** outlining management plan objectives.

The initial mailing's targeted audience consisted of previously identified:

- adjacent property owners;
- local town & county officials;
- local media;
- recreational groups;
- interested industry groups;
- first nations;
- wildlife groups, and;
- other general environmental groups;

Based on those returned and other public comments received, the mailing list was amended to add other interested parties and/or correct outdated names and addresses.

Public comments received from the initial mailing and meeting were listed in Appendix A: Public Comment, with a summary in the Summary of Identified Issues, page 55. All 35 pages of written comments that were originally in the Appendix A: Public Comment section of the printing of the Draft Hemlock-Canadice Unit Management Plan(2013), have been moved to a new Addendum to the Hemlock-Canadice Unit Management Plan which is located on NYS DEC's website at www.dec.ny.gov/lands/68822.html and on the CD versions of this document, but to conserve paper and save on printing costs it will not be printed as a paper copy by NYS DEC.

The Summary of Identified Issues section starting on page 55 includes: Access, Vegetation Management, Water Resources, Wildlife and Fish Management, Public Recreation and Use, Oil and Gas Leasing, Cooperative Agreements, Open Space Conservation, Aesthetics, Overall Management, and Cultural Resources and Historic Preservation.

Second Mailing

Upon completion of the draft Hemlock-Canadice Unit Management Plan, a second mailing was sent to those on the updated mailing list, including the media, summarizing objectives of the draft plan, listing local document repositories and announcing a public meeting. Repositories will include local libraries, the Bath and Avon NYS DEC offices, and NYS DEC's web site. A notice will also be posted in the Environmental Notices Bulletin (ENB) two weeks prior to the meeting.

Public Meetings

The first preliminary public meeting for this Unit Management Plan was held **October 26, 2010** at the Springwater Firehall. The second public meeting was held **March 14, 2013** at the Springwater Firehall to present the draft plan and receive comments on it. Written comments were accepted until **April 15, 2013**. Following the end of the 30-day public comment period, any modifications based on public comment have been made and a responsiveness summary has been inserted in Appendix A: Public Comment of this plan. In addition all comments received on the Draft Hemlock-Canadice Unit Management Plan have been placed in a new Addendum to the Hemlock-Canadice Unit Management Plan, which is located on NYS DEC's website at www.dec.ny.gov/lands/68822.html and on the CD versions of this document, but will not be printed as a paper copy by NYS DEC.

Final Notice

Commentators and those on the updated mailing list will receive a notice of availability of the final plan. Document repositories will again be identified and any significant modifications based on public comment will be noted.

APPENDICES

Appendix A: Public Comment

Initial Public Meeting and Mailing Responses

The steps of the public participation portion of this Unit Management Plan are located in the PUBLIC INVOLVEMENT chapter on page 120.

For the writing of the Hemlock-Canadice Unit Management Plan public comments were received as a result of a scoping meeting held **October 26, 2010** at the Springwater Firehall, Springwater, NY. A letter announcing the meeting, and asking for comments, was mailed on **September 28, 2010** to a previously identified audience including adjacent property owners, local government officials, recreational groups, forest industry groups, wildlife groups and other general environmental groups and the local media. A total of 131 people signed in at the meeting, and 97 written comments were received.

A Summary of Identified Issues from all of the comments received from the scoping meeting is located on page 55 of this Unit Management Plan.

All 35 pages of written comments appeared in this section of the printing of the Draft Hemlock-Canadice Unit Management Plan(2013), but to conserve paper and save on printing costs a new Addendum to the Hemlock-Canadice Unit Management Plan has been produced, and is located on NYS DEC's website at www.dec.ny.gov/lands/68822.html and with the CD versions of this document, but will not be printed as a paper copy by NYS DEC.

Second Public Meeting Responses

Written and verbal comments on the draft plan were received during the **March 14, 2013** public meeting held at the Springwater Fire Hall, Springwater NY. Electronic written comments were included until a timestamp of midnight **April 15, 2013**, and paper written comments with a US Post Office date stamp of **April 15, 2013**, or earlier.

A total of 250 people signed in at the meeting, 33 spoke at the meeting, 445 individual written comments, plus 130 form letters/emails, for a total of 575 written comments that were received by the end of the comment period.

This large volume of comments, with many expressing similar thoughts, has been reduced down to 76 summarized comments below. All of the comments are available electronically in a separate document titled Addendum to Hemlock-Canadice Unit Management Plan, located on NYS DEC's website at www.dec.ny.gov/lands/68822.html and with the CD versions of this document, but will not be printed as a paper copy by NYS DEC.

Summary of Comments Received on the Draft Hemlock-Canadice Unit Management Plan (2013):

- Comments were received requesting High-Volume Hydraulic Fracturing (HVHF, a.k.a. fracking, a.k.a. hydrofracking) be prohibited on Hemlock Canadice State Forest.
  - Response: As discussed and clarified in the modifications to the draft UMP, NYS DEC is prohibiting HVHF in this State Forest for the period covered by this UMP. This prohibition is being included in this Plan based upon the history of this acquisition, the intentions of NYS DEC as to the most appropriate uses of the State Forest lands, both at the time of purchase and currently, and the specific physical characteristics of this property. While more traditional (vertical) drilling activities are or have been historically allowed on state lands (via the separate, generally applicable process described in the Strategic Plan for State Forest Management (2011) regarding mineral leases) due to the unique properties of this forest, NYS DEC has decided to also commit to not allowing vertical drilling for oil or gas to occur on this state forest for the period covered by this UMP. Even without this commitment, it was extremely unlikely that any other drilling would have been allowed on these lands. This property has many unique characteristics such as steep slopes, it remains the primary water supply for the City of Rochester, State and Federally regulated wetlands exist on parts of the property, portions of the state lands are of limited width to provide a reasonable setback from shorelines and one of the primary purposes of purchasing this land was to ensure public ownership and provide access for various public recreational purposes. NYS DEC also considered the public pronouncements made at the time of acquisition that it would endeavor to provide stewardship of this property with a similar approach to land management as that used by the City of Rochester during the many decades of its ownership. Given all of the above factors, together with the strong sentiment expressed by local residents during the public comment phase of the UMP process, NYS DEC determined that it is appropriate to make this explicit commitment in the UMP.

- Comments were received requesting a buffer around the Hemlock-Canadice State Forest where HVHF is prohibited.
  - Response: A Unit Management Plan, such as the Hemlock-Canadice Unit Management Plan does not, and cannot, cover any of the privately owned land adjacent to the State Land. Local regulations address activities on private land. NYS Department of Health Rules and Regulations Title 10 section 125.1, authorizes the City of Rochester to inspect conditions that could affect water quality.

- Comments were received requesting no water from Hemlock or Canadice Lakes be used for HVHF.
  - Response: NYS DEC does not have the authority to sell or give away water from Hemlock or Canadice Lakes. The City of Rochester has a permit from NYS DEC allowing it to withdraw up to 48 million gallons of water in any 24 hour period and 37 million gallons of water per day as an annual average.

- Comments were received requesting no mining be allowed on Hemlock-Candice State Forest.
  - Response: As stated in the Hemlock-Canadice Unit Management Plan on pages 27 and 117, the current NYS DEC policy is to decline any commercial mining application(s) associated with State Forest lands.

- Comments were received requesting motorized vehicles be prohibited on Hemlock-Canadice State Forest.
  - Response: On the majority of Hemlock-Canadice State Forest the general use of motorized vehicles is prohibited. The exceptions are on the Public Forest Access Road, and permitted access on the Haul Roads

- Comments were received requesting all-terrain vehicles (ATV's) be prohibited on Hemlock-Canadice State Forest.
  - Response: ATV's are currently prohibited per 6 NYCRR §190.26, see www.dec.ny.gov/regs/13943.html#13956 for the current list of special regulations for Hemlock-Canadice State Forest.

- Comments were received requesting that snowmobiles not be allowed on Hemlock-Canadice State Forest.
  - Response: Per 6 NYCRR §190.26 snowmobiles are only allowed on designated trails when there is sufficient snow cover. See the Trails section on page 105 for information on the current Hemlock Snowmobile Trail/HRV-5 trail, and a future connecting snowmobile trail, all located on the north end of the property, downstream from the water intake.

- Comments were received requesting that a diversity of forest habitat types be maintained.
  - Response: This plan has a management objective to strive to maintain a balance of vegetative types and stages. This balance is intended to enhance biodiversity, produce healthy and sustainable forest resources and enhance wildlife habitat diversity, and in doing so provide a healthy, diverse forest which will provide long-term protection for the water supply, and resist disturbances that could impact water quality. See the Timber and Vegetation Management Section on page 73 for further details.

- Comments were received requesting no timber harvesting at all, or none in "virgin" forests, no clearcutting, or in areas with rare or unusual plants and/or animals, or limiting harvesting to protect the health and integrity of the forest, no exploiting the forest. Not allowing logging within the buffer zone of the bald eagles nests or other raptors nests.
  - Response: There are large portions of the Hemlock-Canadice State Forest which are in the protection and/or no access, and/or special management zone categories and thus will not have timber harvesting occurring in that area. See also the Timber and Vegetation Management, the Fish and Wildlife Habitat Section and Appendix M: Maps. All timber harvesting will be done using the best available scientific knowledge of timber and animal habitat management. This includes the Fish and Wildlife habitat action 5.1 establishing a floating sanctuary around the active bald eagle nest site(s).

- Comments were received objecting to the commercial sale of timber and gas from the Hemlock-Canadice State Forest.
  - Response: Environmental Conservation Law(ECL) §9-0505 states "…may sell the trees, timber and other products…" it is also the best and most economically viable way to protect the health of the forest, increase the diversity of habitat's available for wildlife to use and ensure young trees area start going to eventually replace old trees when they die. As stated above, the NYS DEC is prohibiting the drilling for gas on this state forest for the period covered by this UMP.

- Comments were received requesting that swimming be allowed in the lakes.
  - Response: Should the ban on swimming be lifted, the influx of people to the shores of Hemlock and Canadice Lakes would fundamentally change the serene, wild character of the lakes. Water quality would be placed at risk because of the ancillary waste disposal challenges associated with the influx of people. Comments were also received to maintain the ban on swimming. A promise was also made, during the acquisition process, to maintain the status quo regarding public use rules. Swimming would likely damage the public perception of the lakes' water quality, especially for those people that use the lakes for their drinking water.

- Comment was received asking for a clarification on wading, specifically does it include walking along the shoreline.
  - Response: It is understood, and accepted, that paddling a canoe or netting a fish may cause some incidental contact. Wading is an issue that was specifically omitted from the regulations for Hemlock Canadice State Forest due to the many people who step in the water to then get into a canoe, kayak or boat. Fisherman or hunters who are wearing waders in the water are not a large concern and has been an accepted practice. The following are proposed changes to 6 NYCRR §190.26, a process that is separate from the Unit Management Planning process: add to subsection 15) Wade, except when accessing a boat/kayak/canoe or when wearing wader/hip boots. For additional information see the Special Regulations for Hemlock-Canadice State Forest Section on page 52.

- Comments were received requesting the Hemlock Canadice State Forest be designated as a State Nature and Historic Preserve.
  - Response: This is an action that can only be authorized by an act of the New York State Legislature, and thus outside the scope of this plan. For further information see: http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=@SLENV0A45+&LIST=LAW+&BROWSER=EXPLORER+&TOKEN=19354909+&TARGET=VIEW to view Article 45 of the Environmental Conservation Law, which covers the State Nature and Historic Preserve Act. Some sections of the Hemlock-Canadice State Forest do meet the "geological, ecological, or historical significance" criteria, however large areas were actively managed for years by the City of Rochester for agricultural and forestry purposes, including many acres of plantations. If the designation is changed the UMP may need to be amended.

- Comments were received requesting the Hemlock-Canadice State Forest be changed to a Unique Area.
  - Response: This action is outside the scope of this plan. For further information see: http://public.leginfo.state.ny.us/LAWSSEAF.cgi?QUERYTYPE=LAWS+&QUERYDATA=@SLENV0A51T7+&LIST=LAW+&BROWSER=EXPLORER+&TOKEN=19354909+&TARGET=VIEW to view Article 51 Title 7 of the Environmental Conservation Law which covers the (4) "Unique Area Preservation Project." It should be noted that this property has already been purchased by the State of New York under the Reforestation Act, (Article 9 Title 5), which

contains no provisions in ECL 51-07 for changing a Reforestation Area into a Unique Area by the Commissioner of DEC, thus this is an action that can only be authorized by an act of the New York State Legislature.

- Comments were received requesting the Hemlock-Canadice State Forest continue to be designated as a State Forest.
  - Response: This action is outside the scope of this plan, however would require no additional actions by anyone.

- Comments were received requesting the South Hemlock Boat Launch be moved further north to deeper water.
  - Response: Public Recreation and Use actions 6.1 and 6.2 deal with the possibility of moving the South Hemlock Boat Launch north.

- Comments were received requesting no upgrades to the boat launches.
  - Response: The only upgrades to the boat launches included in this plan are new kiosks and Invasive Species Disposal Stations at each of them. See the Public Recreation and Use section on page 100 for further information.

- Comments were received requesting that the North Hemlock boat launch be improved.
  - Response: The only upgrades to the existing boat launches included in this plan are new kiosks and Invasive Species Disposal Stations at each of them. See the Public Recreation and Use section on page 100 for further information.

- Comments were received requesting no roads/trails be opened to Motorized Access for Persons with Disabilities (MAPPWD) permit holders.
  - Response: 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 requires a public entity to thoroughly examine each of its programs and services to determine the level of accessibility provided. Title II of the ADA applies to NYS DEC and requires, in part, that reasonable modifications must be made to its services and programs, 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 to NYS DEC.

    Expanding the statewide MAPPWD system to include truck, but not ATV, access to the North Hemlock Haul Rd and South Hemlock Haul Rd will not result in a fundamental alteration of the use of those haul roads and will increase the usability of the Hemlock-Canadice State Forest by people with disabilities.

- Comments were received requesting additional MAPPWD routes.
  - Response: As per the Public Recreation and Use section on page 100, two sections of haul road will be added to the state wide list of MAPPWD routes, but ATV's will not be allowed to be used on them per 6 NYCRR §190.26.

- Comments were received requesting that additional lands be acquired to increase the size of the Hemlock-Canadice State Forest, including the suggestion of more than doubling the current size of the property.
  - Response: The acquisition of land by NYS DEC in New York State is guided by the New York State Open Space Conservation Plan. See the Land Acquisition section on page 113 and www.dec.ny.gov/lands/317.html for the current New York State Open Space Conservation Plan.

- Comments were received to continue stocking fish and include other native fish not just species pursued by fisherman.
  - Response: Fish and Wildlife Habitat section on page 94, Objective 3 is to manage fish populations to conserve native species as well as provide public use through angling.

- Comments were received to retain the current 10hp size limit for motors on Hemlock and Canadice Lakes.
  - Response: At this time there are no plans to change the regulations related to motor size on the Hemlock or Canadice Lakes.

- Comments were received to limit motor boats on Hemlock and Canadice Lakes to 4 stroke motors.
  - Response: Environmentally 4 stroke motors pollute much less than 2 stroke motors, and in some cases can be quieter too. Historically the City of Rochester allowed all motor's under 10 hp to operate on the lakes, in order to manage as much as possible like "the City of Rochester did", for now the regulation will remain based on horsepower, not type of engine.

- Comments were received requesting that horseback riding be allowed.
  - Response: Horseback riding is currently forbidden under 6 NYCRR §190.26. The long linear shape of the state forest, steep hillsides, poor soils, restrictions under NYS Department of Health Rules and Regulations Title 10 section 125.1 and concentrated points of public use make a horse trail system unfeasible.

- Comments were received requesting no change to the current prohibition on horses.
  - Response: This use is currently forbidden under 6 NYCRR §190.26.

- Comments were received requesting that camping be allowed on Hemlock-Canadice State Forest.
  - Response: A promise was made to maintain the status quo on public use regulations during the acquisition process. Camping along the lakes could present water quality concerns, could fundamentally changes the character of the lakes. Additionally, restrictions under NYS Department of Health Rules and Regulations Title 10 section 125.1 make allowing camping unfeasible

- Comments were received requesting an expansion of the current hiking trails. Suggestions included the expansion of The Nature Conservancy's (TNC) Rob's Trail to the west, a new trail in the Dixon Hollow area, lengthening Walnut Trail along the west side of Hemlock Lake and adding hiking trails that were not so secluded or located in the woods.
  - Response: Public Recreation and Use section includes the possible connection of Rob's trail to the west, and the lengthening and/or improving of Walnut Trail. Hemlock-Canadice State Forest is about 90% forested, and most of what isn't forested is wet, so having a trail not located in the woods is not possible on Hemlock-Canadice State Forest, for those looking for a not so secluded walk in the woods please visit a city park near you.

- Comments were received requesting the Hemlock-Canadice State Forest be kept pristine.
  - Response: Per Webster's 9th New Collegiate Dictionary (1983) Pristine - 1**:** belonging to the earliest period or state: 2 a: uncorrupted by civilization b: free from soil or decay: being fresh and clean. Prior to City of Rochester purchasing the shoreline and some of the adjoining land these lakes were ringed with cottages and farms, and evidence of this of still visible in the form of rock walls and foundations, wire fencing, and linear rows of planted trees. However NYS DEC will continue to manage the Hemlock-Canadice State Forest to ensure the "biological integrity, improvement and protection… not only to ensure the biological diversity and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide, including the protection of the public drinking water for the City of Rochester and other communities." As stated in the Vision of this plan located on page 67.

- Comments were received to remove the entire minerals section of the draft Hemlock-Canadice UMP.
  - Response: It was included for public education on the history for the area surrounding the Hemlock-Candice State Forest and on past processes used for leasing on other state lands administered by NYS DEC. In the original draft UMP, it was also included for consistency in drafting. NYS DEC typically includes the description of the process to, in part, be sure the public understands that any mineral lease process requires public comment, and that any lease must result from that independent process. It is not the UMP itself that authorizes those activities. Since, as described above, NYS DEC has determined that it is appropriate to prohibit drilling for the period covered by this UMP, some of the language in this section is inapplicable to this forest. However, given the degree of public interest in the topic of drilling for oil and gas, NYS DEC determined that the language can remain for the educational and consistency purposes described above.

- Comment was received asking where the contract/agreement between NYS DEC and the City of Rochester could be viewed.
  - Response: The deeds for the purchase of the City of Rochester's watershed were filed with the Clerk in Livingston and Ontario Counties.

- Comments were received supporting the historical connection of the bald eagle restoration with the area adjacent to Hemlock Lake, and the continued support for the management of the local population of Bald Eagles.
  - Response: Due to the historical use of the area by Bald Eagles, they will continue to be monitored and encouraged to continue to use the area. See the Fish and Wildlife Habitat section on page 94.

- Comments were received stating that there is currently adequate access to Hemlock Lake and the state lands around the lake.
  - Response: With enough time, energy, gumption and a good boat and pair of waders someone could reach all parts of the Hemlock-Canadice State Forest. However, others requested additional parking, trails and to expand the size of the State Forest. If additional acres are added to the property it will be extremely difficult to do without touching any additional town roads, and by adding road frontage, the access to the Hemlock-Canadice State Forest will be improved. See the Land Acquisition section on page 113 for additional information.

- Comments were received requesting no additional roads or widening of current roads.
  - Response: If the South Hemlock Boat Launch is moved north to deeper water (which will only happen if the criteria mentioned in the Public Recreation and Use section on page 100 is met) then for safety reasons that portion of the South Hemlock Haul Rd used to access the new boat launch location will need to be upgraded to Public Forest Haul Rd standards. No new additional Public Forest Access Roads or Haul Roads are included in this plan; all activities on the existing ones will be limited to maintenance.

- Comment was received suggesting planting disease resistant American elm and/or American chestnut.
  - Response: If, or hopefully when, disease resistant trees are developed the entire State Forest system will be evaluated for the best locations for planting them.

- Comment was received expressing concern for other threatened/endangered or rare species, besides the bald eagle(s) on Hemlock-Canadice State Forest.
  - Response: Bald eagles are a very visible and historically important part of the Hemlock-Canadice State Forest. They and other threatened or endangered species that are found on state forests are managed using the best available scientific knowledge. It should be note that in 1998 the City of Rochester funded a study of plant communities in the entire watershed. The inventory was conducted by staff of The Nature Conservancy.

- Comments were received suggesting that the poison ivy and 'wild rose' be removed with herbicides.
  - Response: Herbicide use is one of the control methods mentioned in the Forest Health Threats section on page 84. Unfortunately poison ivy is a *native* noxious weed that has no state wide removal plan. In areas of intensive public use, such as campgrounds or picnic areas, herbicide may be used to remove the plant at those locations, but in most state forests it is left alone. Multiflora rose (*Rosa Multiflora*) is considered an invasive species of New York, however the native wild rose (*Rosa Carolina*), is the state flower. Multiflora rose has spread extensively in parts of New York State, including much of the Hemlock-Canadice State Forest, to the point where it would take a lot of chemical to remove it from the property. The impact of multiflora rose, and other widespread impeding vegetation, is taken into consideration when planning timber harvests, for example by applying herbicide to the sale area to remove the competing vegetation and give the tree seedling a fighting chance.

- Comments were received wondering what was going to be done about the invasive insects such as forest tent caterpillar, Asian longhorn beetle, and emerald ash borer. Also, if aerial spraying of insecticides was to be used that neighboring landowners should be notified.
  - Response: The Forest Health Threats section on page 84 has been expanded to include additional information. NYS DEC current plan for dealing with Emerald Ash Borer is contained in a document called the Emerald Ash Borer Management Response Plan (2011), additional information can be found at: www.dec.ny.gov/animals/7253.html.

    There is very little chance that aerial spraying would occur, however if the unlikely does occur it would require additional SEQR, and definitely include the notification of neighbors and many others.

- Comments were received regarding invasive species control and/or managed.
  - Response: The Forest Health Threats section on page 84 has been expanded to include additional information, including other none-insect invasive species.

- Comment was received wondering about the possibility of reopening old plugged and abandoned gas wells.
  - Response: There are no known old, plugged and abandoned gas wells on Hemlock Canadice State Forest

- Comment requested that the level of the lake(s) be kept low so that people could walk and explore the shoreline. Including easily walking between boat launches.
  - Response: The water level of Hemlock and Canadice Lakes is not controlled by NYS DEC, and is outside the scope of this plan. Plus, if the water level on a lake is permanently lowered the vegetation would soon sprout and grow down to the new shoreline level, as a result the wide gravel shoreline would soon disappear under new growth. Lake levels fluctuate per public water supply needs and in accordance with guidance prepared by Region 8 Fish & Wildlife staff ~1987.

- Comments were received requesting a kiosk or historical marker at the South Grassland Parking Lot (large lot at south end of South Hemlock Access Road), with information on the Springwater Valley.
  - Response: NYS DEC signs and kiosks on State Forests relate to the state land it is on, not the nearby private land.

- Comments were received requesting additional larger road side signs.
  - Response: The signs posted after purchase by NYS DEC are all standard signs, if the state wide standard changes the signs will be changed to meet the new standard.

- Comment was received questioning qualifications of those on team to make water quality decisions specific to swimming. As well as questioning the SEQRA review of regulations concerning public use such as swimming, wading and campfires.
  - Response: The City of Rochester staff is charged with maintaining water quality to DOH standards. Regulations do go through a public process before being enacted.

- Comments were received about the steep slopes and other topographical information that make up much of the Hemlock-Canadice State Forest and the lack of mention of them in the Draft Hemlock-Canadice Unit Management Plan.
  - Response: The elevation of several points on the Hemlock-Canadice State Forest was mentioned in the Geography section on page 16, and steep slopes were mentioned in the Access section on page 55. Additional information has been added to the Appendix M: Maps. Any planned activities will consider slope and potential erosion, and include the application of Best Management Practices. Rochester Water Bureau staff will be consulted before activities occur.

- Comment was received requesting the bridge on Rex Hill Road needs replacement.
  - Response: Rex Hill Road is a Town of Livonia road, and thus outside of the scope of this plan.

- Comments were received that the deer population is too high and needs to be controlled.
  - Response: Most foresters and farmers would agree with this statement, most hunters would disagree. NYS DEC has used Citizen Task Forces to assist in making deer management decisions in New York State for more than a decade. Task force recommendations are used to guide deer management actions in each WMU. Adult female harvest quotas, for example, are based on the relationship between the actual population trend and the population goal in each WMU. The number of Deer Management Permits (DMPs) available to hunters is, in turn, based on the adult female harvest quota each year.

In July of 1998, the New York state Legislature passed a law entitled Deer Management Assistance Program (DMAP). DMAP allows NYS DEC to issue additional antlerless tags to landowners who need improved harvests of deer to meet management goals of their property. This program is a possibility for use on State Forest lands, and is being tested in other regions of the state. Logistics of how to fairly pass out the additional tags, as well as other questions would need to be answered before this could be implemented on Hemlock-Canadice State Forest. There are no current plans to apply for DMAP, but it is a possibility for the future.

The impact of deer is taken into consideration when planning timber harvests, for example by cutting larger areas so more growth will start than the deer can eat or by leaving tops to protect new growth from hungry deer.

- Comments were received wondering what kind of permits businesses within the Hemlock-Canadice State Forest would need.
  - Response: Business are not allowed to "set up shop" within the Hemlock-Canadice State Forest, however if a business wants to conduct a tour, or other short term use of this or other State Forests, it must first obtain a Temporary Revocable Permit (TRP). Depending on the size of the event, and the type of event, proof of additional insurance or other requirements may be required.

- Comments were received supporting allowing waterfowl hunting on Hemlock-Candice State Forest, including allowing the use of dogs to retrieve birds from the water.
  - Response: During the correct season, and with the correct license and tags, waterfowl hunting is allowed. Dogs must be under the control of the owner at all times, but may be used for retrieving waterfowl.

- Comments were received requesting more encouragement for tourists to use the area.
  - Response: Tourism ad campaigns are handled by the New York State Department of Economic Development. However, recreational use of the area is one of the goals for the area, after protection of the water quality, and natural environment.

- Comments were received about littering, including the residual from the use of fireworks.
  - Response: Hemlock-Canadice State Forest will continue to be a "pack it in, pack it out" area. NYS DEC staff, City of Rochester Staff, and/or volunteers will periodically remove what hasn't been packed out. Personal use of fireworks is illegal in New York State.

- Comment was received requesting no recreation use be allowed at all.
  - Response: It is clear many people, under restrictions, enjoy using the area for recreation, and have, for over 100 years with minimal impact on the character of the area and water quality.

- Comment was received concerning fragmentation of wildlife habitat.
  - Response: Habitat fragmentation is a concern of foresters, wildlife biologists and other natural resource managers. Forest and habitat fragmentation, matrix blocks and connecting corridors are covered in the Strategic Plan for State Forest Management, located at http://www.dec.ny.gov/lands/64567.html. In addition, the Significant Plants and Communities section on page 30 has been expanded.

- Comment was received about lack of public record for the public meeting, and lack of sign-in sheet at the same public meeting.
  - Response: Sign in sheets were available at the tables located near the main entrance to the room, 250 people signed the sheets. Comments were successfully recorded and have been transcribed

into the Addendum to Hemlock-Canadice Unit Management Plan, available on NYS DEC's website at www.dec.ny.gov/lands/68822.html and on the CD versions of this document.

- Comment was received about the Draft Hemlock-Canadice Unit Management Plan not referencing Environmental Justice Commissioners Policy – 29, and that it needs to be explicitly applied to this plan because these lakes supply drinking water to nearly all of the areas identified as EJ areas in both Livingston and Monroe Counties by NYS DEC Environmental Justice maps.
  - Response: Environmental Justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental Justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities. See http://www.dec.ny.gov/public/333.html for additional information.

    The Hemlock-Canadice Unit Management Plan is not a law, regulation, policy or environmental permit, it is a plan for managing the Hemlock-Canadice State Forest, and as such it must follow all applicable laws, regulations and policies.

- Comments were received about the lack of NYS DEC staffing for continued maintenance of Hemlock-Canadice State Forest, and support for continuing the maintenance contract with the City of Rochester.
  - Response: NYS DEC and the City of Rochester staff will continue to do the best maintenance and management possible within the resources allocated to them. Efforts are underway to continue the maintenance contract between the two levels of government, but even without the contract, communication will continue between staff members.

- Comment was received that the final NYS DEC Hemlock-Canadice Unit Management Plan should include a plan for the control, legal enforcement and permanent protection for the waters flowing into the reservoirs from the Hemlock-Canadice watershed.
  - Response: Actions and enforcements on privately owned land is outside the scope of this Unit Management Plan. Town, county and state regulations address activity on private property. In addition, NYS Department of Health Rules and Regulations Title 10 section 125.1 authorize the City of Rochester to inspect conditions that could affect water quality

- Comments were received requesting an advisory council of local citizens, with regular meeting, and sub-committees, to give them a more active role in the decision making process. Others wanted responses, or updates, on the ideas suggested during the comment period for the Draft Hemlock-Canadice Unit Management Plan.
  - Response: While many State Parks have "Friends of" advocacy groups, State Forests do not. The UMP process is used to solicit public input.

- Comments were received stating the Hemlock-Canadice Unit Management Plan is in conflict with the NYS DEC regulations of the City of Rochester's water Treatment plant.
  - Response: We could not find any conflicts with the permit issued by NYSDEC Division of Water for water withdrawals by the City of Rochester from Hemlock and Canadice Lakes.

- Comments were received wanting the City of Rochester's permit system to be used again, and a fee to be charged to enter the Hemlock-Canadice State Forest.
  - Response: All State Forests, Unique Areas, and Wildlife Management Areas are open for the public to use without paying a fee or getting a short term permit.

- Comments were received requesting no more and/or additional grassland habitat be located on Hemlock Canadice State Forest.
  - Response: Grasslands are an important and yet increasingly rare habitats across New York State. Due to changing land-use patterns, natural vegetative succession, and development, in many areas grasslands are fragmenting and disappearing. The amount of acres scheduled to be converted to grassland is an extremely small part of the Hemlock-Canadice State Forest, only 0.4%. It also has a priority code of Low, in that it is for the enhancement of habitat. One of New York States Grassland Focus Areas overlaps with Hemlock-Canadice State Forest. See Significant Plants and Communities, Appendix M: Maps, Timber and Vegetation Management, and Fish and Wildlife Habitat sections for additional information.

- Comments were received requesting information on how to make comments and/or suggestions in the future.
  - Response: Comments, questions, or concerns may always be addressed to the Bath office by phone (607-776-2165), email (r8.ump@dec.ny.gov) or mail (7291 Coon Rd, Bath, NY 14810).

- Comments were received asking about volunteering to work on the Hemlock-Canadice State Forest.
  - Response: Groups or individuals may volunteer for many stewardship activities on State Land, both on a short term or long term under a Volunteer Stewardship Agreement. See the Public Recreation and Use or the Maintenance and Facilities Management Sections on pages 100 and 111.

- Comments were received requesting additional wildlife habitat work, such as releasing apple trees.
  - Response: When possible, using volunteers, or as tradeoffs in a timber sale, small wildlife habitat improvements may occur.

- Comments were received regarding the use of skid trails as recreation trails.
  - Response: With the exception of the land between Boat Launch Rd and Hemlock Lake, people may walk anywhere they want to, including un-used skid trails. For safety reasons active skid trails should not be used. Many of the existing recreational trails started out as skid trails, and if new skid trail is placed such that it can be used to meet the Public Recreation and Use Action 2.2 it will be converted to a recreational trail at the completion of the timber sale.

- Comment was received suggesting that tapping maple trees for sap to produce maple syrup be allowed.
  - Response: Stands or collection of road side trees which do not have the potential for successful production of quality lumber or are reserved from harvesting could be considered for tapping. At this time the procedures for this process are under review, but portions of stands B-15, B-20 and A-35 are considered suitable for tapping. A maple tap sale was attempted in 2014, but no one bid on the sale.

- Comments were received requesting more parking spaces.
  - Response: See Access action 4.0 on page 71 and Parking on page 70 for planned response to alleviate safety problems due to minimal parking available along the Canadice Lake Rd.

- Comments were received requesting revenue from oil and gas leases go to the conservation fund not the general fund.
  - Response: This is an action that can only be authorized by an act of the New York State Legislature, and thus outside the scope of this plan. As stated above, NYS DEC is prohibiting drilling in this State Forest for the period covered by this UMP

- Comments were received requesting float planes be banned from Hemlock and Canadice Lakes.
  - Response: When a float plane lands on water it becomes a mechanically propelled vessel, and per current regulations to be on Hemlock or Canadice Lakes it must be less than 17 feet in length and have a motor of less than 10hp to be legal.

- Comment was received questioning the justification of allowing dogs to be used for hunting because the Town of Livonia's Hemlock Park is a gathering area for Canada geese and hunting is not allowed in that area. Also worrying about dogs disturbing bird nests and causing nest abandonment.
  - Response: This plan does not, and cannot, cover Hemlock Park, contact the Town of Livonia for regulations related to dogs in the park. Hemlock-Canadice State Forest has about 22 miles of shoreline and about 6,684 acres for hunting on. As long as the nest is not destroyed, most birds will return as soon as whatever chased them off is gone from the area.

- Comments were received requesting that boat storage along the shore be allowed.
  - Response: State wide regulations for State Forests, part §190.8w, state: "No person shall erect, … store, …any other property on State lands…", plus it is more aesthetically pleasing to not have all those boats littering the shoreline, and fits within the "pack it in, pack it out" status of the Hemlock-Canadice State Forest.

- Comments were received requesting that fallen trees be allowed to be used for firewood.
  - Response: On all state forests, timber sales include selling trees that could be used as firewood. In that case the highest acceptable bidder pay's for the right to harvest and re-sell the designated trees. Fallen trees not removed will be used as habitat and food source by wildlife and eventually decompose back into the soil to provide nutrients for the next generation of trees and other vegetation.

- Comments were received requesting an off leash area and/or trail for dogs.
  - Response: A dog park is more appropriate recreational activity for a Town or County Park and not a State Forest. On Hemlock-Canadice State Forest dogs must be under control, but not necessarily leashed as per 6NYCRR §190.26.

- Comments were received requesting additional public information/education be available on several topics; including bears, hypothermia, boat safety, woods safety, timber and wildlife management, and others.
  - Response: A lot of this information is available on our website.
    Bears - www.dec.ny.gov/animals/6960.html;
    Hypothermia/lost in woods - www.dec.ny.gov/regulations/57053.html;
    Boat safety - nysparks.com/recreation/boating/safe-boating.aspx
    Woods safety - www.dec.ny.gov/outdoor/28708.html and/or
    www.dec.ny.gov/public/341.html;
    Timber management - www.dec.ny.gov/lands/4972.html;
    Wildlife management - www.dec.ny.gov/23.html
    Or call your local NYS DEC office.

- Comments were received requesting the prohibition of all boats on Hemlock and Canadice Lakes.
  - Response: Thank you for your comment, but it is clear many people enjoy boating on the lakes, as they have for decades, and have safely done so while keeping the water pure for drinking.

- Comments were received requesting compliance with local zoning.
  - Response: A good faith effort is made whenever possible to meet local rules and regulations.

Appendix B: Animals of the Hemlock-Canadice Unit Management Plan Area

These are not intended to be all-inclusive lists, some animals will be missed, and some may no longer be found on these areas.

Species of Greatest Conservation Need (SGCN)

The State Wildlife Grants program provides funds for conservation efforts aimed at preventing fish and wildlife populations from declining, reducing the potential for these species to be listed as endangered. In order to access these grant funds, New York State was required to develop a Comprehensive Wildlife Conservation Strategy (CWCS) that focuses on the "species of greatest conservation need." This includes those species that are deemed rare, imperiled and those for which status has not been established. NYS DEC staff produced a list of 537 species of greatest conservation need. The list of species is certainly not exhaustive, but includes those species for which systematic assessments had been made by staff of the NYSDEC Division of Fish, Wildlife and Marine Resources and the New York Natural Heritage Program. For further information on how the list was compiled, visit the web site www.dec.ny.gov/animals/9406.html which also has the entire list of species.

Birds

Based on information included in the 2000-2005 NYS Breeding Bird Atlas, nine atlas blocks overlap with Hemlock Canadice Unit (2773 B, 2872 A, B, C, 2873 A, B, C, D, 2874 C). These blocks contain confirmed breeding populations of 93 species, probable breeding populations of 11 species, and 24 possible breeding populations. Of these, three species are protected as a NYS threatened species and ten species are protected as NYS special concern species (Table 1B: Birds). Twenty five of these species are also listed as NYS species of greatest conservation need (SGCN) (Table 2B: Bird Species of Greatest Conservation Need (SGCN)).

It should be noted that because the Atlas blocks do not follow exactly the outline of Hemlock Canadice Unit, some of the birds identified during this effort may have been found adjacent to, but not within, the state land.

The Hemlock Canadice Unit is listed by Audubon (2005) as an Important Bird Area (IBA) of New York. There are breeding bald eagles within the unit which meet the "Species at Risk" criterion for an IBA. There are also five forest bird species that meet the "Responsibility Species Assemblage" criterion.

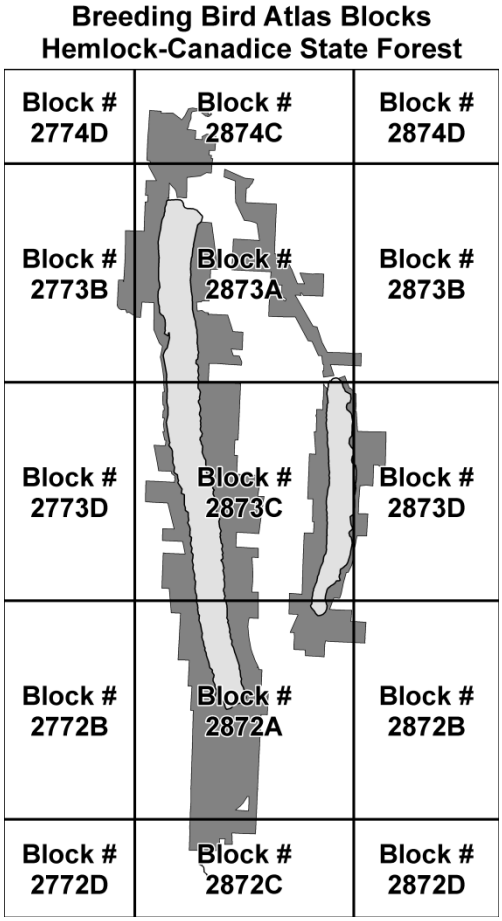


Table 1B: Birds

This is from the 2000-2005 NYS Breeding Bird Atlas blocks that overlap the Hemlock Canadice Unit.

Common Name	Scientific Name	Breeding Status	NY Legal Status
Alder Flycatcher	*Empidonax alnorum*	Confirmed	Protected
Acadian Flycatcher	*Empidonax virescens*	Possible	Protected
American Crow	*Corvus brachyrhynchos*	Confirmed	Game Species
American Goldfinch	*Carduelis tristis*	Confirmed	Protected
American Kestrel	*Falco sparverius*	Confirmed	Protected
American Redstart	*Setophaga ruticilla*	Confirmed	Protected
American Robin	*Turdus migratorius*	Confirmed	Protected
American Woodcock	*Scolopax minor*	Probable	Game Species
Bald Eagle	*Haliaeetus leucocephalus*	Confirmed	Threatened
Baltimore Oriole	*Icterus galbula*	Confirmed	Protected
Barn Swallow	*Hirundo rustica*	Confirmed	Protected
Barred Owl	*Strix varia*	Confirmed	Protected
Belted Kingfisher	*Megaceryle alcyon*	Confirmed	Protected
Black-and-white Warbler	*Mniotilta varia*	Probable	Protected
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Confirmed	Protected
Blackburnian Warbler	*Dendroica fusca*	Confirmed	Protected
Black-capped Chickadee	*Poecile atricapillus*	Confirmed	Protected
Black-throated Blue Warbler	*Dendroica caerulescens*	Possible	Protected
Black-throated Green Warbler	*Dendroica virens*	Confirmed	Protected
Blue Jay	*Cyanocitta cristata*	Confirmed	Protected
Blue-gray Gnatcatcher	*Polioptila caerulea*	Confirmed	Protected
Blue-headed Vireo	*Vireo solitarius*	Confirmed	Protected
Blue-winged Warbler	*Vermivora pinus*	Confirmed	Protected
Bobolink	*Dolichonyx oryzivorus*	Confirmed	Protected
Broad-winged Hawk	*Buteo platypterus*	Confirmed	Protected
Brown Creeper	*Certhia americana*	Confirmed	Protected
Brown Thrasher	*Toxostoma rufum*	Confirmed	Protected
Brown-headed Cowbird	*Molothrus ater*	Confirmed	Protected
Canada Goose	*Branta canadensis*	Confirmed	Game Species
Canada Warbler	*Wilsonia canadensis*	Possible	Protected
Carolina Wren	*Thryothorus ludovicianus*	Possible	Protected

Common Name	Scientific Name	Breeding Status	NY Legal Status
Cedar Waxwing	*Bombycilla cedrorum*	Confirmed	Protected
Cerulean Warbler	*Dendroica cerulea*	Possible	Protected-Special Concern
Chestnut-sided Warbler	*Dendroica pensylvanica*	Confirmed	Protected
Chimney Swift	*Chaetura pelagica*	Possible	Protected
Chipping Sparrow	*Spizella passerina*	Confirmed	Protected
Cliff Swallow	*Petrochelidon pyrrhonota*	Confirmed	Protected
Common Grackle	*Quiscalus quiscula*	Confirmed	Protected
Common Raven	*Corvus corax*	Possible	Protected
Common Yellowthroat	*Geothlypis trichas*	Confirmed	Protected
Cooper's Hawk	*Accipiter cooperii*	Confirmed	Protected-Special Concern
Dark-eyed Junco	*Junco hyemalis*	Confirmed	Protected
Downy Woodpecker	*Picoides pubescens*	Confirmed	Protected
Eastern Bluebird	*Sialia sialis*	Confirmed	Protected
Eastern Kingbird	*Tyrannus tyrannus*	Confirmed	Protected
Eastern Meadowlark	*Sturnella magna*	Confirmed	Protected
Eastern Phoebe	*Sayornis phoebe*	Confirmed	Protected
Eastern Screech-Owl	*Megascops asio*	Possible	Protected
Eastern Towhee	*Pipilo erythrophthalmus*	Confirmed	Protected
Eastern Wood-Pewee	*Contopus virens*	Confirmed	Protected
European Starling	*Sturnus vulgaris*	Confirmed	Unprotected
Field Sparrow	*Spizella pusilla*	Confirmed	Protected
Golden-crowned Kinglet	*Regulus satrapa*	Confirmed	Protected
Golden-winged Warbler	*Vermivora chrysoptera*	Possible	Protected-Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	Probable	Protected-Special Concern
Gray Catbird	*Dumetella carolinensis*	Confirmed	Protected
Great Blue Heron	*Ardea herodias*	Confirmed	Protected
Great Crested Flycatcher	*Myiarchus crinitus*	Confirmed	Protected
Great Horned Owl	*Bubo virginianus*	Confirmed	Protected
Green Heron	*Butorides virescens*	Possible	Protected
Hairy Woodpecker	*Picoides villosus*	Confirmed	Protected
Henslow's Sparrow	*Ammodramus henslowii*	Probable	Threatened

Common Name	**Scientific Name**	**Breeding Status**	**NY Legal Status**
Hermit Thrush	*Catharus guttatus*	Possible	Protected
Hooded Merganser	*Lophodytes cucullatus*	Confirmed	Game Species
Hooded Warbler	*Wilsonia citrina*	Confirmed	Protected
Horned Lark	*Eremophila alpestris*	Possible	Protected-Special Concern
House Finch	*Carpodacus mexicanus*	Confirmed	Protected
House Sparrow	*Passer domesticus*	Confirmed	Unprotected
House Wren	*Troglodytes aedon*	Confirmed	Protected
Indigo Bunting	*Passerina cyanea*	Confirmed	Protected
Killdeer	*Charadrius vociferus*	Confirmed	Protected
Least Flycatcher	*Empidonax minimus*	Possible	Protected
Magnolia Warbler	*Dendroica magnolia*	Confirmed	Protected
Mallard	*Anas platyrhynchos*	Confirmed	Game Species
Marsh Wren	*Cistothorus palustris*	Probable	Protected
Mourning Dove	*Zenaida macroura*	Confirmed	Protected
Mourning Warbler	*Oporornis philadelphia*	Confirmed	Protected
Mute Swan	*Cygnus olor*	Probable	Protected
Nashville Warbler	*Vermivora ruficapilla*	Probable	Protected
Northern Cardinal	*Cardinalis cardinalis*	Confirmed	Protected
Northern Flicker	*Colaptes auratus*	Confirmed	Protected
Northern Goshawk	*Accipiter gentilis*	Possible	Protected-Special Concern
Northern Harrier	*Circus cyaneus*	Probable	Threatened
Northern Mockingbird	*Mimus polyglottos*	Probable	Protected
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	Confirmed	Protected
Northern Saw-whet Owl	*Aegolius acadicus*	Possible	Protected
Northern Waterthrush	*Seiurus noveboracensis*	Possible	Protected
Osprey	*Pandion haliaetus*	Possible	Protected-Special Concern
Ovenbird	*Seiurus aurocapilla*	Confirmed	Protected
Pileated Woodpecker	*Dryocopus pileatus*	Confirmed	Protected
Pine Warbler	*Dendroica pinus*	Probable	Protected
Purple Finch	*Carpodacus purpureus*	Confirmed	Protected
Purple Martin	*Progne subis*	Confirmed	Protected

Common Name	**Scientific Name**	**Breeding Status**	**NY Legal Status**
Red-bellied Woodpecker	*Melanerpes carolinus*	Confirmed	Protected
Red-breasted Nuthatch	*Sitta canadensis*	Confirmed	Protected
Red-eyed Vireo	*Vireo olivaceus*	Confirmed	Protected
Red-shouldered Hawk	*Buteo lineatus*	Confirmed	Protected-Special Concern
Red-tailed Hawk	*Buteo jamaicensis*	Confirmed	Protected
Red-winged Blackbird	*Agelaius phoeniceus*	Confirmed	Protected
Ring-necked Pheasant	*Phasianus colchicus*	Possible	Game Species
Rock Pigeon	*Columba livia*	Confirmed	Unprotected
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	Confirmed	Protected
Ruby-throated Hummingbird	*Archilochus colubris*	Confirmed	Protected
Ruffed Grouse	*Bonasa umbellus*	Confirmed	Game Species
Savannah Sparrow	*Passerculus sandwichensis*	Confirmed	Protected
Scarlet Tanager	*Piranga olivacea*	Confirmed	Protected
Sharp-shinned Hawk	*Accipiter striatus*	Confirmed	Protected-Special Concern
Song Sparrow	*Melospiza melodia*	Confirmed	Protected
Spotted Sandpiper	*Actitis macularius*	Possible	Protected
Swamp Sparrow	*Melospiza georgiana*	Confirmed	Protected
Tree Swallow	*Tachycineta bicolor*	Confirmed	Protected
Tufted Titmouse	*Baeolophus bicolor*	Confirmed	Protected
Turkey Vulture	*Cathartes aura*	Possible	Protected
Veery	*Catharus fuscescens*	Confirmed	Protected
Vesper Sparrow	*Pooecetes gramineus*	Possible	Protected-Special Concern
Warbling Vireo	*Vireo gilvus*	Confirmed	Protected
White-breasted Nuthatch	*Sitta carolinensis*	Confirmed	Protected
White-throated Sparrow	*Zonotrichia albicollis*	Possible	Protected
Wild Turkey	*Meleagris gallopavo*	Confirmed	Game Species
Willow Flycatcher	*Empidonax traillii*	Confirmed	Protected
Winter Wren	*Troglodytes troglodytes*	Probable	Protected
Wood Duck	*Aix sponsa*	Confirmed	Game Species
Wood Thrush	*Hylocichla mustelina*	Confirmed	Protected
Yellow Warbler	*Dendroica petechia*	Confirmed	Protected

Common Name	Scientific Name	Breeding Status	NY Legal Status
Yellow-bellied Sapsucker	*Sphyrapicus varius*	Confirmed	Protected
Yellow-billed Cuckoo	*Coccyzus americanus*	Possible	Protected
Yellow-rumped Warbler	*Dendroica coronata*	Confirmed	Protected
Yellow-throated Vireo	*Vireo flavifrons*	Possible	Protected

Table 2B: Bird Species of Greatest Conservation Need (SGCN)

Birds that were identified during the 2000-2005 Breeding Bird Atlas, on blocks that overlap with the State Forests of the Hemlock Canadice Unit.

Common Name	Scientific Name	Breeding Status	NYS Status	SGCN
American Woodcock	*Scolopax minor*	Probable	Game Species	SGCN
Bald Eagle	*Haliaeetus leucocephalus*	Confirmed	Threatened	SGCN
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Confirmed	Protected	SGCN
Black-throated Blue Warbler	*Dendroica caerulescens*	Possible	Protected	SGCN
Blue-winged Warbler	*Vermivora pinus*	Confirmed	Protected	SGCN
Bobolink	*Dolichonyx oryzivorus*	Confirmed	Protected	SGCN
Brown Thrasher	*Toxostoma rufum*	Confirmed	Protected	SGCN
Canada Warbler	*Wilsonia canadensis*	Possible	Protected	SGCN
Cerulean Warbler	*Dendroica cerulea*	Possible	Protected-Special Concern	SGCN
Cooper's Hawk	*Accipiter cooperii*	Confirmed	Protected-Special Concern	SGCN
Eastern Meadowlark	*Sturnella magna*	Confirmed	Protected	SGCN
Golden-winged Warbler	*Vermivora chrysoptera*	Possible	Protected-Special Concern	SGCN
Grasshopper Sparrow	*Ammodramus savannarum*	Probable	Protected-Special Concern	SGCN
Henslow's Sparrow	*Ammodramus henslowii*	Probable	Threatened	SGCN
Horned Lark	*Eremophila alpestris*	Possible	Protected-Special Concern	SGCN
Northern Goshawk	*Accipiter gentilis*	Possible	Protected-Special Concern	SGCN
Northern Harrier	*Circus cyaneus*	Probable	Threatened	SGCN
Osprey	*Pandion haliaetus*	Possible	Protected-Special Concern	SGCN
Red-shouldered Hawk	*Buteo lineatus*	Confirmed	Protected-Special Concern	SGCN
Ruffed Grouse	*Bonasa umbellus*	Confirmed	Game Species	SGCN
Scarlet Tanager	*Piranga olivacea*	Confirmed	Protected	SGCN

Common Name	Scientific Name	Breeding Status	NYS Status	SGCN
Sharp-shinned Hawk	*Accipiter striatus*	Confirmed	Protected-Special Concern	SGCN
Vesper Sparrow	*Pooecetes gramineus*	Possible	Protected-Special Concern	SGCN
Willow Flycatcher	*Empidonax traillii*	Confirmed	Protected	SGCN
Wood Thrush	*Hylocichla mustelina*	Confirmed	Protected	SGCN

Reptiles and Amphibians

Based on information presented in the 1990-2007 NYS Amphibian and Reptile Atlas Project (Herp Atlas), nine species of snake, one lizard species, four turtle species, one toad species, eight frog species, and eleven species of salamander were found in or near the Hemlock Canadice Unit (Table 3B: Reptiles and Amphibians by Common Name and Scientific Name). There are also two additional species of snake for which there are historical records. Of these reptile and amphibian species, nine are Species of Greatest Conservation Need (Table 4B: Reptile and Amphibian Species of Greatest Conservation Need).

It should be noted that because the Herp Atlas blocks do not follow the exact outline of Hemlock Canadice Unit, some of the reptiles and amphibians identified during this effort may have been found adjacent to, but not within, the state land.

This list is summarized from the NYS Amphibian and Reptile Atlas, 1990-2007.

Amphibian and Reptile Atlas Blocks
Hemlock-Canadice State Forest

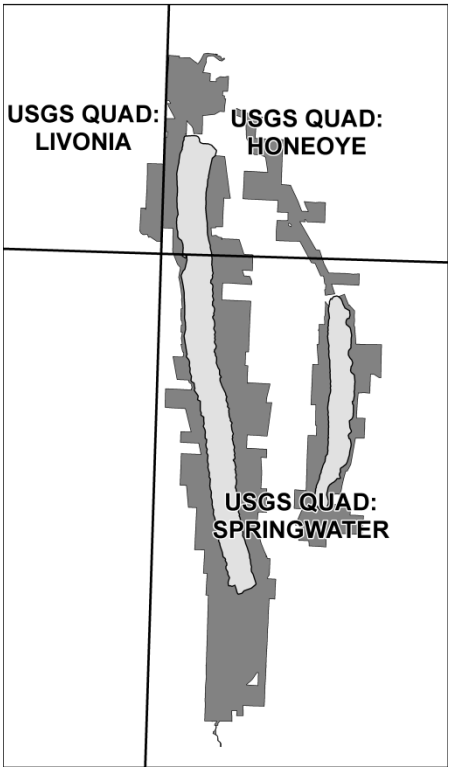


Table 3B: Reptiles and Amphibians by Common Name and Scientific Name

Common Name	Scientific Name	NYS Status
Allegheny Dusky Salamander	*Desmognathus ochrophaeus*	
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern, SGCN
Bullfrog	*Rana catesbeiana*	
Common Gartersnake	*Thamnophis sirtalis*	
Eastern American Toad	*Bufo a. americanus*	

Common Name	**Scientific Name**	**NYS Status**
Eastern Milk Snake	*Lampropeltis t. triangulum*	
Eastern Ratsnake	*Elaphe alleganiensis*	
Eastern Ribbon Snake	*Thamnophis sauritus*	SGCN
Eastern Spiny Softshell	*Apalone s. spinifera*	Special Concern, SGCN
Gray Treefrog	*Hyla versicolor*	
Green Frog	*Rana clamitans melanota*	
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern, SGCN
Northern Brown Snake	*Storeria d. dekayi*	
Northern Coal Skink	*Eumeces a. anthracinus*	SGCN
Northern Dusky Salamander	*Desmognathus fuscus*	
Northern Leopard Frog	*Rana pipiens*	
Northern Redback Salamander	*Plethodon c. cinereus*	
Northern Redbelly Snake	*Storeria o. occipitomaculata*	
Northern Ringneck Snake	*Diadophis punctatus edwardsii*	
Northern Slimy Salamander	*Plethodon glutinosus*	
Northern Spring Peeper	*Pseudacris c. crucifer*	
Northern Spring Salamander	*Gyrinophilus p. porphyriticus*	
Northern Two-lined Salamander	*Eurycea bislineata*	
Northern Water Snake	*Nerodia s. sipedon*	
Painted Turtle	*Chrysemys picta*	
Pickerel Frog	*Rana palustris*	
Red-spotted Newt	*Notophthalmus v. viridescens*	
Smooth Green Snake	*Liochlorophis vernalis*	SGCN
Snapping Turtle	*Chelydra serpentina*	SGCN
Spotted Salamander	*Ambystoma maculatum*	
Spotted Turtle	*Clemmys guttata*	Special Concern, SGCN
Wehrle's Salamander	*Plethodon wehrlei*	
Western Chorus Frog	*Pseudacris triseriata*	SGCN
Wood Frog	*Rana sylvatica*	
Historical Records:		
Common Name	**Scientific Name**	**NYS Status**
Timber Rattlesnake	*Crotalus horridus*	Threatened, SGCN
Queen Snake	*Regina septemvittata*	Endangered, SGCN

Table 4B: Reptile and Amphibian Species of Greatest Conservation Need

Reptiles and Amphibians identified within the 1990-2007 Herp Atlas on blocks that overlap with the Hemlock Canadice Unit.

Common Name	**Scientific Name**	**NYS Status**
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern ,SGCN
Eastern Ribbon Snake	*Thamnophis sauritus*	SGCN
Eastern Spiny Softshell	*Apalone s. spinifera*	Special Concern , SGCN
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern, SGCN
Northern Coal Skink	*Eumeces a. anthracinus*	SGCN
Smooth Green Snake	*Liochlorophis vernalis*	SGCN
Snapping Turtle	*Chelydra serpentina*	SGCN
Spotted Turtle	*Clemmys guttata*	Special Concern , SGCN
Western Chorus Frog	*Pseudacris triseriata*	SGCN
Historical Records:		
Common Name	**Scientific Name**	**NYS Status**
Timber Rattlesnake	*Crotalus horridus*	Threatened, SGCN
Queen Snake	*Regina septemvittata*	Endangered, SGCN

Fish Species

Recent surveys have been limited, as most streams within the Unit have not been surveyed recently. Hemlock Lake was sampled as recently as 2007 while Canadice Lake was sampled in 2008. Springwater Creek and a few other tributaries were sampled as recently as 2010. The following is a list of fish species within this unit management plan area. It should be noted that this list may exclude some species that are present and omit species that are rare.

Table 5B: Fish Species by Common Name and Scientific Name

Common Name	Scientific Name
Alewife	*Alosa pseudoharengus*
Atlantic Salmon	*Salmo salar*
Banded Killifish	*Fundulus diaphanus*
Black Crappie	*Pomoxis nigromaculatus*
Bluegill	*Lepomis macrochirus*
Bluntnose Minnow	*Pimephales notatus*
Brook Silverside	*Labidesthes sicculus*
Brook Trout	*Salvelinus fontinalis*
Brown Trout	*Salmo trutta*
Brown Bullhead	*Ameiurus nebulosus*
Central Stoneroller	*Campostoma anomalum*
Chain pickerel	*Esox niger*
Common Carp	*Cyprinus carpio*
Common Shiner	*Notropis cornutus*
Creek Chub	*Semotilus atromaculatus*
Cutlips Minnow	*Exoglossum maxillingua*
Eastern Blacknose Dace	*Rhinichthys atratulus*
Fallfish	*Semotilus corporalis*
Greenside Darter	*Etheostoma blennioides*
Golden Shiner	*Notemigonus cysoleucas*
Johnny Darter	*Etheostoma nigrum*

Common Name	Scientific Name
Lake Trout	*Salvelinus namaycush*
Lake Whitefish	*Coregonus clupeaformis*
Largemouth Bass	*Micropterus salmoides*
Logperch	*Percina caprodes*
Longnose Dace	*Rhinichthys cataractae*
Mottled Sculpin	*Cottus bairdii*
Northern Hogsucker	*Hypentelium nigricans*
Pumpkinseed	*Lepomis gibbosus*
Rainbow Smelt	*Osmerus mordax*
Rainbow Trout	*Oncorhyncus mykiss*
Rock Bass	*Ambloplites rupestris*
Slimy Sculpin	*Cottus cognatus*
Smallmouth Bass	*Micropterus dolomieui*
Spottail Shiner	*Notropis hudsonius*
Stonecat	*Noturus flavus*
Striped Shiner	*Luxilus crysocephalus*
Tessellated Darter	*Etheostoma olmstedi*
Walleye	*Sander vitreus*
White Sucker	*Catostomus commersoni*
Yellow Perch	*Perca flavescens*

Freshwater Mussels

Most of the area within the Hemlock Canadice Unit has not been surveyed, or recently surveyed, for the presence of native freshwater mussels. In 2009, NYSDEC Staff surveyed portions of the Hemlock Outlet and found evidence (shells) of common species. Although this cursory examination suggests the presence of native freshwater mussels, further investigation would need to be completed to properly characterize the mussel population in Hemlock and Canadice lakes and their tributaries.

Macrophyte Species in Hemlock and Canadice Lakes

This report was funded by the Ontario County Water Resources Council through their 2010 Special Projects grant program. Boats provided by the City of Rochester, with fieldwork assistance from Leonard Schantz, Greg Whitney and Don Root of the Hemlock Filtration Plant.

Macrophyte communities characterize the shallow littoral zone of the Finger Lakes. These communities contain some aquatic plants that grow completely submerged in the water, others with leaves floating on the surface, and still others with leaves emerging from the water.

Macrophyte communities are an essential component of healthy aquatic ecosystems. Their anchoring structures help keep bottom substrates in place. This reduces sediment re-suspension, thereby helping to minimize shoreline turbidity and near-shore benthic deposition that might otherwise have undesirable effects on certain life stages of lake organisms, in particular, burying and suffocating fish eggs. Macrophyte stems and leaves also reduce wave energy thereby protecting shorelines from the maximum impacts of erosion. On a daily basis, macrophytes replenish the dissolved oxygen supply in the water through their photosynthetic activity. Macrophytes also improve water quality as they help control algal abundance by competitively utilizing significant portions of a lake's nutrient budget. Most importantly, macrophytes are a critical habitat for many lake organisms, providing food, shelter, spawning areas and nesting materials.

The shallow littoral zone was large at the north and south ends of both lakes, but was reduced to a narrow strip of vegetation along the eastern and western shorelines where basin morphometry was steeply sloped. Protected embayments along depositional shoreline points had moderate sized aquatic plant communities. Many different aquatic species were encountered during the course of the study, including several vascular plants and two macro-algae (Table 6B: 2010 Aquatic Plant Survey of Hemlock and Canadice Lakes). Canadice Lake had 27 aquatic vascular species, while Hemlock Lake had 23 aquatic vascular species. Additional aquatic vascular species may be present but were simply not in our sample sites or not seen during our surveys. Exceptionally dense growth of the native Elodea was noted at the south end of both lakes in 2010. Three species, brittle naiad, curly leaf pondweed and Eurasian water milfoil, are exotic invaders. They were widely distributed in both lakes and often shared dominance where they occurred in the macrophyte communities.

Table 6B: 2010 Aquatic Plant Survey of Hemlock and Canadice Lakes

Vascular Plants			
Common Name	**Scientific Name**	**Hemlock Lake**	**Canadice Lake**
Coontail	*Ceratophyllum demersum*	x	x
Elodea	*Elodea canadensis*	x	x
Water horsetail	*Equisetum fluviatile*	x	
Water stargrass	*Heteranthera dubia*	x	x
Eurasian milfoil	*Myriophyllum spicatum*	x	x
Slender naiad	*Najas flexilis*	x	x
Southern naiad	*Najas guadalupensis*	x	
Brittle naiad	*Najas minor*	x	x
Yellow water lily	*Nuphar variegata*		x

Vascular Plants			
Common Name	**Scientific Name**	**Hemlock Lake**	**Canadice Lake**
Reed canary grass	*Phalaris arundinacea*	x	x
Water smartweed	*Polygonum amphibium*	x	x
Large leaf pondweed	*Potamogeton amplifolius*	x	x
Curly leaf pondweed	*Potamogeton crispus*	x	x
Ribbon leaf pondweed	*Potamogeton epihydrus*	x	x
Thread leaf pondweed	*Potamogeton filiformis*		x
Leafy pondweed	*Potamogeton foliosus*		x
Grass leaf pondweed	*Potamogeton gramineus*	x	x
Brown pondweed	*Potamogeton natans*		x
Long leaf pondweed	*Potamogeton nodosus*	x	
Redhead pondweed	*Potamogeton perfoliatus*	x	x
Small pondweed	*Potamogeton pusillus*	x	
Clasping leaf pondweed	*Potamogeton richardsonii*		x
Flat stem pondweed	*Potamogeton zosteriformis*	x	x
Stiff white water buttercup	*Ranunculus longirostris*	x	x
Soft stem bulrush	*Scirpus validus*	x	x
Giant burreed	*Sparganium eurycarpum*		x
Greater duckweed	*Spirodela polyrhiza*	x	x
Sago pondweed	*Stuckenia pectinata*	x	x
Cattail	*Typha latifolia*		x
Bladderwort	*Utricularia vulgaris*		x
Eel grass	*Vallisneria americana*	x	x
Non-vascular Plants			
Common Name	***Scientific Name***	**Hemlock Lake**	**Canadice Lake**
Muskgrass	*Chara sp.*	x	
Stonewort	*Nitella sp.*	x	x

References:

Burger, M.F. and J.M. Liner. 2005. Important Bird Area of New York: Habitats Worth Protecting. 2nd Ed. Audubon New York, Albany, NY. 352 pp.

New York State Breeding Bird Atlas 2000 [Internal Data]. 2000 - 2005. Release 1.0. Albany (New York): New York State Department of Environmental Conservation.

New York State Amphibian and Reptile Atlas Project Interim Report [Internal Data]. 1990 - 2007. Albany (New York): New York State Department of Environmental Conservation.

Gilman, Bruce A. and Don Root. 2011 Macrophyte Surveys for Hemlock and Canadice Lakes: Ontario County Water Resources Council

Appendix C: Taxes

Taxes paid on NYS DEC Lands

The following is an estimate of the real property taxes paid by the City of Rochester prior to New York State purchasing the property. The figures were based on actual tax receipts provided by the City of Rochester. Monies projected to be paid by the State for future taxes will be based on the same formula as was paid by the City of Rochester.

Table 1C: Hemlock - Canadice State Forest – Taxes paid in 2010

County	Town	Law Section	No. of Parcels	Town and/or County	School	Total
Livingston	Springwater	RPTL* 532	1	$11,097	$11,338	$22,435
Livingston	Conesus	Ch. 774 Laws of 1989**	N/A	$46,823	$143,412	$190,235
Livingston	Livonia, Conesus, Springwater	Ch. 774 Laws of 1989	N/A	$97,586		$97,586
Ontario	Richmond	RPTL 532	1	$745	$1,408	$2,153
Ontario	Canadice	RPTL 532	6	$74,741	$127,726	$202,467
					Total	$514,876

*RPTL- Real Property Tax Law
** Chapter 774 of the Laws of 1989, New York State Law

RPTL 532 establishes that certain State owned land categories pay all appropriate taxes assessed to those lands as if they were privately owned without improvements. For additional information refer to www.state.ny.us , click on 'state laws' in the bottom right corner of the web site, scroll down and click on Real Property Tax and navigate to Article 5, Title 2 for more information on RPTL 532.

This unit does not contain any Wildlife Management Areas, but if it did they are not subject to real property taxes except where special arrangements have been made at the time of acquisition. See Taxes section for further information.

Tax codes used to determine adjoining land use patterns

All real property appearing on the tax rolls in New York is assigned a property use code by the local assessor. These were used to create Table 3: Real property (existing use) tax code of adjacent property found on page 18.

Examples of the classes of these codes are as follows:

100 - Agricultural - Property used for the production of crops or livestock.

200 - Residential - Property used for human habitation. Living accommodations such as hotels, motels, and apartments are in the Commercial category - 400.

300 - Vacant Land - Property that is not in use, is in temporary use, or lacks permanent improvement.

400 - Commercial - Property used for the sale of goods and/or services.

500 - Recreation & Entertainment - Property used by groups for recreation, amusement, or entertainment.

600 - Community Services - Property used for the well being of the community.

700 - Industrial - Property used for the production and fabrication of durable and nondurable man-made goods.

800 - Public Services - Property used to provide services to the general public.

900 - Wild, Forested, Conservation Lands & Public Parks - Reforested lands, preserves, and private hunting and fishing clubs

Within each class are a number of individual codes. As an example, below, we show individual codes for the Agricultural class:

105 - Agricultural Vacant Land (Productive)

Land used as part of an operating farm. It does not have living accommodations and cannot be specifically related to any of the other divisions in the agricultural category. Usually found when an operating farm is made up of a number of contiguous parcels.

110 - Livestock and Products

111 - Poultry and Poultry Products: eggs, chickens, turkeys, ducks and geese

112 - Dairy Products: milk, butter and cheese

113 - Cattle, Calves, Hogs

114 - Sheep and Wool

115 - Honey and Beeswax

116 - Other Livestock: donkeys, goats

117 - Horse Farms

120 - Field Crops - Potatoes, wheat, hay, dry beans, corn, oats, and other field crops.

129 - Acquired Development Rights - Land for which development rights have been acquired by a governmental agency (e.g., certain agricultural lands in Suffolk County).

130 - Truck Crops - Mucklands

140 - Truck Crops - Not Mucklands

150 - Orchard Crops

151 - Apples, Pears, Peaches, Cherries, etc.

152 - Vineyards

160 - Other Fruits-Strawberries, raspberries, dewberries, currants, etc.

170 - Nursery and Greenhouse

180 - Specialty Farms

181 - Fur Products: mink, chinchilla, etc.

182 - Pheasant, etc.

183 - Aquatic: oysterlands, fish and aquatic plants

184 - Livestock: deer, moose, llamas, buffalo, etc.

190 - Fish, Game and Wildlife Preserves

Appendix D: Facilities

Table 1D: Facilities on Hemlock-Canadice State Forest

Public Forest Access Rd (Est. Miles)	0.6 - South Hemlock Access Road
Haul Road (Est. Miles)	1.6 - North Hemlock Haul Road 1.3 - South Hemlock Haul Road 3.9 - Canadice Haul Road **6.8 total miles**
Access Trails (Est. Miles)	3.1- Other /skid trail **3.1 total miles**
Right-of-Way (Est. Miles)	<0.1 - Section of Canadice Haul Road 0.5 - Marrowback Rd ROW **0.5+ total miles**
Gates	13 – metal gates (9 farm gates and 4 saloon style gates) (removed 7 "wire" gates after acquisition) **13 current total gates**
Unpaved Parking lots	21
Facility ID Signs	2 - 15A 1 – Mission Rd 1 – Purcell Hill Rd 1 – Canadice Lake Rd **5 total**
Kiosks	6
Boat Launch	3 gravel trailer launches 1 hand launch **4 total launches**
Bench	6
Bird Houses	At least 8 + (this is an incomplete count)
Designated Snowmobile Trail	0.3 miles HVR – 5 snowmobile trail
Pipeline	0.7 miles water pipeline

Hiking Trails (miles)	0.5 - Bur Oak Trail 0.2 - Walnut Trail 0.7 - Rob's Trail 0.2 - Cattail Loop Trail 0.2 - Willow Oak Trail 0.1 - Roots View Trail 0.1 - Speckled Alder Loop 0.2 - Pine Trail 0.1 - Green Ash Loop 0.1 - Redbud Trail 0.2 - Spruce Loop Trail **2.6 total miles**
MAPPWD Routes	0 miles (After UMP approval: 1.6 - North Hemlock Haul Road 1.3 - South Hemlock Haul Road)
Boundary Line	80 miles (approx. 24 miles of road frontage, and 22 miles of shoreline)
Concrete pad for Port-a-Johns	1- Canadice Canoe Launch 1- Canadice Boat Launch 1 - North Hemlock Boat Launch 1 - South Hemlock Boat Launch
Water body, Fire Pond and/or Fishing Pond	Hemlock Lake (length - 7 miles) Canadice Lake (length - 3 miles) Numerous unnamed vernal pools/seasonal ponds supporting suckers and minnows

Appendix E: Water Resources

WIN - Watershed Index Number: Numbering system used by NYSDEC to identify individual streams/ponds/lakes. (PA- water flows to Pennsylvania, Ont – water flows to Lake Ontario)

Water Classifications:

1. Class AA- A source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing
2. Class AA(T)-Same as Class AA plus it is designated as trout waters
3. Class C - Fishing and any other usages except for bathing or as a source of water supply for drinking, culinary, or food processing purposes.
4. Class C(T) - Same as Class C plus it is designated as trout waters
5. Class C(TS) - Same as Class C plus waters are suitable for trout spawning

Table 1E: Streams

Name	WIN	Perennial/ Intermittent	Class	Fisheries Resource
Hemlock Outlet	ONT-117-27-34	Perennial	C	Chain Pickerel, Largemouth Bass, Suckers, Minnows
Unnamed	ONT-117-27-34-8	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-9	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-10	Perennial	C	Suckers, Minnows
Canadice Outlet	ONT-117-27-34-11	Perennial	AA; AA(t); C	Chain Pickerel, Largemouth Bass, Suckers, Minnows
Unnamed	ONT-117-27-34-12	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-13	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-13-A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-9D	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-9C	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-9B	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-9A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-9	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-8A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-8A-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-8	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7P	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7O	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7N	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7M	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7L	Intermittent	C	Suckers, Minnows

Name	WIN	Perennial/ Intermittent	Class	Fisheries Resource
Unnamed	ONT-117-27-34-P44-7K	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7J	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7I	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7H	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7G	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7F	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7E	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7D	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7C	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7B	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7A	Intermittent	C	Suckers, Minnows
Springwater Creek	ONT-117-27-34-P44-7	Perennial	C(ts)	Rainbow Trout, Brown Trout
Unnamed	ONT-117-27-34-P44-7-5	Perennial	C(ts)	Rainbow Trout, Brown Trout
Unnamed	ONT-117-27-34-P44-7-B	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-4A	Intermittent	C	Suckers, Minnows
Limekiln Creek	ONT-117-27-34-P44-7-4	Perennial	C(ts)	Rainbow Trout
Unnamed	ONT-117-27-34-P44-7-1A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-4-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-C	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-A-2	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-A-1-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-7-A-1	Perennial	C	Suckers, Minnows
Reynolds Gully Creek	ONT-117-27-34-P44-7-1	Perennial	C(ts)	Brook Trout, Rainbow Trout
Unnamed	ONT-117-27-34-P44-7-1-A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6K	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6J	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6I	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6H	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6G	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6F	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6E	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6D	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6C	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6B	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6A	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-P44-6	Intermittent	C	Suckers, Minnows

Name	WIN	Perennial/ Intermittent	Class	Fisheries Resource
Unnamed	ONT-117-27-34-P44-4	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-12A	Perennial	C	Suckers, Minnows
Kinney Creek	ONT-117-27-34-7	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-2A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-2	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3A	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3C	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3D	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3E	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3F	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-3G	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-4A	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-6A	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5G	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5F	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5E	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5D	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5C	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5-B	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5-A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-5-A-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-4	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-4-A	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-3	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-2	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-F	Intermittent	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-E	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-D	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-D-1	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-C	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-B	Perennial	C	Suckers, Minnows
Unnamed	ONT-117-27-34-11-P43-A	Perennial	C	Suckers, Minnows

Table 2E: Ponds

Name	WIN	Fisheries Resource
Hemlock Lake	ONT-117-27-34-P44	black crappie, bluegill, brown bullhead, brown trout, chain pickerel, common carp, lake trout, landlocked Atlantic salmon, largemouth bass, pumpkinseed, rainbow smelt, rainbow trout, rock bass, smallmouth bass, yellow perch, and walleye
Canadice Lake	ONT-117-27-34-11-P43	black crappie, bluegill, brown bullhead, brown trout, chain pickerel, common carp, lake trout, landlocked Atlantic salmon, largemouth bass, pumpkinseed, rainbow smelt, rainbow trout, rock bass, smallmouth bass, and yellow perch

Appendix F: Timber Management

See also maps on Appendix M: Maps, page 220 and Timber and Vegetation and Timber and Vegetation Management starting on pages 28 and 73.

The following table list the anticipated period of time for bidding out the start of the treatment of these stands. Many factors can influence the actual start date for these events, including, but not limited too; staff time and other resources, invasive bug or plant issues, weather, local/regional/worldwide markets, and deer or other animal populations. Most, but not all, of these will be sold in sales of more than one stand, and most will take more than one year to plan, sell, and cut.

These lists only include commercial sales of timber; they do not include any pre-commercial treatments for any stands. Pre-commercial is a stand treatment when the trees or stand is too small to sell for profit, requiring the payment of someone to do the work. In addition, properly trained volunteers, or prison work crews, can also do the work. When prison work crews are available, or money to contract for work is available, the stands not slated for commercial sales will be evaluated, starting with the ones in the seedling-sapling and pole timber sizes.

Key	
Abbreviation	Definition
SS	Seedling/sapling size - A stand with an average D.B.H. of 0 to 5 inches.
PT	Poletimber size - A stand with an average D.B.H. of 6 to 11 inches.
ST	Sawtimber size - A stand with an average D.B.H. of 12 inches or larger.
AA	All-aged cut - To continue, or encourage, a forest stand to contain trees of two or more age classes. Both regenerating and thinning at the same time.
Regen	Regeneration -To reestablish a forest stand with tree seedlings. Cut styles that do this include; clearcut or overstory removal cut (one cut removes all the overstory trees); or a Shelterwood or Seed tree Cut (one or more cuts to get sunlight on the ground before the final cut). This indicates the first entry; later cuts will be timed based on the growth response of the vegetation. Depending on type of cut and the size of the area treated additional SEQR may be required.
Thin	Thinning - An intermediate cut to encourage faster growth.
Protection	An area which requires special management considerations. (Special cutting regimen, no treatment, short rotation, or long rotation.) See Protection Forest page 81.
No Access	Inadequate access to treat, if access improves treatment may (or may not) be scheduled.

Legacy Plantation	This is a unique piece of state forest lands. In contrast to most state forests, the CCC was not active during the planting process in this case. Tree planting is believed to have begun in about 1902 and been complete by 1940. This work was carried out by City of Rochester crews. In recognition of this unique legacy, the NYSDEC has designated several of the existing softwood plantations as "legacy plantations". Although no living creature lives forever, these plantations would be grown beyond economic maturity and maintained for as long as possible. Every effort will be made to not deliberately regenerate these stands, although thinning to improve the health of the trees may occasionally occur.

Table 1F: Hemlock-Canadice State Forest Timber Management

(Livingston-Ontario Reforestation Area #1)

Com-partment	Stand No.	Acres	Stand type	Stand Size	Management Action	
					Years 1-5	Years 6-10
A	1	25	Hardwood	PT		
A	2	23	Hardwood	ST		Regen
A	3	24	Forested Wetland	PT	Protection - Wetland	
A	4	245	Forested Wetland	PT	Protection - Wetland	
A	5	24	Hardwood	PT		Regen
A	6	8	Hardwood	PT		
A	7	19	Hardwood	SS		
A	8	8	Hardwood	SS		
A	9	6	Hardwood	ST		
A	10	23	Hardwood	SS		
A	11	109	Hardwood	ST	No Access and Protection	
A	12	28	Hardwood	ST		
A	13	39	Plantation	PT		
A	14	26	Plantation	PT		
A	16	103	Hardwood	PT		
A	17	36	Hardwood	PT	No Access and Protection	
A	18	45	Conifer Natural	ST	No Access and Protection	
A	19	7	Hardwood	SS		
A	20	24	Plantation	ST		
A	21	42	Hardwood	PT	No Access and Protection	
A	22	244	Conifer Natural	ST	No Access and Protection	
A	23	19	Hardwood	ST	No Access	
A	24	45	Hardwood	ST	No Access and Protection	
A	25	277	Conifer Natural	PT	No Access and Protection	
A	26	95	Hardwood	ST	No Access and Protection	
A	28	66	Hardwood	ST	No Access and Protection	
A	29	52	Conifer Natural	ST	No Access and Protection	
A	30	233	Forested Wetland	ST	Protection - Wetland	
A	31	244	Hardwood	PT	No Access	
A	33	55	Hardwood	PT	Thin	
A	34	10	Plantation	ST		

Com-part-ment	Stand No.	Acres	Stand type	Stand Size	Management Action	
					Years 1-5	Years 6-10
A	35	6	Conifer Natural	ST	Maple Sap Production	
A	36	11	Hardwood	PT		
A	37	10	Hardwood	ST	Protection	
A	38	10	Hardwood	PT		
A	39	13	Plantation	ST		Thin
A	40	14	Plantation	ST		
A	41	90	Forested Wetland	ST	Protection - Wetland	
A	42	13	Plantation	ST		
A	43	55	Plantation	ST		
A	44	72	Plantation	ST		
A	45	15	Plantation	ST		
A	46	8	Hardwood	ST		
A	47	14	Hardwood	PT		
A	48	178	Hardwood	ST	Protection	
A	49	27	Plantation	ST		
A	50	6	Hardwood	PT		
A	52	11	Plantation	ST		
A	53	47	Plantation	ST		Thin
A	55	7	Plantation	PT		
A	56	35	Plantation	ST	Legacy Plantation	
A	57	5	Hardwood	ST	Protection	
A	59	22	Plantation	ST	Legacy Plantation	
A	60	6	Plantation	ST		
A	61	9	Plantation	ST		
A	62	4	Hardwood	ST		
A	63	19	Hardwood	ST		
A	64	12	Plantation	ST	Thin	
A	65	9	Hardwood	PT		
A	66	7	Plantation	ST	Thin	
A	67	28	Plantation	ST	Thin	
A	68	15	Hardwood	PT		
A	69	27	Plantation	ST		
A	70	36	Plantation	PT		
A	71	47	Plantation	PT		
A	72	247	Hardwood	ST	Protection	
A	73	29	Plantation	PT	Legacy Plantation	
A	74	8	Hardwood	PT		
A	76	27	Plantation	ST		Regen
A	77	89	Hardwood	ST		
A	78	81	Hardwood	PT		
A	79	242	Hardwood	PT		
A	80	52	Plantation	PT		Thin
A	81	34	Plantation	PT	Legacy Plantation	

Com-part-ment	Stand No.	Acres	Stand type	Stand Size	Management Action	
					Years 1-5	Years 6-10
A	82	12	Hardwood	PT		
A	83	17	Plantation	PT	Legacy Plantation	
A	84	52	Hardwood	PT		
A	85	31	Plantation	PT	Thin	
A	86	17	Hardwood	SS		
A	87	31	Hardwood	ST		
A	88	32	Plantation	ST		
A	89	12	Hardwood	ST	Thin	
A	90	33	Hardwood	PT	Protection	
A	91	53	Hardwood	ST		
A	92	19	Conifer Natural	ST		
A	93	4	Hardwood	PT		
A	94	25	Hardwood	PT		
A	95	10	Plantation	ST		
A	96	6	Hardwood	PT		
A	97	12	Hardwood	ST		
A	99	4	Hardwood	SS		
A	100	20	Plantation	ST		
A	101	42	Plantation	PT		Thin
A	711	83	Road		Other (Roads, etc.)	
A	720	5	Waterpipe ROW		Other (Roads, etc.)	
A	910	3	Pond			
A	911	3	Pond			
A	920	176	Open/Brushy Wetland		Protection - Wetland or Pond	
A	940	6	Grassland/Brushy			
A	941	21	Grassland/Brushy			
A	942	32	Grassland/Brushy			
A	943	71	Grassland/Brushy			
A	950	28	Grassland/Brushy			
A	951	11	Grassland/Brushy			
A	952	20	Grassland/Brushy			
A	953	24	Pond		Pond	
A	954	15	Grassland/Brushy			
B	1	90	Hardwood	ST	No Access and Protection	
B	2	43	Hardwood	PT	No Access	
B	3	23	Hardwood	PT		
B	4	16	Hardwood	ST		
B	5	9	Hardwood	PT		
B	6	33	Hardwood	PT	Thin	
B	7	182	Forested Wetland	PT	Protection - Wetland	
B	8	3	Hardwood	ST		
B	9	21	Plantation	ST	Legacy Plantation	
B	10	12	Hardwood	ST		
B	11	13	Plantation	ST	Protection	

Com-part-ment	Stand No.	Acres	Stand type	Stand Size	Management Action	
					Years 1-5	Years 6-10
B	12	11	Hardwood	ST		
B	13	11	Plantation	ST		
B	14	12	Hardwood	ST		Thin
B	15	29	Hardwood	ST	Maple Sap Production	Thin - Maple Sap Production
B	16	74	Plantation	ST		
B	17	13	Hardwood	ST		
B	18	29	Conifer Natural	ST		
B	19	4	Hardwood	ST	Protection	
B	20	35	Hardwood	ST	No Access – Maple Sap Production	
B	22	11	Plantation	ST	Thin	
B	23	14	Plantation	PT	Thin	
B	24	21	Forested Wetland	PT	Protection - Wetland	
B	25	78	Forested Wetland	PT	Protection - Wetland	
B	27	288	Hardwood	ST	Protection	
B	28	4	Plantation	ST	Thin	
B	29	4	Plantation	ST	Thin	
B	30	3	Plantation	ST	Legacy Plantation	
B	31	7	Plantation	ST		
B	33	8	Hardwood	ST		
B	34	11	Plantation	ST	Regen	
B	35	8	Conifer Natural	ST		
B	36	25	Plantation	ST		
B	37	17	Plantation	ST	Regen	
B	38	21	Hardwood	PT		
B	39	19	Plantation	ST		Regen
B	40	28	Hardwood	PT		
B	41	78	Hardwood	PT	Protection	
B	42	66	Hardwood	ST	Protection	
B	43	20	Hardwood	ST	Thin	
B	44	16	Hardwood	PT	Thin	
B	45	14	Hardwood	ST	Protection	
B	46	20	Plantation	PT	Legacy Plantation	
B	47	8	Plantation	ST		Thin
B	48	20	Hardwood	SS		
B	49	17	Plantation	ST		Thin
B	50	12	Hardwood	ST		
B	51	23	Plantation	ST	Regen	
B	52	23	Plantation	ST	Regen	
B	53	10	Plantation	PT	Regen	
B	54	13	Hardwood	ST		
B	55	31	Plantation	ST		
B	56	8	Hardwood	ST	Protection	

Com-part-ment	Stand No.	Acres	Stand type	Stand Size	Management Action	
					Years 1-5	Years 6-10
B	57	6	Conifer Natural	ST	Protection	
B	60	5	Plantation	ST	Legacy Plantation	
B	61	7	Hardwood	ST	Protection	
B	62	16	Hardwood	ST	Protection	
B	63	22	Plantation	ST	Legacy Plantation	
B	64	16	Hardwood	SS		
B	66	4	Plantation	ST		
B	67	43	Hardwood	PT		
B	68	3	Plantation	ST		
B	69	15	Plantation	ST	Thin	
B	70	35	Hardwood	ST	No Access	
B	711	49	Road		Other (Roads, etc.)	
B	712	2	Parking Lot		Other (Roads, etc.)	
B	920	21	Open/Brushy Wetland		Protection - Wetland	

Table 2F: Summary of Timber and Vegetation Management for this Planning Period

See also maps on Appendix M: Maps, page 237 and Timber and Vegetation, and Timber and Vegetation Management, starting on pages 28 and 73.

Management Action		Total Number of Stands	Total Acres	Percent of Land Area
Even Aged Silviculture	Regenerate	9	177	2.6%
	Thin/Intermediate cut	22	482	7.2%
All Aged Silviculture	Stand Entry	0	0	0
Grassy/Brushy Openings	Current	8	206	3.1%
	Create	?	28	0.4%
	Total	39	892	13.3%

Appendix G: Glossary

Access Trails - May be permanent, unpaved and do not provide all-weather access within the Unit. These trails are originally designed for removal of forest products and may be used to meet other management objectives such as recreational trails. These trails are constructed according to Best Management Practices.

All-Aged - A forest containing trees of two or more age classes.

Allegheny Hardwoods - Composed of primarily of black cherry, white ash, and tulip poplar. May contain lesser amounts of sugar maple, beech, red maple, red oak and basswood.

Allowable cut - The amount of wood fiber that may be harvested annually or periodically for a specified area over a stated period in accordance with the objectives of management.

Alluvium - Clay, silt, sand, gravel or similar material deposited by running water.

Anticlinal - Rock layers that are folded so that the layers are inclined away from each other (like the legs of a capital A).

Basal Area - The cross sectional area of a tree at breast height, measured in square feet. (Forestry Handbook, 2nd Edition, 1984, p.287) For a stand: the total basal area per unit of area, usually expressed as square feet per acre. (Silvicultural Systems For The Major Forest Types of The United States, USDA Ag. Hndbk. #445, 1973, p.103)

Bedrock - Hard lithified or consolidated rock units that underlie the unconsolidated or partially-consolidated surface (geology) sediments and soils deposited during recent sedimentation and glacial sedimentation.

Best Management Practices (BMP's) - Practices and techniques that control erosion of soil or other contaminants from the site.

Board Foot - A piece of lumber 1 inch thick, 12 inches wide and 1 foot long, or its equivalent.

Buffer Strips - A strip of vegetation used to protect sensitive areas from soil erosion and siltation.

Canadian Shield - the stable portion or nucleus of the North American continent, primarily igneous and metamorphic rocks, located primarily in northeastern Canada, Michigan, Wisconsin and Minnesota.

Clast - A fragment of rock

Classified Water Bodies - A system whereby water bodies are protected under Environmental Conservation Law.

Clearcut - The removal of a forest overstory. This practice is done in preparation of the reestablishment of a new forest through regeneration. One form of even aged management.

Conifer - Needle bearing trees.

Conifer Stand - A forest stand containing 50% or more conifer species.

D.B.H. - (diameter at breast height) - The diameter of a tree at roughly breast height or 42 feet from the ground.

Defoliated - Complete, or almost complete removal of leaves from a living tree.

Dip - The angle that strata (rock layers) or planar features deviate from horizontal.

Dug-Out - A 500 square foot by 3 feet deep pot hole constructed of earth and containing water.

Early Successional Forest - Trees and brush that grow after disturbance such as plowing, fire or clearcut. Common species include grass, raspberries/black berries, white pine, aspen, red maple, black cherry, birch etc.

Early Successional Wildlife Species - Animal species which require early vegetative stages such as grass, brush, aspen.

Ecological Diversity - The number of species living in an ecosystem.

Ecological Subzone - A geographic area containing fauna and flora which are adapted to that particular area.

Ecoregion – (Ecological Region) - NYS DEC is using the The Nature Conservancy definition of an area of ecological homogeneity, which are defined by similarities in soil, physiography, climate, hydrology, geology and vegetation.

Ecosystem - A complex of living organisms and their environment.

Emergent – a class of wetlands that are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed. These areas are often further described by subclasses, such as "persistent", "nonpersistent", etc

Endangered - Native plants (and animals) in danger of extinction throughout all or a significant portion of their ranges within the state and requiring remedial action to prevent such extinction (NYCRR Title 9 Part 193.3)

Erosion - To wear away by the action: water, wind, or ice.

Even Aged - A forest in which all of the trees are essentially the same age.

Faulting - a fracture or crack that has had movement parallel to the fracture's surface

Fluvial - pertaining to sediments deposited by stream or river actions

Fragipan - An impervious subsurface soil layer (sometimes known as "hardpan") which restricts rooting and internal soil drainage.

Glacier / Glacial - a large mass of ice and snow that is moving on the land's surface

Hardwood Forest - A forest stand in which each of the two predominant species by percent is a hardwood.

Hardwoods – Broad leafed trees.

Haul roads - Are permanent, unpaved roads but are not designed for all-weather travel. They are constructed primarily for the removal of forest products and provide only limited access within the Unit. Public motor vehicle use is not allowed, but pedestrian travel is encouraged. All administrative roads are gated and warning signs are posted. The standards for these roads are those of Class C roads as provided for in the Forest Road Handbook.

Herbaceous Opening - A non-forest vegetative type consisting of grasses and forbs.

Homocline - geologic structure that is dipping or inclined in one direction and at the same angle of inclination

Intermediate cut – Thinning cut that extracts salable trees from and area and that are aimed primarily at controlling the growth of stands through adjustments in stand density.

Kame - a short ridge, hill, or mound of stratified glacial deposits

Lacustrine - sediments deposited in association with the processes within a lake

Lacustrine Wetland – (Federal wetland designation) includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% aerial coverage; and (3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but ocean derived salinity is always less than 0.5 %.

Large Coarse Woody Debris - The accumulation of dead woody material, both standing and fallen, which occurs in a forest stand.

Lean-To - A small, open fronted, log shelter used for overnight camping.

Legacy Plantation - The CCC, and later work crews, established a legacy of sound stewardship on state forest land through the planting of millions of trees. Where possible, NYS DEC will designate some plantations to help carry on this legacy. Although no living creature lives forever, these plantations would be grown beyond economic maturity and maintained for as long as possible. Every effort will be made to not deliberately regenerate these stands, although thinning to improve the health of the trees will occasionally occur.

Linements - linear trends of weakness or fractures in the earth's crust

Log Landing - An area to which logs are skidded and then loaded for removal.

MCFGPD - thousand cubic feet of gas per day

Moraine - sediment that is accumulated due to the actions of a glacier

Multiple Use - A management philosophy by which many uses are derived for a specific land area.

Natural Regeneration - The regrowth of a forest stand by natural means.

Natural Forest - A forest established by natural regeneration.

Natural Forest Conifer/Conifer Hardwood Forest - A forest stand in which total percent of all conifer species is 33%, or more, of the total for the stand.

No Entry / No Surface Occupancy Lease - A lease to explore and develop underground mineral resources without any surface disturbance. Above ground facilities and equipment to remove mineral resources must be located off the subject property.

Northern Hardwoods - Largely composed of sugar maple, American beech, yellow birch, and hemlock. These species are generally long-lived and may adapt to all-aged management.

Oak Opening - a globally rare plant community, also known as an oak savannah. The community is composed of native prairie grasses and associated plants usually surrounded by oak/hickory forests. Oak Openings are maintained by periodic burning. Historically, fires were set by Native Americans or caused by lightning strikes. Oak Openings can be variable in size, from just an acre to several thousand acre complexes.

Off - Site - The species are growing (or at least have been planted) where these species would not ordinarily be found, due to unfavorable site conditions.

Old-Growth Forest - The definition of "Old-Growth Forest" involves a convergence of many different, yet interrelated criteria. Each of these criteria can occur individually in an area that is not old growth, however, it is the presence of all of these factors that combine to differentiate "Old-Growth Forest" from other forested ecosystems. These factors include: An abundance of late successional tree species, at least 180 - 200 years of age-in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring (1) canopy gaps formed by natural disturbances creating an uneven canopy, and (2) a conspicuous absence of multiple stemmed trees and coppices. Old growth forest sites typically (1) are characterized by an irregular forest floor containing an abundance of coarse woody materials which are often covered by mosses and lichens; (2) show limited signs of human disturbance since European settlement; and (3) have distinct soil horizons that include definite organic, mineral, illuvial accumulation, and unconsolidated layers. The understory displays well developed and diverse surface herbaceous layers.

Overstory - The upper portion of a community of plants, the canopy of the trees in a forest.

Palustrine Wetland – (Federal wetland designation) includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 %. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5 %

Pioneer Hardwood - Early Successional trees that are hardwood, such as black cherry, white birch, red maple and aspen.

Plantation - A forest established by planting.

Pole Sized - A young tree with a D.B.H. of 6 to 11 inches.

Pre-Commercial - To do a stand treatment when the trees are too small to sell for profit, requiring the payment of someone to do the work.

Prescribed Fire - The intentional setting of forest or grass land on fire under carefully controlled conditions to achieve a vegetative or wildlife management goal adhering to a written and approved prescribed fire burn plan.

Protection Management/Forest - An area which requires special management considerations. (Special cutting regimen, short rotation, long rotation, or no treatment.)

Public Forest Access Roads - Are constructed and maintained to accommodate motor vehicle traffic, they are permanent, unpaved roads. They may be designed for all-weather use depending on their location and surfacing. These roads provide primary access within a Unit. The standards for these roads are those of the Class A and Class B access roads as provided for in the Forest Road Handbook.

Rare - Native plants that have from 20 to 35 extant sites or 3,000 to 5,000 individuals statewide. (NYCRR Title 9 Part 193.3)

Regeneration - To reestablish a forest stand with tree seedlings. The act of replacing old trees, either naturally or artificially. Also refers to the new growth that develops

Riverine Wetland – (Federal wetland designation) includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts in excess of 0.5 ‰. A channel is “an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water”.

Rotation - The length of time between the establishment and the harvest of a forest stand.

Salvage cut – The harvest of dead, dying, damaged or deteriorating trees primarily to put the wood to use before it becomes worthless.

Sawtimber Sized - A tree with a D.B.H. of 12 inches or greater.

Seedling/Sapling Sized - A young tree with a D.B.H. of less than 6 inches.

Selective Harvesting - Removal of the mature timber, usually the oldest or largest trees.

Shade Intolerant - Tree species that require full sunlight to survive past the seedling stage.

Shade Tolerant - Tree species that can survive in the shade cast by older trees.

Sidetrack Well - An inclined well that is drilled from a predetermined depth within an existing well

Site - Site is defined as a group of features (such as slope, aspect, soil type, etc.) which characterize a given area of land.

Silviculture - The establishment, development, care, and reproduction of forest stands.

Softwoods - Needle bearing trees, conifers

Species Diversity - The occurrence of a variety of plants and animals.

Stand - A group of plants with similar characteristics that are treated as a single unit in a management plan.

Stand Analysis - A systematic method of evaluating stands to determine the need for treatment.

Stand Treatment - Work done in a stand which is directed towards the management of the stand.

State Forest - Lands owned by the state of New York and administered by the Department of Environmental Conservation which are managed for the establishment and maintenance of forests for watershed protection, the production of timber, and for recreation and kindred purposes.

Stratigraphic - The layering and sequence of mapable rock units.

Succession - The gradual supplanting of one community of plants and animals by another.

Surficial - Of, or relating to, the surface

Sustained Yield - The maintenance of a continuous flow of a particular product.

Synclinal - Rock layers that are folded so that the layers are inclined towards each other (like the letter V)

Thinning cut – Intermediate cut that extracts salable trees from and area and that are aimed primarily at controlling the growth of stands through adjustments in stand density.

Till - Unstratified glacial deposits consisting of clay, sand, gravel, and boulders

Temporary Revocable Permit (TRP) - Authority for the issuance of temporary use permits is provided by 3-0301 of the ECL. Permits may be granted for the temporary use of State Lane by the public within stated guidelines and legal constraints so as to protect the State lands and their resources.

Top Lopping - The cutting of limbs from the tops of felled trees to reduce fire danger and improve visibility. On state forests top lopping of conifers is required by law.

Trail Head - The intersection of a trail with a road.

Understory - The layer of plants that grow in the shade of the forest.

Uneven Aged - A forest containing trees of two or more age classes.

Unique Area - A parcel of land owned by the state acquired do to its special natural beauty, wilderness character, geological, ecological or historical significance for the state nature and historic preserve, and may include lands within a forest preserve county outside the Adirondack and Catskill Parks.

Vegetative Stage - A description of a plant community based on the age of the component plants.

Vegetative Type - A description of a plant community based on species composition.

Vernal Pool - A small body of water that is present in the spring, but dries up by mid-summer.

Vertical Well - a well that is straight into the ground or is 90 degrees from horizontal.

Water Hole - A laid up stone cistern often built by C.C.C. volunteers and originally used for water for fire protection purposes.

Watershed - The land area from which a stream receives its water.

Wetland - Land or area saturated and sometimes partially or intermittently covered with water.

Class I, II, III or IV - The designation placed upon a mapped wetland by NYS DEC as required by 6NYCRR. The four classes rank wetlands according to their ability to perform wetland functions and provide wetland benefits. Class I is the most critical.

Wheelchair - means a manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor, or of both indoor and outdoor locomotion. This definition does not apply to Federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207 (c)(2).

Yield - The production of a commodity such as; forest products, water, or wildlife.

Appendix H: Wildlife Harvests and Hunting Use

Deer, Black Bear and Beaver

Table 1H: Calculated Legal Deer Take, WMU 8N

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bucks	1,806	1,515	1,586	1,597	1,594	1,415	1,561	1,845	1,848	1,893
Total Deer	5,866	5,210	3,880	4,428	4,517	4,926	4,011	5,160	5,245	5,358

Table 2H: Reported Bear Harvest, WMU 8N

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number	*	*	*	*	0	0	1	2	5	0

*No season

Table 3H: Pelt-Sealed Beaver, WMU 8N**

Year	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Number	14	10	27	160	53	69	23

**** Beaver no longer required sealing starting the 2010-11 season.

Wild Turkey

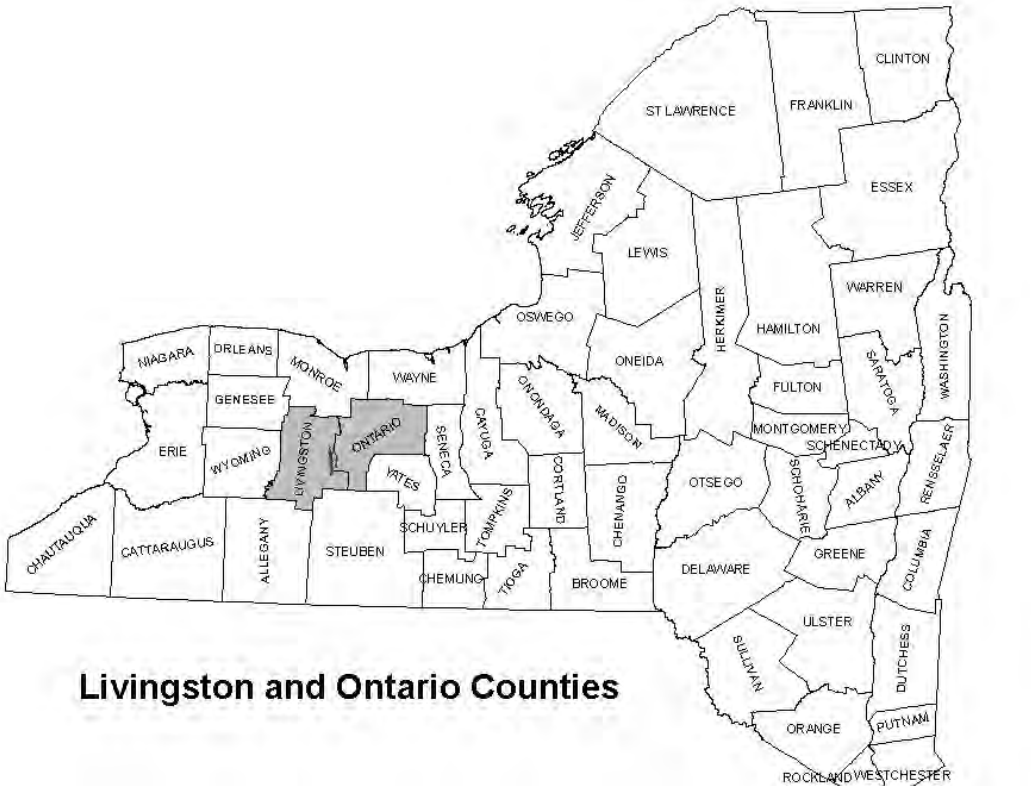


Table 4H: Fall Wild Turkey Harvest

Livingston and Ontario Counties Combined									
Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Number	112	128	176	161	254	89	113	92	88

Table 5H: Spring Wild Turkey Harvest

Livingston and Ontario Counties Combined										
Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Number	766	546	830	1,281	1,212	1,311	802	715	744	731

Furbearer and Small Game

Table 6H: Furbearer Harvests, Western Zone

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Mink	7,720	4,770	3,486	3,296	5,300	7,226	7,836
Muskrat	93,779	35,030	29,606	37,654	46,821	65,074	61,660
Raccoon	27,796	18,638	22,621	18,726	20,590	28,733	31,941
Skunk	2,998	2,535	2,493	2,199	1,970	3,123	3,146
Opossum	9,536	7,351	7,825	5,528	7,585	7,914	9,989
Weasel	271	392	243	269	265	344	480
Red Fox	12,408	11,953	9,051	7,958	10,696	13,872	16,778
Gray Fox	3,456	2,260	2,147	1,967	2,258	2,231	3,205
Coyote	3,362	4,098	3,540	2,972	3,261	4,136	5,148
Beaver					9,547	13,124	11,532

Table7H: Small Game Harvests, Western Zone

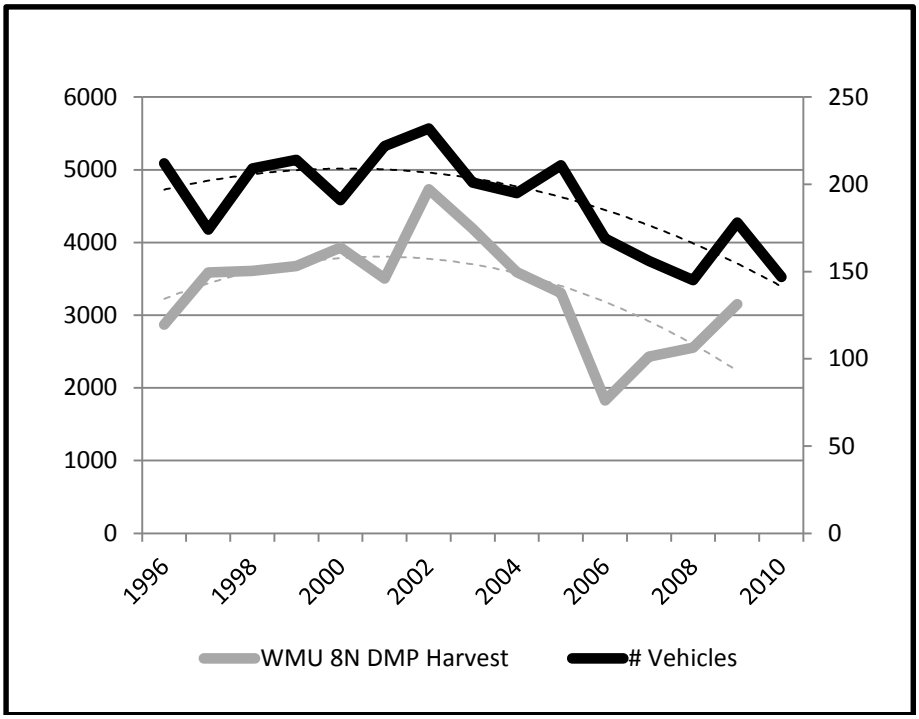
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Grouse	19,632	21,907	30,065	20,908	28,487	18,460	15,207	16,028
Pheasant	23,513	14,899	22,895	22,439	21,365	22,242	17,916	23,470
Crow	55,014	42,633	60,457	53,763	79,264	58,254	46,397	39,335
Rabbit	67,555	40,199	84,004	100,097	98,965	57,875	51,012	58,634
Squirrel	144,067	104,960	154,156	140,765	197,652	122,862	114,762	122,256
Raccoon	21,050	14,309	18,007	16,466	23,677	11,424	9,538	8,587
Red Fox	6,196	5,532	5,540	9,037	8,232	3,177	7,630	3,925
Gray Fox	4,777	3,319	1,304	2,068	2,220	2,421	2,277	572
Coyote	8,435	7,376	11,244	14,321	16,648	5,901	12,799	8,505

Deer Hunting Use

Table 8H: Deer Hunter Vehicles Observed Opening Morning Regular Gun Season

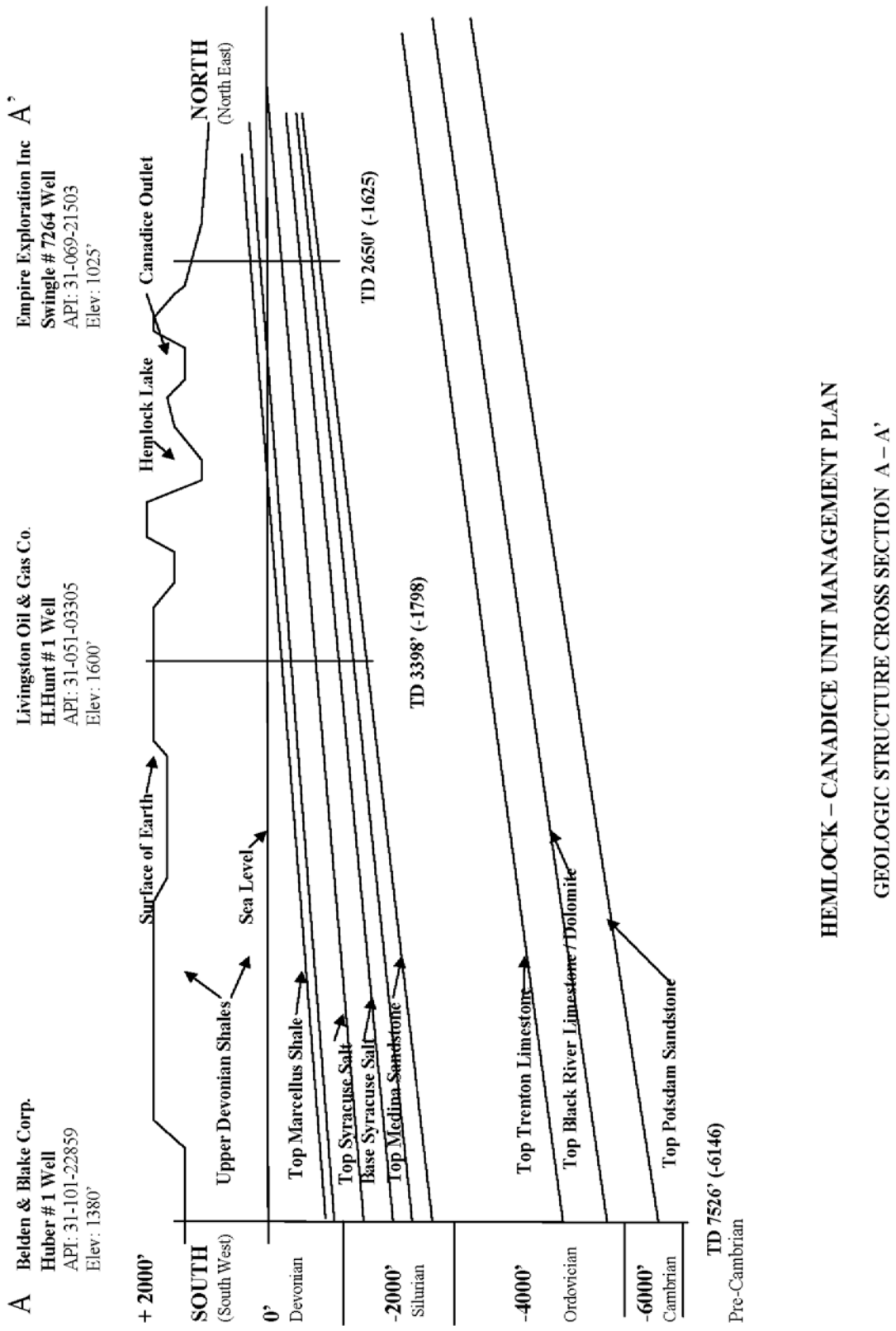
	Hemlock-Canadice Watershed Property								
Year	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Number of Vehicles*	212	174	209	214	191	222	232	201	195
8N DMP Harvest	2,870	3,586	3,608	3,675	3,931	3,502	4,734	4,191	3,594
Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**			
Number of Vehicles*	211	169	156	145	178	147			
8N DMP Harvest	3,305	1,826	2,429	2,553	3,152	2,077			

*Number of vehicles counted by staff from the City of Rochester Watershed the opening morning of regular gun season.



Appendix I: Bedrock Cross Section

See also Bedrock Geology on page 23 and Appendix M: Maps.



Appendix J: State Environmental Quality Review Act (SEQR)

This Unit Management Plan (UMP) does not propose pesticide applications of more than 40 acres, any clearcuts of 40 acres or larger, or prescribed burns in excess of 100 acres. Therefore the actions in the plan do not exceed the thresholds set forth in the Strategic Plan/Generic Environmental Impact Statement for State Forest Management.

This Unit Management Plan also does not include any of the following:

1. Forest management activities occurring on acreage occupied by protected species ranked S1, S2, G1, G2 or G3
2. Pesticide applications adjacent to plants ranked S1, S2, G1, G2 or G3
3. Aerial pesticide spraying by airplane or helicopter
4. Any development of facilities with potable water supplies, septic system supported restrooms, camping areas with more than 10 sites or development in excess of other limits established in this plan.
5. Well drilling plans
6. Well pad densities of greater than one well pad in 320 acres or which does not comply with the limitations identified through a tract assessment
7. Carbon injection and storage or waste water disposal

Therefore the actions proposed in this UMP will be carried out in conformance with the conditions and thresholds established for such actions in the Strategic Plan/Generic Environmental Impact Statement , and do not require any separate site specific environmental review (see 6 NYCRR 617.10[d]).

Actions not covered by the Strategic Plan/Generic Environmental Impact Statement

Any action taken by NYS DEC 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 K: Special Regulations

§190.26 Hemlock-Canadice State Forest (Livingston-Ontario State Reforestation Area #1)

In addition to other applicable general provisions of this Part, the following requirements apply to the Hemlock-Canadice State Forest. In the event of a conflict, these specific provisions shall control.

a) Description. For the purposes of this section, Hemlock-Canadice State Forest refers to the Phelps and Gorham Purchase in Townships 7, 8 and 9, Ranges 5 and 6, located in the Finger Lakes Region, approximately 30 miles south of the city of Rochester. The property includes two large undeveloped parcels surrounding Hemlock and Canadice Lakes, totaling 6,684 acres in the towns of Canadice, Conesus, Livonia, Richmond and Springwater in Ontario and Livingston counties, being the same lands as more particularly described in deeds conveying such lands to the People of the State of New York, on file in the Department of Environmental Conservation, Albany, NY, and duly recorded in the offices of the county clerks of Ontario and Livingston counties. Said Hemlock-Canadice State Forest shall be hereinafter referred to in this section as "state forest".
b) In or on the state forest, it is unlawful for any person to:
1) possess or operate a boat, ice fish, traverse the ice or water, or fish from shore on:
   i. Hemlock Lake: north of the northerly boat launch, and between Boat Launch Road and Hemlock Lake; and
   ii. Canadice Lake: northernmost 500 feet of the lake;
2) operate: a mechanically propelled vessel over 17 feet in length, a mechanically propelled vessel with a motor exceeding ten horsepower, or a non-mechanically propelled vessel over 24 feet in length;
3) flush motors, bilges, bait buckets, livewells, or wash boats, except more than 100 feet from lakes and streams;
4) swim, bathe, water ski, tube;
5) set, light or use a campfire, charcoal fire;
6) camp;
7) operate an all-terrain vehicle;
8) operate a snowmobile, except on designated trails when there is sufficient snow cover;
9) discharge a firearm, except for legally taking game species;
10) transport or introduce any aquatic plant or animal into the water;
11) introduce, use or maintain any horses, work animals or other animals;
12) possess a domesticated pet unless it is leashed or controlled at all times;
13) deposit any feces or animal entrails within 100 feet of any water body or water course;
14) commit any act that may result in contamination of any portion of the lakes or streams.

Proposed Changes to §190.26

The following are proposed changes to the above, a process that is separate from the Unit Management Planning process.
4) add - SCUBA dive and float
12) add - and kept out of the water except when lawfully hunting game
15) Wade, except when accessing a boat/kayak/canoe or when wearing wader/hip boots.

Appendix L: Plant Communities of Hemlock-Canadice Watershed

The following are scanned copies of The Nature Conservancy/Natural Heritage 1998 inventory and report on the watersheds of Hemlock and Canadice lakes.

1998

PLANT COMMUNITIES OF THE HEMLOCK-CANADICE WATERSHED

Inventory and report prepared by

PATRICIA MARTIN

EXECUTIVE SUMMARY

Standard New York Natural Heritage Program methodology was used to document plants and plant communities in the Hemlock-Canadice watershed. Plant communities were identified by ground-truthing and/or by stereoscopic analysis of aerial photos. They were delineated on mylar overlays of the photos, digitized by personnel at the Ontario County Planning Department and named according to Ecological Communities of New York State by Carol Reschke.

Twenty-four plant communities were surveyed and mapped; lakes and ponds were mapped but not surveyed. Eight wetland communities comprise 2.5% of the watershed and include four communities which are rare in New York State. Abandoned farmland in the form of successional old field and successional shrubland covers over 20% of the watershed. Almost 55% of the watershed is vegetated in one of seven forest communities including one which is rare in New York State. Over 11% is being actively farmed and only 4% has been developed.

Plants are named according to Revised Checklist of New York State Plants by Richard S. Mitchell and Gordon C. Tucker. Plant lists are provided for seven palustrine and six terrestrial communities. One New York State rare plant was found: Kentucky coffee tree, *Gymnocladus dioica.*

ACKNOWLEDGEMENTS

The author gratefully acknowledges the efforts of all those people and organizations who have been involved in making this study a reality.

Carolyn Cass, Genesee Ornithological Society and Rochester Birding Association
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Tim Jensen, Ontario County Planning Department
Sarah Kersting, Finger Lakes Land Trust
Richard Mather, Rochester Birding Association
Don Root, Watershed Conservationist, City of Rochester Department of Environmental Services
Bruce Robinson, Forestry Consultant, Bruce Robinson, Inc.
Terry Saxby, Ontario County Planning Department
Kris West, The Nature Conservancy

Special thanks go to the landowners who so gratiously allowed the author access to their properties.

Lee Babbitt Jr.
Jack Bishop
Steve Carter
Roshan and Roger Christensen
Al and Sybil Craig
Dick Dennison
Dye family
James Engel
Helen and Charles Foster
Howard and Bonnie Harris
George Hart
Jim and Sarah Kersting
Margaret and Hig Lloyd
Mark and Kathy Malmendier
Lars and Agnes Mazzola and Jane Morse
George Murray
Barbara Oliver
George Standish

Many steps and several people were involved in transcribing data from the aerial photos into the computer that generated the multi-colored community map. We have done our best to catch mistakes, but with such a complex mosaic of communities to deal with, it is possible that inadvertant errors have crept into the final product. Please direct ommissions, corrections and comments to:

City of Rochester
Hemlock Water Treatment Plant
7412 Rix Hill Road
Hemlock, New York 14466

Support from the City of Rochester and from the Rochester Area Community Foundation is gratefully acknowledged.

PLEASE RESPECT PROPERTY RIGHTS

Many of the plant communities described in this report are on private property. **Their descriptions in this report do not constitute permission to visit.**

The City of Rochester welcomes visitors to its property on the watershed. Please obtain a visitor permit at the kiosk at the north end of Hemlock Lake on Rix Hill Road. When on city property, please obey the conditions listed on the permit and do not trespass on private property.

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INTRODUCTION

The Hemlock-Canadice Watershed is a 38,995 acre mosaic of forests, wetlands, fields, shrublands, farms and lawns that includes portions of the townships of Canadice, Conesus, Livonia, Richmond, Springwater and Wayland. Unique among the Finger Lakes, Hemlock and Canadice are renowned for their wild, undeveloped shorelines and wooded hillsides, the home of nesting bald eagles for the past century. The dramatic and unspoiled setting of Hemlock and Canadice sets them apart from all the other Finger Lakes.

The Finger Lakes Land Trust, The Nature Conservancy and the Ontario County Planning Department are working with the City of Rochester and other landowners within the watershed in a cooperative conservation effort. This report, which is part of that cooperative effort, is designed to provide information about the plants, animals and plant communities of the watershed itself.

METHODS

INTRODUCTION

Standard New York Natural Heritage Program methodology was used to document vegetation in the watershed. The New York Natural Heritage Program is a joint effort of the NYS Department of Environmental Conservation and The Nature Conservancy. It seeks to preserve biological diversity by identifying the locations of rare plants and animals and significant ecological communities, by providing this information to a broad audience, by providing scientific advice on conserving and managing these resources and by supporting an international network of scientists evaluating North America's natural diversity. Heritage maintains New York's most comprehensive database on the status and location of rare species and ecological communities, assembled from historical records and collections maintained by scientific institutions along with on-the-ground field inventories.

PLANT COMMUNITY IDENTIFICATION AND MAPPING

Plant communities were delineated using names and descriptions established by Carol Reschke in her book Ecological Communities of New York State, with exceptions described within the Results section. Their identities were established by actual visits ("ground truthing") and/or by stereoscopic analysis of existing air photos which, for Ontario County were flown in 1995 and for Livingston County in 1994. Field visits took place from July 1996 to October 1996 and from April 1997 to October 1997. Forty-five visits were made totalling 215 hours. Most of the stereoscopic analysis was done during the winter of 1996-1997 with corrections ongoing throughout the 1997 field season.

Stereoscopic analysis of aerial photos involves looking at pairs of photos through a stereoscope, which renders a three dimensional image. Plant communities were delineated in pencil on mylar (translucent plastic) overlays of the photos. These overlays were then digitized by personnel at the Ontario County Planning Department to produce the final multi-colored cover type maps. The plant communities that are mapped are limited to the palustrine and terrestrial types, i.e. those that could be walked with either wet (palustrine) or dry (terrestrial) feet. Riverine communities (e.g. streams) and lacustrine communities (e.g. the farm ponds and the two lakes) were mapped but not surveyed.

Ground truthing the entire 40,000 acres of the Hemlock-Canadice Watershed was clearly not possible for one field worker in one and one half field seasons. Therefore, strategies were devised to maximize field time productivity. These strategies are discussed below.

First, the New York Natural Heritage Program Biological and Conservation Data System (BCD) was consulted to determine what, if any, rare plant communities were known from the watershed. If any had been reported, an effort could be made to rediscover them and document them more thoroughly. The data base search did not reveal any rare plant communities already known.

Second, a list of sites to visit was prepared by the City of Rochester Watershed Consevationist (Don Root) in consultation with one of the foresters (Bruce Robinson) who has spent considerable time on the watershed. The list follows.

A. The wetland loop trail south of Canadice Lake
B. Springwater Flats
C. The east and west branches of Springwater Creek to their headwaters
D. Reynolds Gull to its headwaters
E. Mission Gull to its headwaters
F. Canadice Outlet Creek upstream of the curved dam
G. A representative delta on Canadice Lake
H. The "peat bog" near Webster Crossing

I. The old growth oaks west of Hemlock Outlet Creek
J. Other appropriate places

These sites were chosen for the following reasons. First, it was deemed appropriate to visit all the wetlands and uplands with immediate hydrological connection to Hemlock and Canadice Lakes. Wetlands, because of their relative inaccessability, tend to be less disturbed (by humans) than nearby upland sites and so somewhat more likely to yield rare plants and intact plant communities. Also, silver-maple ash swamp, a plant community that is rare in New York State but not so in the Finger Lakes region, was likely to be found bordering one or both of the watershed lakes. This explains the inclusion of sites A through G. The wetland near Webster Crossing is actually part of the Conesus Lake watershed except during high water, when some drainage into Hemlock Lake can occur. It was deemed appropriate to visit because of its hydrological connection and because it is known locally as a "peat bog." Peatlands can harbor rare plants and are often themselves rare plant communities. Site I is actually not on the watershed, but the old growth oaks on it meant that the site was minimally disturbed so there was some interest in studying it further.

Aerial photos and topographic maps were used to help determine what other places would be visited. They were used to identify such features as wetlands, extensive forested areas, wooded north and east facing steep slopes and wooded south and west facing steep slopes. Again, the overall goal was to identify the least disturbed areas, and steep slopes were less likely to have been logged, farmed or pastured in the past because of their steepness. Also, north and east facing slopes, which are relatively cool and moist, tend to harbor different plant communities and different plants than south and west facing slopes, which tend to be warmer and dryer.

Landowners were encouraged to participate by giving permission for fieldwork to be done on their properties. They were recruited at a public lecture given in October 1996, part of the Talks and Treks series organized by the Finger Lakes Land Trust. The lecture outlined the scope of this project and shared results to date. About a dozen property owners were contacted this way and word of mouth added several more. Other property owners were contacted as sites looked interesting during aerial photo analysis and/or during drives on the watershed.

PLANT IDENTIFICATION

Plants were named according to the Revised Checklist of New York State Plants by Richard S. Mitchell and Gordon C. Tucker. They were identified using Newcomb's Wildflower Guide by Lawrence Newcomb and/or by more technical works, such as Britton and Brown. See the bibliography for sources used.

A search for rare plants on the 40,000 acre watershed was narrowed considerably by using the following strategies.

The New York Natural Heritage Program's Biological and Conservation Data System (BCD) was consulted to determine which, if any, rare plants had already been discovered on the watershed. If any had been discovered, an effort could be made to re-discover them. A data base search revealed a record for a single rare plant, namely Northern Wild Comfrey (*Cynoglossum virginianum* var. *boreale*), that had been seen in the village of Springwater. There was no known observation date. This plant population was not re-located.

The Heritage Program also makes available rare plant lists that can be printed out by county of occurrence. These county lists provide plant phenology data, i.e., information on when the plant is in flower and in fruit. With this information and information about the preferred habitat of the plant, decisions were made as to what habitats to visit and when to visit them.

RESULTS

OVERVIEW

Tables IA and IB list the plant communities that were found on the watershed as a whole and on the Hemlock and Canadice sub-watersheds. Tables IIA and IIB list the same plant communities with their percent cover broken down by township. The statistics in Tables IA through IIB were compiled from digital information within the Geographic Information System. Fifty-five % of the watershed is forested in one of seven forest communities. Eight wetland communities constitute 2.6% of the watershed. Old fields, shrubland and a mosaic of the two make up 20%, whereas 11% is actively agricultural land in either cropland, pasture or vineyard. Only 4% is developed into mowed lawns or commercial use. Remarkably, there are 271 ponds on the watershed, mostly farm ponds. Assuming no more than one pond per tax parcel, this represents almost 14% of the tax parcels.

The maps illustrate the locations of the plant communities on the watershed, all shown in color except for mowed roadside/pathway and unpaved road/path. The paved roads are in white on the community maps and are readily apparent; the unpaved roads are not included because they were too narrow to map at the scale used.

Dominant features on the community map include the presence of large, unbroken tracts of forest along the lake shores, numerous conifer plantations and their remnants (mapped as a mosaic of successional northern hardwoods and conifer plantation), abandoned farmland represented by old field and shrubland, vast tracts of agricultural land, mostly in the southeast corner of the watershed, and mowed lawns which hug the roadsides.

TABLE 1A

COVER TYPES AND PLANT COMMUNITIES IN ACRES

PLANT COMMUNITY OR COVER TYPE	TOTAL WATERSHED	CANADICE WATERSHED	HEMLOCK WATERSHED
OPEN WATER	**2818.09**	**712.46**	**2105.63**
Lakes	2678.22	670.22	2008
Ponds	139.87	42.24	97.63
TOTAL WETLAND COVER TYPES	**999.32**	**120.91**	**878.41**
Shallow emergent marsh	68.61	4.12	64.49
Shrub swamp	321.05	71.91	249.14
Sedge meadow	39.63	0	39.63
Shallow emergent marsh/shrub swamp/sedge meadow	332.28	0	332.28
Inland poor fen	7.61	0	7.61
Highbush blueberry bog thicket	0.44	0.31	0.13
Silver maple-ash swamp	221.53	44.57	176.96
Rich hemlock-hardwood peat swamp	8.17	0	8.17
TOTAL SUCCESSIONAL COVER TYPES	**7889**	**1154.2**	**6714.8**
Successional old field	4321.02	785.48	3535.54
Successional shrubland	3224.59	282.66	2941.93
Successional old field/successional shrubland	323.39	86.06	237.33
TOTAL FOREST COVER TYPES	**21313.35**	**5211.85**	**16101.5**
Appalachian oak-hickory forest	119.51	103.57	15.94
Maple-basswood rich mesic forest	43.71	0	43.71
Hemlock-northern hardwood forest	1667.35	224.37	1442.98
Successional northern hardwoods	13422.7	3196.69	10226.01
Successional shrubland/successional northern hardwoods	1048.3	532.26	516.04
Successional northern hardwoods/conifer plantation	2509.43	547.91	1961.52
Conifer Plantation	2502.35	607.05	1895.3
TOTAL AGRICULTURAL COVER TYPES	**4391.04**	**180.43**	**4210.6**
Cropland	4102.96	175.45	3927.51
Pasture	281.29	4.98	276.3
Vineyard	6.79	0	6.79
TOTAL DEVELOPED COVER TYPES	**1599.45**	**345.27**	**1259.06**
Mowed lawn	1455.33	345.27	1114.94
Residential/commercial	131.72	0	131.72
Gravel mine	12.4	0	12.4
TOTAL ACRES	**38995.12**	**7725.12**	**31270**

TABLE 1B

COVER TYPES AND PLANT COMMUNITIES AS PERCENT OF WATERSHED

PLANT COMMUNITY OR COVER TYPE	TOTAL WATERSHED	CANADICE WATERSHED	HEMLOCK WATERSHED
OPEN WATER	**7.22**	**9.22**	**6.73**
Lakes	6.87	8.68	6.42
Ponds	0.36	0.55	0.31
TOTAL WETLAND COVER TYPES	**2.56**	**1.57**	**2.82**
Shallow emergent marsh	0.18	0.05	0.21
Shrub swamp	0.82	0.93	0.8
Sedge meadow	0.1	0	0.13
Shallow emergent marsh/shrub swamp/sedge meadow	0.85	0	1.06
Inland poor fen	0.02	0	0.02
Highbush blueberry bog thicket	<0.01	<0.01	<0.01
Silver maple-ash swamp	0.57	0.58	0.57
Rich hemlock-hardwood peat swamp	0.02	0	0.03
TOTAL SUCCESSIONAL COVER TYPES	**20.18**	**14.94**	**21.48**
Successional old field	11.08	10.17	11.31
Successional shrubland	8.27	3.66	9.41
Successional old field/successional shrubland	0.83	1.11	0.76
TOTAL FOREST COVER TYPES	**54.67**	**67.46**	**51.49**
Appalachian oak-hickory forest	0.31	1.34	0.05
Maple-basswood rich mesic forest	0.11	0	0.14
Hemlock-northern hardwood forest	4.3	2.9	4.62
Successional northern hardwoods	34.4	41.38	32.7
Successional shrubland/successional northern hardwoods	2.69	6.89	1.65
Successional northern hardwoods/conifer plantation	6.44	7.09	6.27
Conifer Plantation	6.42	7.86	6.06
TOTAL AGRICULTURAL COVER TYPES	**11.26**	**2.33**	**13.47**
Cropland	10.52	2.27	12.56
Pasture	0.72	0.06	0.88
Vineyard	0.02	0	0.02
TOTAL DEVELOPED COVER TYPES	**4.1**	**4.47**	**4.03**
Mowed lawn	3.73	4.47	3.57
Residential/commercial	0.34	0	0.42
Gravel mine	0.03	0	0.04

TA IIA

COVER TYPES AND PLANT COMMUNITIES BY TOWNSHIP (IN ACRES)

PLANT COMMUNITY OR COVER TYPE	RICHMOND	CANADICE	LIVONIA	CONESUS	SPRINGWATER	WAYLAND
OPEN WATER	**6.63**	**795.1**	**288.89**	**385.49**	**76.12**	**3.07**
Lakes	0	733.82	287	372.6	22	0
Ponds	6.63	61.28	1.89	12.89	54.12	3.07
TOTAL WETLAND COVER TYPES	**0.02**	**311.32**	**0**	**0**	**665.85**	**22.14**
Shallow emergent marsh	0	4.12	0	0	64.49	0
Shrub swamp	0	77.63	0	0	229.45	13.97
Sedge meadow	0	0	0	0	39.63	0
Shallow emergent marsh/shrub swamp/sedge meadow	0	0	0	0	332.28	0
Inland poor fen	0	7.61	0	0	0	0
Highbush blueberry bog thicket	0	0.44	0	0	0	0
Silver maple-ash swamp	0.02	221.52	0	0	0	0
Rich hemlock-hardwood peat swamp	0	0	0	0	0	8.17
TOTAL SUCCESSIONAL COVER TYPES	**365.21**	**2486.1**	**305.27**	**931.07**	**3678.67**	**47.73**
Successional old field	217.27	1155	165.9	592.32	2190.26	0.28
Successional shrubland	147.94	1181.87	139.37	338.75	1369.22	47.45
Successional old field/successional shrubland	0	149.23	0	54.99	119.19	0
TOTAL FOREST COVER TYPES	**439.19**	**9069.68**	**1091.76**	**3215.84**	**7412.58**	**91.24**
Appalachian oak hickory forest	0	119.51	0	0	0	0
Maple-basswood rich mesic forest	0	0	0	22.15	21.56	0
Hemlock-northern hardwood forest	2.81	388.17	123.51	659.86	463.77	29.24
Successional Northern hardwoods	340.59	5426.78	672.6	1954.89	4972.58	62
Successional shrubland/successional northern hardwoods	0	540.81	62.75	165.56	279.2	0
Successional northern hardwoods/conifer plantation	47.96	1395.27	119.3	178.58	766.49	0
Conifer plantation	47.83	1199.14	113.6	234.8	906.98	0
TOTAL AGRICULTURAL COVER TYPES	**57.32**	**296.47**	**304.45**	**250.61**	**3288.9**	**193.28**
Cropland	57.32	278.8	304.45	203.23	3065.88	193.28
Pasture	0	17.67	0	40.59	223.02	0
Vineyard	0	0	0	6.79	0	0
TOTAL DEVELOPED COVER TYPES	**49.98**	**582.69**	**78.52**	**127.5**	**3743.34**	**56.41**
Mowed lawn	49.98	582.69	78.52	127.5	566.64	55.02
Residential/commercial	0	0	0	0	3164.3	1.39
Gravel mine	0	0	0	0	12.4	0
TOTAL ACRES	**918.35**	**13541**	**2068.72**	**4964.7**	**18865.46**	**414.57**

TA IIB

COVER TYPES AND PLANT COMMUNITIES BY TOWNSHIP (AS PERCENT OF WATERSHED)

PLANT COMMUNITY OR COVER TYPE	RICHMOND	CANADICE	LIVONIA	CONESUS	SPRINGWATER	WAYLAND
OPEN WATER	**0.72**	**5.87**	**13.96**	**7.76**	**0.41**	**0.74**
Lakes	0	5.42	13.87	7.5	0.12	0
Ponds	0.72	0.45	0.09	0.26	0.29	0.74
TOTAL WETLAND COVER TYPES	**0**	**2.3**	**0**	**0**	**3.53**	**5.34**
Shallow emergent marsh	0	0.03	0	0	0.34	0
Shrub swamp	0	0.57	0	0	1.22	3.37
Sedge meadow	0	0	0	0	0.21	0
Shallow emergent marsh/shrub swamp/sedge meadow	0	0	0	0	1.76	0
Inland poor fen	0	0.06	0	0	0	0
Highbush blueberry bog thicket	0	0	0	0	0	0
Silver maple-ash swamp	0	1.64	0	0	0	0
Rich hemlock-hardwood peat swamp	0	0	0	0	0	1.97
TOTAL SUCCESSIONAL COVER TYPES	**39.77**	**18.36**	**11.05**	**19.86**	**19.5**	**11.52**
Successional old field	23.66	8.53	8.02	11.93	11.61	0.07
Successional shrubland	16.11	8.73	3.03	6.82	7.26	11.45
Successional old field/successional shrubland	0	1.1	0	1.11	0.63	0
TOTAL FOREST COVER TYPES	**47.83**	**66.97**	**52.76**	**64.75**	**39.29**	**22.01**
Appalachian oak hickory forest	0	0.88	0	0	0	0
Maple-basswood rich mesic forest	0	0	0	0.45	0.11	0
Hemlock-northern hardwood forest	0.31	2.87	5.97	13.29	2.46	7.05
Successional Northern hardwoods	37.09	40.07	32.51	39.36	26.36	14.96
Successional shrubland/successional northern hardwoods	0	3.99	3.03	3.33	1.48	0
Successional northern hardwoods/conifer plantation	5.22	10.3	5.76	3.6	4.07	0
Conifer plantation	5.21	8.86	5.49	4.73	4.81	0
TOTAL AGRICULTURAL COVER TYPES	**6.24**	**2.19**	**14.72**	**5.05**	**17.43**	**46.62**
Cropland	6.24	2.06	14.72	4.09	16.25	46.62
Pasture	0	0.13	0	0.82	1.18	0
Vineyard	0	0	0	0.14	0	0
TOTAL DEVELOPED COVER TYPES	**5.44**	**4.3**	**3.8**	**2.57**	**19.84**	**13.61**
Mowed lawn	5.44	4.3	3.8	2.57	3	13.27
Residential/commercial	0	0	0	0	16.77	0.34
Gravel mine	0	0	0	0	0.07	0

SOURCES OF ERROR

While every attempt was made to accurately identify and map the plant communities within the watershed, errors may still appear on the map. Sources of error can be related to aerial photo scale, distortion present in the photos, changes in land use, ease of community identification from photos and errors in digitizing.

Livingston County plant community delineations are likely to contain more errors than Ontario County delineations because the aerial photos used to map them are at a scale of 1 inch:3000 feet whereas the Ontario County photos are at 1 inch:1000 feet.

If a community's shape or place in the landscape looks not quite correct it is often because of the distortion present in the aerial photos themselves. The photos that were used were not orthographically corrected. Simply put, a photo is a two-dimensional representation of a three-dimensional landscape. The more three-dimensional (i.e.hilly) that landscape is, the more distortion exists on the photo. Road intersections help, but not all photos had road intersections on them, especially where they were needed the most, such as on the west side of Hemlock Lake.

Livingston County photos date from 1994 whereas Ontario County photos date from 1995. Any changes in the landscape that happened between these dates and the 1996 and 1997 field seasons might not have been recorded, especially if these changes happened far from a road. Fields that are fallow one year and cropland the next are likely places where these sorts of "errors" can be made. Indeed, cropland and successional old fields can be difficult to tell apart on aerial photos, presumably because the photos are taken early in the growing season.

Certain forested communities are easier to tell apart than others on aerial photos. On leaf-off photos, conifer plantations stand out prominently, as do hemlock-northern hardwood forests, especially when the photos are used in conjunction with topographic maps. But distinguishing, say, Appalachian oak-hickory forest from successional northern hardwoods can be difficult, especially when the the latter community, as it exists on the watershed, happens to have a high concentration of oaks in the canopy. A conservative approach was taken to this mapping dilemma; when in doubt, forested leafless patches on the aerial photos were mapped as successional northern hardwoods because that was the community type most often encountered in the field.

When the first multi-colored drafts of the community maps were produced with tax parcel lines added, it was evident that tax parcel boundaries often coincided closely with but not exactly with plant community boundaries. It was tempting to make them fit exactly by altering the community data fed to the computer but we refrained. For one thing, doing so makes the assumption that the current land surveys are more accurate than the community analysis. Although this is probably the case (the width of the pencil line on the air photos represents about 60 feet on the ground), it could also be true that current land use reflects a neighborly agreement along growing community boundaries rather than strict adherence to survey lines.

Transferring information from the aerial photos to a computer through digitizing can introduce errors in shape, size and identification of the plant community.

INTRODUCTION TO THE PLANT COMMUNITY DESCRIPTIONS

Descriptions of and plant lists for most of the common communities are given below: three wetland, two successional and four forest cover types are included here as well as the four mosaic communities and the farm ponds. Descriptions of the five rare plant communities follow these. Plant lists for the common communities are a composite of all the occurrences of that particular community type that were visited on the watershed. The rare plant community lists are not composites, so there are separate lists for each of the rare plant community occurrences on the watershed. The plant lists that are provided with each community are not intended to represent a complete inventory of all the plants that occur. Rather they are a list of what this author saw during her two field seasons on the watershed.

For the purposes of this report and to simplify interpretation of cover types, several standard community names as defined by Reschke are lumped. Cropland/row crops and cropland/field crops are mapped as one community, called cropland. Mowed lawn with trees and mowed lawn are mapped as one community, called mowed lawn. A new community is added, called residential/commercial. This is to distinguish the intense development in the village of Springwater from the lower density residential development elsewhere on the watershed. Finally, pine plantation is lumped with spruce plantation and called conifer plantation.

Although plant communities were, with the exceptions described above, named according to Reschke, it is not to be assumed that the communities as they occur on the watershed exactly match the descriptions as given in Reschke. Plant community classification is, at best, an inexact science and plant composition can vary somewhat from one community occurrence to another. The reader with access to Reschke's book is free to come to his or her own conclusions about the appropriateness of this author's designations.

FARM PONDS

Although ponds were not surveyed for either plants or animals, the sheer number of them on the watershed (271) has prompted this short discussion.

Most of the ponds visible on the aerial photos seem too small to sustain breeding populations of ducks, geese and game fish. However, they are quick to get colonized by aquatic plants such as cat tails, sedges and rushes. The ponds also attract animals that require water for at least part of their life cycles, like frogs, toads, salamanders, dragonflies, damselflies, caddisflies and snails as well as the smaller plants and animals that these feed on. If managed properly, these ponds can function as miniature ecosystems for years and certainly add to the diversity present on the watershed.

SHALLOW EMERGENT MARSH, SHRUB SWAMP AND SEDGE MEADOW

The three common wetland communities on the watershed are discussed together because they often occur together. Indeed, they occur as a large mosaic in Springwater Flats, south of the south end of Hemlock Lake and north of Kellogg Road.

Shallow emergent marsh occurs on the watershed as described above and farther upstream along the headwaters of Springwater Creek. It is a community whose soils are always saturated and which may be seasonally flooded. It is a herbaceous community with occasional emergent shrubs that may include speckled alder and arrowwood. Characteristic herbaceous species include swamp milkweed, bur marigold, water hemlock, three-way sedge, Joe Pye weed, whorled loostrife, ostrich fern, sensitive fern, reed canary grass, skunk cabbage and wide leaf cat tail.

Purple loosestrife (*Lythrum salicaria*) is an invasive alien species that has become a significant problem in the northeast by crowding out native species in shallow emergent marshes. So far, it is absent from the watershed except for a small population at the south end of Hemlock Lake.

The dominant layer in a **shrub swamp**, not surprisingly, consists of shrubs. On the watershed, these are most often gray, silky and red osier dogwoods as well as speckled alder, arrowwood, multiflora rose and shrubby willows including pussy willow. There are generally a few trees emergent over these shrubs such as swamp white and bur oaks. Herbs are rather scarce because the shrubs are often dense enough that light levels below them are low. Jewelweed, sensitive fern and skunk cabbage are commonly present.

Sedge meadows are herbaceous wetland communities that resemble shallow emergent marshes. Differences between them are subtle and include differences in soil composition not apparent to the casual observer. Shallow emergent marshes occur on mineral soils while sedge meadows develop on organic muck or fibrous peat. As their name implies, they are dominated by sedges, most of which don't have common names, such as *Carex aquatilis*, *Carex crinita* and *Carex lacustris*. Other species include those which might also be found in a shallow emergent marsh such as Joe Pye weed, boneset, skunk cabbage, marsh fern and wide leaf cat tail.

Birds that one might expect to see within these wetlands include Canada Goose, Mallard, Wood Duck, Great Blue Heron, House Wren, Marsh Wren, Least Flycatcher, Gray Catbird, Blue-winged Warbler, Yellow Warbler, Chestnut-sided Warbler, Common Yellowthroat, Red-winged Blackbird, Swamp Sparrow and Song Sparrow.

The area known locally as a "peat bog" near Webster Crossing turned out to be a mosaic of shrub swamp and sedge meadow. The author did not see any peat.

SHALLOW EMERGENT MARSH

Common Name	Species name	Dominant	Tree	Shrub/Vine	Herb
ARROWWOOD	*Viburnum dentatum var. lucidum*			X	
MEADOWSWEET	*Spirea sp.*			X	
SPECKLED ALDER	*Alnus incana ssp. rugosa*			X	
WILD CUCUMBER	*Echinocystis lobata*			X	
ARROW-LEAVED TEARTHUMB	*Polygonum sagittatum*				X
BULRUSH	*Scirpus atrovirens*				X
BUR MARIGOLD	*Bidens cernua*				X
BUR REED	*Sparganium sp.*				X
CANADA GOLDENROD	*Solidago canadensis*				X
CLEAR WEED	*Pilea pumila*				X
CRESTED FERN	*Dryopteris cf. cristata*				X
FIELD HORSETAIL	*Equisetum arvense*				X
JEWELWEED	*Impatiens capensis*				X
JOE PYE WEED	*Eupatorium maculatum*				X
MONEYWORT	*Lysimachia nummularia*				X
NEW ENGLAND ASTER	*Aster novae-angliae*				X
OSTRICH FERN	*Matteuccia struthiopteris*				X
PANICLED ASTER	*Aster lanceolatus*				X
PURPLE LOOSESTRIFE	*Lythrum salicaria*				X
PURPLE STEMMED ASTER	*Aster puniceus*				X
REED CANARY GRASS	*Phalaris arundinacea*				X
REED GRASS	*Phragmites australis*				X
ROUGH LEAVED GOLDENROD	*Solidago patula*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex cristatella*				X
SEDGE	*Carex hystericina*				X
SEDGE	*Carex cf. interior*				X
SEDGE	*Carex intumescens*				X
SEDGE	*Carex lacustris*				X
SEDGE	*Carex lupulina*				X
SEDGE	*Carex lurida*				X
SEDGE	*Carex scoparia*	/			X
SEDGE	*Carex vulpinoidea*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SKUNK CABBAGE	*Symplocarpus foetidus*				X
SOFT RUSH	*Juncus effusus*				X
SOFT STEM BULRUSH	*Scirpus tabernaemontanii*				X
SPIKEBRUSH	*Eleocharis obtusifolia*				X
SWAMP MILKWEED	*Asclepias incarnata*				X
THREE-WAY SEDGE	*Dulichium arundinaceum*				X
WATER HEMLOCK	*Cicuta maculata*				X
WHORLED LOOSESTRIFE	*Lysimachia quadrifolia*				X
WIDE LEAF CAT TAIL	*Typha latifolia*				X
WOOLGRASS	*Scirpus cyperinus*				X

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SHRUB SWAMP

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BLACK WALNUT	*Juglans nigra*		X		
BUR OAK	*Quercus macrocarpa*		X		
ELM SP.	*Ulmus sp.*		X		
SWAMP WHITE OAK	*Quercus bicolor*		X		
ARROWWOOD	*Viburnum dentatum var. lucidum*			X	
BOX ELDER	*Acer negundo*			X	
FALSE SPIREA	*Sorbaria sorbifolia*			X	
GRAY DOGWOOD	*Cornus foemina*			X	
HAWTHORNE	*Crataegus sp.*			X	
MULTIFLORA ROSE	*Rosa multiflora*			X	
PUSSY WILLOW	*Salix discolor*			X	
RED OSIER DOGWOOD	*Cornus sericea*			X	
SILKY DOGWOOD	*Cornus amomum*			X	
SPECKLED ALDER	*Alnus incana ssp. rugosa*			X	
ARROW-LEAVED TEARTHUMB	*Polygonum sagittatum*				X
FLAT SEDGE	*Cyperus sp.*				X
GOLDENROD	*Solidago sp.*				X
JEWELWEED	*Impatiens capensis*				X
JOE PYE WEED	*Eupatorium maculatum*				X
MONEYWORT	*Lysimachia nummularia*				X
SEDGE	*Carex bromoides*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SKUNK CABBAGE	*Symplocarpus foetidus*				X
SPIKERUSH	*Eleocharis obtusa*				X

SEDGE MEADOW

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
QUAKING ASPEN	*Populus tremuloides*		X		
ARROWWOOD	*Viburnum dentatum var. lucidum*			X	
GRAY DOGWOOD	*Cornus foemina ssp. racemosa*			X	
HONEYSUCKLE	*Lonicera sp.*			X	
RED OSIER DOGWOOD	*Carex sericea*			X	
RED RASPBERRY	*Rubus idaeus*			X	
WILLOW	*Salix sp.*			X	
WINTERBERRY	*Ilex verticillata*			X	
BUTTERCUP	*Ranunculus hispidus var. caricetorum*				X
BLUE FLAG	*Iris versicolor*				X
BONESET	*Eupatorium perfoliatum*				X
BULRUSH	*Scirpus atrovirens*				X
FIELD HORSETAIL	*Equisetum arvense*				X
GREAT ANGELICA	*Angelica atropurpurea*				X
JOE PYE WEED	*Eupatorium maculatum*				X
LATE GOLDENROD	*Solidago gigantea*				X
MARSH FERN	*Thelypteris palustris*				X
MARSH SPEEDWELL	*Veronica scutellata*				X
SEDGE	*Carex aquatilis*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex diandra*				X
SEDGE	*Carex hystericina*				X
SEDGE	*Carex lacustris*				X
SEDGE	*Carex livida*				X
SEDGE	*Carex scoparia*				X
SEDGE	*Carex stipata*				X
SEDGE	*Carex vulpinoidea*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SKUNK CABBAGE	*Symplocarpus foetidus*				X
SMALL PURPLE FRINGED ORCHID	*Platanthera psycodes*				X
SOFT RUSH	*Juncus effusus*				X
WIDE LEAF CAT TAIL	*Typha latifolia*				X
WILD PARSNIP	*Pastinaca sativa*				X
WILLOW HERB	*Epilobium sp.*				X
WOOLGRASS	*Scirpus cyperinus*				X

SUCCESSIONAL OLD FIELD AND SUCCESSIONAL SHRUBLAND

There is much abandoned farmland on the watershed. If left untouched, abandoned cropland and pasture will eventually return to forest through a fairly well-defined process whereby they are first invaded by herbaceous plants to become successional old fields and thence by woody shrubs and vines to become successional shrublands.

Successional old fields are at their best in late summer and early fall because it is at this time of year that native asters and goldenrods are blooming. Look for calico, New England, frost, purple-stemmed and arrow-leaved asters and grass-leaved, Canada, early, late and rough-stemmed goldenrods. Native species that bloom earlier in the season include common milkweed and blue-eyed grass. Except for the asters and goldenrods, most species that one can enjoy in old fields are aliens. These include most hawkweeds, St. John's wort, oxeye daisy, black-eyed susan, brown and spotted knapweeds, chickory, Queen Anne's lace and elecampane.

Successional old fields are great places to see birds that don't reside elsewhere and which indeed require non-forested communities in which to nest. Species to look for include Northern Harrier, Eastern Meadowlark, Bobolink and Vesper, Grasshopper, Savannah, Field and Henslow's Sparrows. See Table III for birds of open fields.

For those wishing to search for birds of open fields, the following tips are offered. For Harriers and Upland Sandpipers (the latter not seen but to be expected), bigger is better. They seem to require huge fields within an entire landscape of huge fields. Vesper, Henslow's and Grasshopper Sparrows seem to like old fields in an early state of succession, before they are dominated by asters and goldenrods. The birders call these "sparse grassy weed fields." Bobolinks, Eastern Meadowlarks and Savannah Sparrows, on the other hand, prefer fields that are still in cultivation; wheat and alfalfa seem to be favorites. If a landowner wishes to maintain grassland breeding birds, fields containing these species should be mowed no earlier than mid-July to allow young to fledge.

Successional shrublands are, of course, dominated by shrubs. Native gray dogwood, staghorn sumac, blackberries and raspberries are often dominant. If trails are cut through these they can be great places to visit in July with a basket and an empty stomach! Unfortunately, invasive shrubs such as autumn olive, honeysuckle and multiflora rose can sometimes choke these communities and make them difficult to walk through. Herbs are generally the same as one might find in a successional old field but in lesser amounts and fewer species because they are shaded by the shrubs.

Successional shrublands are good places to look for Blue-winged and Golden-winged Warblers and their hybrids, Lawrence's and Brewster's Warblers.

SUCCESSIONAL OLD FIELD

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
COTTONWOOD	*Populus deltoides*		X		
QUAKING ASPEN	*Populus tremuloides*		X		
WHITE ASH	*Fraxinus americana*		X		
AUTUMN OLIVE	*Elaeagnus umbellata*			X	
BLACK RASPBERRY	*Rubus occidentalis*			X	
BLACKBERRY	*Rubus allegheniensis*			X	
GRAY DOGWOOD	*Cornus foemina ssp. racemosa*			X	
HEDGE BINDWEED	*Calystegia sepium*			X	
POISON IVY	*Toxicodendron radicans*			X	
RED RASPBERRY	*Rubus idaeus*			X	
STAGHORN SUMAC	*Rhus hirta*			X	
ARROW-LEAVED ASTER	*Aster sagittifolius*				X
BIRD'S FOOT TREFOIL	*Lotus corniculatus*				X
BLACK EYED SUSAN	*Rudbeckia hirta var. pulcherrima*				X
BLACK MEDICK	*Medicago lupulina*				X
BLUE-EYED GRASS	*Sisyrinchium montanum*				X
BONESET	*Eupatorium perfoliatum*				X
BRACKEN	*Pteridium aquilinum*				X
BROWN KNAPWEED	*Centaurea jacea*				X
BULL THISTLE	*Cirsium vulgare*				X
BUTTERCUP	*Ranunculus hispidus*				X
CALICO ASTER	*Aster lateriflorus*				X
CANADA GOLDENROD	*Solidago canadensis*				X
CANADA THISTLE	*Cirsium arvense*				X
CHICKORY	*Cichorium intybus*				X
COLTS FOOT	*Tussilago farfara*				X
COMMON BLUE VIOLET	*Viola sororia*				X
COMMON CINQUEFOIL	*Potentilla simplex*				X
COMMON MILKWEED	*Asclepias syriaca*				X
COMMON MULLEIN	*Verbascum thapsus*				X
CREEPING BELLFLOWER	*Campanula rapunculoides*				X
CURLY DOCK	*Rumex crispus*				X
DAISY FLEABANE	*Erigeron annuus*				X
DOG VIOLET	*Viola conspersa*				X
EARLY GOLDENROD	*Solidago juncea*				X
ELECAMPANE	*Inula helenium*				X
FIELD SORREL	*Rumex acetosella*				X
FROST ASTER	*Aster pilosus*				X
GARDEN VALERIAN	*Valeriana officinalis*				X
GRASS LEAVED GOLDENROD	*Euthamia graminifolia*				X
HAWKWEED	*Hieracium aurantiacum*				X
HAY SCENTED FERN	*Dennstaedia punctilobula*				X
HEAL-ALL	*Prunella vulgaris*				X
HEMP NETTLE	*Galeopsis tetrahit*				X
LADY FERN	*Athyrium felix-femina*				X
LATE GOLDENROD	*Solidago gigantea*				X
MONEYWORT	*Lysimachia nummularia*				X
NEW ENGLAND ASTER	*Aster novae-angliae*				X
ORCHARD GRASS	*Dactylis glomerata*				X
OX EYE DAISY	*Leucanthemum vulgare*				X
OX-TONGUE	*Picris hieracoides*				X
PATH RUSH	*Juncus tenuis*				X
PLANTAIN	*Plantago sp.*				X

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SUCCESSIONAL OLD FIELD

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
PURPLE STEMMED ASTER	*Aster puniceus*				X
QUEEN ANNE'S LACE	*Daucus carota*				X
RAGWEED	*Ambrosia artemisiifolia*				X
RED CLOVER	*Trifolium pratense*				X
ROUGH-STEMMED GOLDENROD	*Solidago rugosa*				X
SEDGE	*Carex scoparia*				X
SEDGE	*C. stipata*				X
SEDGE	*C. vulpinoidea*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SLENDER VETCH	*Vicia tetrasperma*				X
SPOTTED KNAPWEED	*Centaurea maculosa*				X
ST. JOHN'S WORT	*Hypericum perforatum*				X
STRAWBERRY	*Fragaria virginiana*				X
SULFUR CINQUEFOIL	*Potentilla recta*				X
SWEET VERNAL GRASS	*Anthoxanthum odoratum*				X
TEASEL	*Dipsacus sylvestris*				X
TIMOTHY	*Phleum pratense*				X
WHITE SWEET CLOVER	*Melilotus alba*				X
WILD BERGAMOT	*Monarda fistulosa*				X
WILD MADDER	*Gallium mollugo*				X
WINTERCRESS	*Barbarea vulgaris*				X
YARROW	*Achillea millifolia*				X
YELLOW HOP CLOVER	*Trifolium aureum*				X

SUCCESSIONAL SHRUBLAND

Common Name	Species	Dominant	Tree	Shrub/Vine	Herb
BLACK LOCUST	*Robinia pseudo-acacia*		X		
COTTONWOOD	*Populus deltoides*		X		
QUAKING ASPEN	*Populus tremuloides*		X		
RED MAPLE	*Acer rubrum*		X		
RED OAK	*Quercus rubra*		X		
RED PINE	*Pinus resinosa*		X		
SCOTCH PINE	*Pinus sylvestris*		X		
SHAGBARK HICKORY	*Carya ovata*		X		
SWEET CHERRY	*Prunus avium*		X		
WHITE ASH	*Fraxinus americana*		X		
WHITE PINE	*Pinus strobus*		X		
WILLOW	*Salix sp.*		X		
AUTUMN OLIVE	*Elaeagnus umbellata*			X	
BAYBERRY	*Myrica pensylvanica*			X	
BITTERSWEET NIGHTSHADE	*Solanum dulcamara*			X	
BLACK RASPBERRY	*Rubus occidentalis*			X	
GRAY DOGWOOD	*Cornus foemina ssp. racemosa*			X	
HAWTHORNE	*Crataegus sp.*			X	
HONEYSUCKLE	*Lonicera sp.*			X	
MULTIFLORA ROSE	*Rosa multiflora*			X	
POISON IVY	*Toxicodendron radicans*			X	
PURPLE FLOWERING RASPERRY	*Rubus odoratus*			X	
RIVERBANK GRAPE	*Vitis riparia*			X	
SMOOTH SUMAC	*Rhus glabra*			X	
STAGHORN SUMAC	*Rhus hirta*			X	
WILD RAISIN	*Viburnum lentago*			X	
BLACK MUSTARD	*Brassica nigra*				X
BONESET	*Eupatorium rugosum*				X
BURDOCK	*Arctium vulgare*				X
CANADA GOLDENROD	*Solidago canadensis*				X
CHRISTMAS FERN	*Polystichum acrostichoides*		/		X
COLTS FOOT	*Tussilago farfara*				X
COMMON PLANTAIN	*Plantago major*				X
FLAT-TOPPED ASTER	*Aster umbellatus*				X
GARLIC MUSTARD	*Alliaria petiolata*				X
GRASS LEAVED GOLDENROD	*Euthamia graminifolia*				X
MARGINAL SHIELD FERN	*Dryopteris marginalis*				X
NEW ENGLAND ASTER	*Aster novae-angliae*				X
REED CANARY GRASS	*Phallaris arundinacea*				X
ROUGH STEMMED GOLDENROD	*Solidago rugosa*				X
SEDGE	*Carex cristatella*				X
SOLOMON'S SEAL	*Polygonatum pubescens*				X

TABLE III
BIRDS OF OPEN FIELDS

DATE	LOCATION	SPECIES	OBSERVER
6/8/97	Holmes Hill Rd.	Grasshopper Sparrow	Patricia Martin
6/28/97	Quantz Rd.	Northern Harrier Bobolink Eastern Meadowlark Grasshopper Sparrow Vesper Sparrow	Ann Clarridge
7/2/97	Quantz Rd.	Grasshopper Sparrow Vesper Sparrow	Ann Clarridge Carolyn Cass Dick Mather
7/2/97	Harper's Ferry Rd.	Savannah Sparrow Henslow's Sparrow Chipping Sparrow Field Sparrow	Ann Clarridge Carolyn Cass Dick Mather
7/2/97	Grouse Rd.	Bobolink Eastern Meadowlark Savannah Sparrow Chipping Sparrow Field Sparrow	Ann Clarridge Carolyn Cass Dick Mather
7/2/97	Strutt Street	Bobolink Eastern Meadowlark Savannah Sparrow Chipping Sparrow	Ann Clarridge Carolyn Cass Dick Mather

APPALACHIAN OAK-HICKORY FOREST

One of the more pleasant plant communities to walk through on the watershed is Appalachian oak-hickory forest. It is at least at the following three locations: on top of Bald Hill, adjacent to the east end of Holmes Hill Road and on the west side of Canadice Hill. It is the dryest forest community type to be found on the watershed and it is distinguished from successional northern hardwoods at least as much by its shrub layer as by its dominant canopy trees. These canopy trees are, of course, dominated by oaks and hickories. In the case of the watershed, these are red, white and black oaks and pignut hickory. Red maple, musclewood, chestnut, white ash, hophornbeam, white pine and sassafras are also present. Shrubs include witch hazel, deerberry, lowbush blueberry and maple-leaved viburnum. In distinguishing these community types from other similar ones, it is important to see these and possibly other shrubs, such as flowering dogwood, shad, chokecherry and beaked hazelnut. In addition, sugar maple should be missing or an infrequent part of the canopy and oak seedlings should be dominant in the understory rather than white ash, beech or the aforementioned sugar maple. In the herbaceous layer, characteristic plants to look for are Pennsylvania sedge, pointed leaf tick trefoil, gaywings and bracken fern.

As explained in the introduction to this section, there may be more Appalachian oak-hickory forest on the watershed than is mapped because it is difficult to distinguish its signature on the aerial photos from other hardwood forest types. Bald Hill is the most likely place to find more of it.

Birds heard singing on an early July visit to this community included Hermit Thrush, Wood Thrush, Chestnut-sided Warbler, Ovenbird, Hooded Warbler and Rose-breasted Grosbeak.

Some of the more magnificent red and white oaks observed are neither within appalachian oak hickory forest nor actually on the watershed. Task "I" (see Methods), was to observe the "old growth oaks west of Hemlock Outlet Creek." These trees are growing on City of Rochester property in a grove of about 10 acres just north of the north border of the watershed. They have diameters of three to four feet, straight trunks and are about 100 feet tall. The understory consists of red maple, pignut hickory, hop hornbeam, musclewood and white ash. Pennsylvania sedge carpets the forest floor. The community lacks the shrub species of a typical appalachian oak-hickory forest but is nonetheless a beautiful place to visit.

APPALACHIAN OAK-HICKORY FOREST

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BLACK OAK	*Quercus velutina*	X	X		
RED OAK	*Quercus rubra*	X	X		
WHITE OAK	*Quercus alba*	X	X		
CHESTNUT	*Castanea dentata*		X		
IRONWOOD	*Ostrya virginiana*		X		
MUSCLEWOOD	*Carpinus caroliniana*		X		
PIGNUT HICKORY	*Carya glabra*		X		
RED MAPLE	*Acer rubrum*		X		
SASSAFRAS	*Sassafras albidum*		X		
SUGAR MAPLE	*Acer saccharum*		X		
WHITE ASH	*Fraxinus americana*		X		
WHITE PINE	*Pinus strobus*		X		
BLACKBERRY	*Rubus allegheniensis*			X	
DEERBERRY	*Vaccinium stamineum*			X	
LOWBUSH BLUEBERRY	*Vaccinium angustifolium*			X	
MAPLE LEAF VIBURNUM	*Viburnum acerifolium*			X	
STRIPED MAPLE	*Acer pensylvanicum*			X	
WITCH HAZEL	*Hamamelis virginiana*			X	
BRACKEN FERN	*Pteridium aquilinum*				X
CANADA MAYFLOWER	*Maianthemum canadense*				X
GAYWINGS	*Polygala paucifolia*				X
INTERRUPTED FERN	*Osmunda claytoniana*				X
MAY APPLE	*Podophyllum peltatum*				X
PATHRUSH	*Juncus tenuis*				X
POINTED LEAF TICK TREFOIL	*Desmodium nudiflorum*				X
SEDGE	*Carex pensylvanica*				X
SEDGE	*Carex rosea*				X
SQUAWROOT	*Conopholis americana*				X
WHORLED LOOSESTRIFE	*Lysimachia quadrifolia*				X
WOODRUSH	*Luzula sp.*				X
MOSS	*Leucobryum glaucum*				X

HEMLOCK-NORTHERN HARDWOOD FOREST

On the watershed, as in other places in Western New York, hemlock-northern hardwood forest seems to occur in several varieties. Most often, as when it occurs in ravines, hemlock is joined in the canopy by sugar maple and yellow birch. In these situations, the understory shrubs are most likely to be striped maple, maple-leaf viburnum and/or hobblebush. Light levels in these ravines are low so the herbaceous flora is somewhat sparse. Ferns to look for include silvery spleenwort, fragile fern, bulblet fern and maidenhair fern. Most of the herbs present flower in the spring; some of the more unusual and/or more spectacular ones include three species of trillium (red, white and painted), squirrel corn, Oswego tea, Indian cucumber root and wild ginger.

Reynolds and Mission gullies are the best places to see this forest type. Other locations are along lower Canadice Outlet Creek and adjacent to Pokamoonshine Hollow Road.

Hemlock-northern hardwood forest of this type is also present along much of the east facing slope above Hemlock Lake. In the places sampled by this author, hemlock shares the canopy with lesser amounts of beech, sugar maple, red oak and white ash. Shrubs include striped maple, witch hazel and maple-leaved viburnum. The herbaceous layer is dominated by ferns. Species present are lady fern, sensitive fern, interrupted fern, marginal shield fern, Christmas fern and fancy fern.

Hermit Thrush and Black-throated Green Warbler are characteristic species of these slopes and ravines. During an August visit, Hermit Thrush were singing and the warblers were feeding young. Other species that inhabit these areas are Winter Wren, Peewee, Blue-headed Vireo, Red-eyed Vireo, Yellow-rumped Warbler, Ovenbird, Scarlet Tanager and Junco.

A dry variation of Hemlock-northern hardwood forest occurs on the south facing slopes of some of the ravines on the watershed. Here, the hemlock is mixed with red and/or chestnut oak and the shrub layer is more likely to include witch hazel, lowbush blueberry, and/or black huckleberry. Herbs include pussytoes in the spring and silver-rod in the fall.

In Wayland, Steuben County, there is a patch of hemlock-northern hardwood forest that occurs adjacent to a rich hemlock-hardwood peat swamp. In this variety, the canopy includes a few northern white cedar and balsam fir.

SUCCESSIONAL NORTHERN HARDWOODS

A forest can be considered successional if the composition of the tree canopy is not the same as the composition of the seedling trees sprouting on the forest floor and if the canopy itself consists primarily of tree species which are known to be wind dispersed and have sun tolerant seedlings, such as white pine, big-toothed and quaking aspens and white ash.

Successional northern hardwoods is by far the most abundant forest community on the watershed. It appears either in the aftermath of a failed conifer plantation or as the successional step after successional shrubland. As a failed conifer plantation, the canopy may include left-over conifers like red and white pines and/or Norway spruce mixed with big-tooth aspen, white ash, red maple and black cherry. In other situations, there may be a canopy of oaks but sugar maple and beech are the young trees sprouting in the understory. If the forest's origin is successional shrubland, the understory can still be quite shrubby with such species as gray dogwood, hawthorne, autumn olive, witch hazel and multiflora rose. Herbaceous flora is difficult to characterize but garlic mustard, an invasive plant from Europe, is often present.

Chestnut-sided and Yellow-rumped Warblers nest in sucessional northern hardwoods, the latter especially seem to like hardwoods mixed with white pine and some hemlock.

HEMLOCK-NORTHERN HARDWOOD FOREST

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
HEMLOCK	*Tsuga canadensis*	X	X		
BALSAM FIR	~~*Pseudotsuga menziesii*~~ *Abies balsamea*		X		
BASSWOOD	*Tilia americana*		X		
BEECH	*Fagus grandifolia*		X		
BIG TOOTH ASPEN	*Populus grandidentata*		X		
BLACK BIRCH	*Betula lenta*		X		
BLACK CHERRY	*Prunus serotina*		X		
BUTTERNUT	*Juglans cinerea*		X		
CHESTNUT	*Castanea dentata*		X		
CHESTNUT OAK	*Quercus montana*		X		
HOPHORNBEAM	*Ostrya virginiana*		X		
MUSCLEWOOD	*Carpinus caroliniana*		X		
NORTHERN WHITE CEDAR	*Thuja occidentalis*		X		
PIGNUT HICKORY	*Carya glabra*		X		
RED MAPLE	*Acer rubrum*		X		
RED OAK	*Quercus rubra*		X		
SHAGBARK HICKORY	*Carya ovata*		X		
SUGAR MAPLE	*Acer saccharum*		X		
TULIP	*Liriodendron tulipifera*		X		
WHITE ASH	*Fraxinus americana*		X		
WHITE OAK	*Quercus alba*		X		
WHITE PINE	*Pinus strobus*		X		
YELLOW BIRCH	*Betula alleghaniensis*		X		
ALTERNATE-LEAVED DOGWOOD	*Cornus alternifolia*			X	
BLACK HUCKLEBERRY	*Gaylussacia baccata*			X	
BLACK RASPBERRY	*Rubus occidentalis*			X	
FLOWERING DOGWOOD	*Cornus florida*			X	
HOBBLEBUSH	*Viburnum lantanoides*			X	
LOWBUSH BLUEBERRY	*Vaccinium angustifolium*			X	
MAPLE LEAVED VIBURNUM	*Viburnum acerifolium*			X	
PURPLE FLOWERING RASPBERRY	*Rubus odoratus*			X	
RIVERBANK GRAPE	*Vitis riparia*			X	
SHAD	*Amelanchier sp.*			X	
STRIPED MAPLE	*Acer pensylvanicum*			X	
VIRGINIA CREEPER	*Parthenocissus quinquefolia*			X	
WITCH HAZEL	*Hamamelis virginiana*			X	
AGRIMONY	*Agrimonia gryposepala*				X
BEECH FERN	*Phegopteris sp.*				X
BLUE-STEMMED GOLDENROD	*Solidago caesia*				X
BLUETS	*Myosotis scorpioides*				X
BOTTLEBRUSH GRASS	*Elymus hystrix*				X
BRACKEN FERN	*Pteridium aquilinum*				X
BULBLET FERN	*Cystopteris bulbifera*				X
CALICO ASTER	*Aster lateriflorus*				X
CANADA MAYFLOWER	*Maianthemum canadense*				X
CHRISTMAS FERN	*Polystichum acrostichoides*				X
CLEAR WEED	*Pilea pumila*				X
COLTS FOOT	*Tussilago farfara*				X
CUT-LEAVED TOOTHWORT	*Cardamine concatenata*				X
FANCY FERN	*Dryopteris intermedia*				X
FRAGILE FERN	*Cystopteris fragilis*				X
GARLIC MUSTARD	*Alliaria petiolata*				X

HEMLOCK-NORTHERN HARDWOOD FOREST

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
GERANIUM	*Geranium maculatum*				X
GINGER	*Asarum canadense*				X
GROUND PINE	*Lycopodium obscurum*				X
HEPATICA	*Hepatica nobilis*				X
INDIAN CUCUMBER ROOT	*Medeola virginica*				X
INDIAN PIPE	*Monotropa uniflora*				X
INTERRUPTED FERN	*Osmunda claytoniana*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
JEWELWEED	*Impatiens cf. capensis*				X
JUMPSEED	*Polygonum virginianum*				X
LADY FERN	*Athyrium filix-femina*				X
MAIDENHAIR FERN	*Adiantum pedatum*				X
MARGINAL SHIELD FERN	*Dryopteris marginalis*				X
MAY APPLE	*Podophyllum peltatum*				X
MITERWORT	*Mitella diphylla*				X
NEW YORK FERN	*Thelypteris noveboracensis*				X
OSTRICH FERN	*Matteucia struthiopteris*				X
OSWEGO TEA	*Monarda didyma*				X
PAINTED TRILLIUM	*Trillium undulatum*				X
PUSSYTOES	*Antennaria sp.*				X
RED TRILLIUM	*Trillium erectum*				X
SARSAPARILLA	*Aralia nudicaulis*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex gracillima*				X
SEDGE	*Carex pensylvanica*				X
SEDGE	*Carex platyphylla*				X
SEDGE	*Carex rosea*				X
SEDGE	*Carex scabrata*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SHINING CLUBMOSS	*Huperzia lucidula*				X
SILVER-ROD	*Solidago bicolor*				X
SILVERY SPLEENWORT	*Deparia acrostichoides*				X
SQUIRREL CORN	*Dicentra canadensis*				X
STINGING NETTLES	*Urtica dioica*				X
TURTLEHEAD	*Chelone glabra*				X
TWO-LEAVED TOOTHWORT	*Cardmine diphylla*				X
WHITE SNAKEROOT	*Eupatorium rugosum*				X
WHITE TRILLIUM	*Trillium grandiflorum*				X
WHITE WOOD ASTER	*Aster divaricatus*				X
WHORLED MILKWEED	*Asclepias verticillata*				X
YELLOW WOOD SORREL	*Oxalis stricta*				X
ZIG ZAG GOLDENROD	*Solidago flexicaulis*				X

SUCCESSIONAL NORTHERN HARDWOODS

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BASSWOOD	*Tilia americana*		X		
BEECH	*Fagus grandifolia*		X		
BIG TOOTH ASPEN	*Populus grandidentata*		X		
BITTERNUT HICKORY	*Carya cordiformis*		X		
BLACK BIRCH	*Betula lenta*		X		
BLACK CHERRY	*Prunus serotina*		X		
BLACK LOCUST	*Robinia pseudo-acacia*		X		
BLACK WALNUT	*Juglans nigra*		X		
BUTTERNUT	*Juglans cinerea*		X		
CHESTNUT	*Castanea dentata*		X		
CHESTNUT OAK	*Quercus montana*		X		
COTTONWOOD	*Populus deltoides*		X		
HOPHORNBEAM	*Ostrya virginiana*		X		
MUSCLEWOOD	*Carpinus caroliniana*		X		
NORWAY SPRUCE	*Picea abies*		X		
PIGNUT HICKORY	*Carya glabra*		X		
QUAKING ASPEN	*Populus tremuloides*		X		
RED MAPLE	*Acer rubrum*		X		
RED OAK	*Quercus rubra*		X		
RED PINE	*Pinus resinosa*		X		
SHAGBARK HICKORY	*Carya ovata*		X		
SUGAR MAPLE	*Acer saccharum*		X		
SYCAMORE	*Platanus occidentalis*		X		
TULIP	*Liriodendron tulipifera*		X		
WHITE ASH	*Fraxinus americana*		X		
WHITE OAK	*Quercus alba*		X		
WHITE PINE	*Pinus strobus*		X		
AUTUMN OLIVE	*Elaeagnus umbellata*			X	
CURRANT or GOOSEBERRY	*Ribes sp.*			X	
FALSE SPIREA	*Sorbaria sorbifolia*			X	
FLOWERING DOGWOOD	*Cornus florida*			X	
GRAY DOGWOOD	*Cornus foemina*			X	
HAWTHORNE	*Crataegus sp.*			X	
HONEYSUCKLE	*Lonicera sp.*			X	
LOWBUSH BLUEBERRY	*Vaccinium angustifolium*			X	
MAPLE-LEAVED VIBURNUM	*Viburnum acerifolium*			X	
MULTIFLORA ROSE	*Rosa multiflora*			X	
POISON IVY	*Toxicodendron radicans*			X	
RED RASPBERRIES	*Rubus idaeus*			X	
RIVERBANK GRAPE	*Vitis riparia*			X	
SHAD	*Amerlanchier sp.*			X	
STRIPED MAPLE	*Acer pensylvanicum*			X	
VIRGINIA CREEPER	*Parthenocissus quinquefolia*			X	
WITCH HAZEL	*Hamamelis virginiana*			X	
ARROW LEAVED ASTER	*Aster sagittifolius*				X
BLOODROOT	*Sanguinaria canadensis*				X
BLUE COHOSH	*Caulophyllum thallictroides*				X
BLUE-STEMMED GOLDENROD	*Solidago caesia*				X
BLUETS	*Houstonia caerulea*				X
BRACKEN	*Pteridium aquilinum*				X
BUGLE	*Ajuga reptans*				X
CALICO ASTER	*Aster lateriflorus*				X
CANADA MAYFLOWER	*Maianthemum canadense*				X

SUCCESSIONAL NORTHERN HARDWOODS

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
CHRISTMAS FERN	*Polystichum acrostichoides*				X
CLEAVERS	*Galium aparine*				X
COLTS FOOT	*Tussilago farfara*				X
COMMON CINQUEFOIL	*Potentilla simplex*				X
CUT-LEAVED TOOTHWORT	*Cardamine concatenata*				X
DAMES ROCKET	*Hesperis matronalis*				X
DAY LILY	*Hemerocallis fulva*				X
EARLY MEADOW RUE	*Thalictrum dioicum*				X
ENCHANTER'S NIGHTSHADE	*Circaea lutetiana*				X
FORGET ME NOT	*Myosotis scorpioides*				X
GARLIC MUSTARD	*Alliaria petiolata*				X
GOLDEN RAGWORT	*Senecio aureus*				X
HAIRY WOODRUSH	*Luzula acuminata*				X
HERB ROBERT	*Geranium robertianum*				X
INTERRUPTED FERN	*Osmunda claytoniana*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
JEWELWEED	*Impatiens capensis*				X
JUMPSEED	*Polygonum virginicum*				X
KIDNEY-LEAF BUTTERCUP	*Ranunculus abortivis*				X
LADY FERN	*Athyrium felix-femina*				X
LILY OF THE VALLEY	*Convallaria majalis*				X
LION'S FOOT	*Prenanthes sp.*				X
MAYAPPLE	*Podophyllum peltatum*				X
OSTRICH FERN	*Matteuccia struthiopteris*				X
POINTED LEAF TICK TREFOIL	*Desmodium nudiflorum*				X
PUSSYTOES	*Antennaria sp.*				X
RED TRILLIUM	*Trillium erectum*				X
RUE ANEMONE	*Thalictrum thalictroides*				X
SARSAPARILLA	*Aralia nudicaulis*				X
SEDGE	*Carex pensylvanica*				X
SEDGE	*Carex plantaginea*				X
SEDGE	*Carex rosea*				X
SEDGE	*Carex scoparia*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SILVERROD	*Solidago bicolor*				X
SOLOMON'S SEAL	*Polygonatum pubescens*				X
TOOTHWORT	*Cardamine diphylla*				X
TROUT LILY	*Erythronium americanum*				X
WHITE AVENS	*Geum canadense*				X
WHITE SNAKE ROOT	*Eupatorium rugosum*				X
WHITE TOPPED ASTER	*Aster paternus*				X
WHITE TRILLIUM	*Trillium grandiflorum*				X
WHITE WOOD ASTER	*Aster divaricatus*				X
WILD LEEK	*Allium tricoccum*				X
WILD OATS	*Uvularia sessilifolia*				X
WINTERGREEN	*Gaultheria procumbens*				X
WOODLAND AGRIMONY	*Agrimonia gryposepala*				X
ZIG ZAG GOLDENROD	*Solidago flexicaulis*				X

CONIFER PLANTATION

Most of the conifer platations found on the watershed are relatively old, with origins dating from the 1930's to the 1950's. Consequently, light levels in the understory are low and herbaceous flora sparse. Shrubs and vines such as poison ivy, virginia creeper and various raspberries are often present. White and red-breasted nuthatches and chickadees are the most common birds.

THE MOSAIC COMMUNITIES

SHALLOW EMERGENT MARSH/SHRUB SWAMP/SEDGE MEADOW
SUCCESSIONAL OLD FIELD/SUCCESSIONAL SHRUBLAND
SUCCESSIONAL SHRUBLAND/SUCCESSIONAL NORTHERN HARDWOODS
SUCCESSIONAL NORTHERN HARDWOODS/CONIFER PLANTATION

Sometimes it is impossible to assign a community name to a place. Often, this is because a community is in transition from one community to another. For example, many of the conifer plantations on the watershed are "failing" because the trees within them were planted on incompatible sites or because they did not receive proper care, such as timely thinning. As the original planted conifers die or fall, their place is taken in the forest canopy by various hardwoods. If this community happens to be observed, say, when its canopy is roughly 50% conifer and 50% hardwoods, one is left little choice but to call it a mosaic of plantation and successional northern hardwoods. Similar problems exist with old fields succeeding to shrubland and shrubland succeeding to northern hardwoods. On the other hand, sometimes a location is actually a mixture of several different community types. This mixture occurs on a small enough scale, at least relative to the size of the community map being produced or of the magnification of the aerial photos that are being interpreted, as to make dissection into the component community types either pointless or impossible. Such is the case with the shallow emergent marsh/sedge meadow/shrub swamp mosaic that is mapped in Springwater Flats.

Separate plant lists were not created for these mosaic communities.

RARE PLANT COMMUNITIES, GENERAL IMPRESSIONS

Plant communities are considered to be rare or not according to guidelines established by the New York Natural Heritage Program. The Heritage Program assigns every natural community in the state a global (G) and a state (S) rarity status. The code is numerical: 'one' signifies a very rare element, generally 1-5 sites known globally (G1) or statewide (S1) whereas 'five' signifies a common element. The rare plant communities found on the watershed are listed in Table IV, together with their sizes and rarities and an explanation of the rarity ranks.

Five rare plant communities occur on the watershed. They are inland poor fen, highbush blueberry bog thicket, silver maple-ash swamp, rich hemlock-hardwood peat swamp and maple-basswood rich mesic forest.

It is not at all surprising that four out of these five rare plant communities are palustrine communities. Wetlands are relatively inaccessible because they are wet and so are least likely to have been logged or otherwise disturbed in the recent past. The rare wetland communities that are found in the basins occupied by the lakes and immediately adjacent to them are silver maple-ash swamp and rich hemlock-hardwood peat swamp. It is perhaps more surprising to find wetlands perched on the tops of hills; inland poor fen and highbush blueberry bog thicket fit this description. Having a wetland of any type on top of a hill might sound counter-intuitive but turns out to be a fairly common phenomenon in western New York. The soils on top of these hills are derived from sandstones, shales, siltstones and glacial till and are highly impermeable. The tops of the hills themselves tend to have been scraped flat during glaciation; this combination of topography and impermeable soils combines to create proper conditions for the development of wetlands.

TABLE IV
HEMLOCK CANADICE WATERSHED RARE PLANT COMMUNITIES

COMMUNITY NAME	LOCATION	SIZE (ACRES)	RARITY
Inland poor fen	Canadice Hill Road	1	G4 S3
Highbush blueberry bog thicket	Bald Hill	<1	G4 S3
Silver maple-ash swamp	Canadice Inlet	50	G3G4 S2S3
Silver maple-ash swamp	Canadice Outlet	90	G3G4 S2S3
Rich hemlock-hardwood peat swamp	Town of Wayland	15-20	G3G4 S2S3
Maple-basswood rich mesic forest	Town of Springwater	20	G4 S2S3
Maple-basswood rich mesic forest	Mission Road Gullies	40	G4 S2S3

EXPLANATION OF RANKS AND CODES

GLOBAL RANK:
G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences, or very few remaining acres, or miles of stream) or especially vulnerable to extinction because of some factor of its biology.

G2 = Imperiled globally because of its rarity (6-20 occurrences or few remaining acres, or miles of stream) or very vulnerable to extinction throughout its range because of other factors.

G3 = Either rare and local throughout its range (21 to 100 occurrences), or found locally (even abundantly at some of its locations) in a restricted range (e.g. a physiographic region), or vulnerable to extinction throughout its range because of other factors.

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

G5 = Demonstratably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

STATE RANK:
S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = Typically 6 to 20 occurrences, few remaining individuals, acres or miles of stream, or factors demonstatably making it very vulnerable in New York State.

S3 = Typically 21 to 100 occurrences, limited acreage or miles of stream in New York State.

S4 = Apparently secure in New York State.

S5 = Demonstratably secure in New York State

SILVER MAPLE-ASH SWAMP

The largest rare plant community on the watershed is silver maple-ash swamp. It is a palustrine community found at both ends of Canadice Lake and, in a presumptively early successional stage, at the south end of Hemlock Lake. It is not mapped as such at this last location. Both mapped locations are on City of Rochester property. The community at the south end of Hemlock Lake, in Springwater Flats, is a forested wetland whose canopy is made up almost entirely of young (4-15 inch diameter) green ash. It may have been a silver maple-ash swamp before being cleared for agriculture.

SILVER MAPLE ASH SWAMP AT CANADICE INLET

The most accessible example of silver maple-ash swamp is found at Canadice Inlet. There, the City of Rochester, in cooperation with the Department of Environmental Conservation, has created a mosaic of berms and artificial ponds for the purpose of creating wetland habitiat and to retain or recreate an earlier stage of wetland succession. Coincidentally the berms provide dry-foot access to the interior of the swamp and are excellent for bird watching. These berms can be found by walking east about 1/4 mile from Canadice Lake Road along the city-owned service road. The dikes are located south of the service road and also provide access to two other plant communities in the immediate vicinity, shrub swamp and shallow emergent marsh. Animals in the area include green frogs, wood ducks, mallards, common yellowthroats, orioles and song sparrows.

Botanical highlights at this site include some silver maples with diameters as large as three and four feet. Green ash is present with diameters of four to twelve inches. Winterberry, arrowwood and swamp rose are found in the shrub layer. Herbaceous species to search for are skunk cabbage, sensitive fern, swamp milkweed, crested fern, ostrich fern and swamp buttercup.

This community, although mature, is relatively small, bissected by a road, fragmented by the berms and home to a large population of moneywort, which is an invasive alien species.

Kentucky coffeee tree, (*Gymnocladus dioica*), the one rare plant found on the entire watershed, is located within this community. It is a species more common in the south, although it is often planted in this part of the country. The ten small trees that are present, with a maximum diameter of four inches, could have been seeded in from a planting somewhere on the watershed, although such yard trees were not observed.

SILVER MAPLE-ASH SWAMP AT CANADICE OUTLET

This community, although larger than the one at the Inlet, is younger and hosts a higher concentration of invasive species. Access, so to speak, is from the intersection of Canadice Outlet Creek and either Purcell Hill Road or Canadice Hollow Road but one must be prepared to bushwack through an almost impenetrable thicket of invasive alien shrubs to get to the interior of the swamp forest. The invasive aliens include honeysuckle, multiflora rose and autumn olive. The herbaceous layer is also dominated by aliens; moneywort and forget-me-nots are everywhere. The canopy is young and is dominated by silver maple, black ash and green ash. These species are joined by occasional swamp white oak and bur oak; the latter has pleasant, violin-shaped leaves. In the spring, look for marsh marigold, golden ragwort and skunk cabbage. Search for swamp milkweed, fringed loosestrife and common monkey flower in the summer. In places, the swamp forest gives way to small herbaceous communities (sedge meadows) dominated by rice cut grass or a sedge called *Carex lacustris*. This community is young, invaded by alien species, and fragmented by roads.

Birds noted at this site include Common Yellowthroats, Black-capped Chickadees, White-breasted Nuthatches, Cedar Waxwings, Bluejays, Kingfishers and Catbirds.

SILVER MAPLE-ASH SWAMP AT CANADICE INLET

Common name	Species name	Dominant	Tree	Shrub/Vine	Herb
GREEN ASH	*Fraxinus pennsylvanica*	X	X		
SILVER MAPLE	*Acer saccharinum*	X	X		
BLACK ASH	*Fraxinus nigra*		X		
BUR OAK	*Quercus macrocarpa*		X		
KENTUCKY COFFEE TREE	*Gymnocladus dioica*		X		
SLIPPERY ELM	*Ulmus rubra*		X		
ARROWWOOD	*Viburnum dentatum var. lucidum*			X	
BLACK RASPBERRY	*Rubus occidentalis*			X	
SWAMP ROSE	*Rosa palustris*			X	
WINTERBERRY	*Ilex verticillata*			X	
JEWELWEED	*Impatiens sp.*	X			X
REED CANARY GRASS	*Phalaris arundinacea*	X			X
SEDGE	*Carex bromoides*	X			X
SENSITIVE FERN	*Onoclea sensibilis*	X			X
SKUNK CABBAGE	*Symplocarpus foetidus*	X			X
BUTTERCUP	*Ranunculus hispidus var. caricetorum*				X
CRESTED FERN	*Dryopteris cristata*				X
EARLY MEADOW RUE	*Thalictrum polygonum*				X
ENCHANTER'S NIGHTSHADE	*Circaea lutetiana*				X
FORGET-ME-NOT	*Myosotis scorpioides*				X
IRIS	*Iris sp.*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
JUMPSEED	*Polygonum virginianum*				X
LADY FERN	*Athyrium filix-femina*				X
MARSH MARIGOLD	*Caltha palustris*				X
MONEYWORT	*Lysimachia nummularia*				X
OSTRICH FERN	*Matteuccia struthiopteris*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex cristatella*				X
SEDGE	*Carex granularis*				X
SEDGE	*Carex lupulina*				X
SEDGE	*Carex cf. normalis*				X
SEDGE	*Carex stipata*				X
SEDGE	*Carex tuckermanii*				X
SWAMP MILKWEED	*Asclepias incarnata*				X
WATER-HEMLOCK	*Cicuta maculata*				X
WATER-PARSNIP	*Siam suave*				X
WILD LEEK	*Allium tricoccum*				X

SILVER MAPLE-ASH SWAMP AT CANADICE OUTLET

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BLACK ASH	*Fraxinus nigra*	X	X		
GREEN ASH	*Fraxinus pennsylvanica*	X	X		
SILVER MAPLE	*Acer saccharinum*	X	X		
BASSWOOD	*Tilia americana*		X		
BEECH	*Fagus grandifolia*		X		
BUR OAK	*Quercus macrocarpa*		X		
ELM	*Ulmus sp.*		X		
MUSCLEWOOD	*Carpinus caroliniana*		X		
SHAGBARK HICKORY	*Carya ovata*		X		
SWAMP WHITE OAK	*Quercus bicolor*		X		
WHITE WILLOW	*Salix alba*		X		
ARROWWOOD	*Viburnum dentatum var. lucidum*			X	
AUTUMN OLIVE	*Elaeagnus umbellata*			X	
HAWTHORNE	*Crataegus sp.*			X	
HONEYSUCKLE	*Lonicera sp.*			X	
MULTIFLORA ROSE	*Rosa multiflora*			X	
POISON IVY	*Toxicodendron radicans*			X	
RIVERBANK GRAPE	*Vitis riparia*			X	
SILKY DOGWOOD	*Cornus amomum*			X	
SPECKLED ALDER	*Alnus incana ssp. rugosa*			X	
SWAMP ROSE	*Rosa palustris*			X	
VIRGINIA CREEPER	*Parthenocissus quinquefolia*			X	
AGRIMONY	*Agrimonia gryposepala*				X
BULRUSH	*Scirpus atrovirens*				X
CALICO ASTER	*Aster lateriflorus*				X
CANADA GOLDENROD	*Solidago canadensis*				X
COMMON MONKEY FLOWER	*Mimulus ringens*				X
FIELD HORSETAIL	*Equisetum arvense*				X
FORGET-ME-NOT	*Myosotis scorpioides*				X
FRINGED LOOSESTRIFE	*Lysimachia ciliata*				X
GOLDEN RAGWORT	*Senecio aureus*				X
HEAL-ALL	*Prunella vulgaris*				X
JEWELWEED	*Impatiens cf. capensis*				X
JOE PYE WEED	*Eupatorium maculatum*				X
LADY FERN	*Athyrium felix-femina*				X
MARSH MARIGOLD	*Caltha palustris*				X
MONEYWORT	*Lysimachia nummularia*				X
OSTRICH FERN	*Matteuccia struthiopteris*				X
REED CANARY GRASS	*Phalaris arundinacea*				X
RICE CUTGRASS	*Leersia oryzoides*				X
ROUGH-STEMMED GOLDENROD	*Solidago rugosa*				X
SEDGE	*Carex aquatilis*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex debilis*				X
SEDGE	*Carex intumescens*				X

SILVER MAPLE-ASH SWAMP AT CANADICE OUTLET

SEDGE	*Carex lacustris*				X
SEDGE	*Carex cf. lupulina*				X
SEDGE	*Carex lurida*				X
SEDGE	*Carex bromoides*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
SKUNK CABBAGE	*Symplocarpus foetidus*				X
SOFTSTEM BULRUSH	*Scirpus tabernaemontanii*				X
SPRING CRESS	*Cardamine bulbosa*				X
ST. JOHN'S WORT	*Hypericum punctatum*				X
SWAMP BUTTERCUP	*Ranunculus hispidus var. caricetorum*				X
SWAMP MILKWEED	*Asclepias incarnata*				X
TALL MEADOW RUE	*Thalictrum pubescens*				X
WATER PARSNIP	*Sium suave*				X
WHITE AVENS	*Geum canadense*				X
WHITE VERVAIN	*Verbena urticifolia*				X
WOODLAND HORSETAIL	*Equisetum sylvaticum*				X

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RICH HEMLOCK-HARDWOOD PEAT SWAMP IN WAYLAND TOWNSHIP

Rich hemlock-hardwood peat swamp occurs on private property near the village of Wayland in the Town of Wayland, Steuben county. It lies at the south end of a complex of wetland communities and agricultural land that surrounds the headwaters of Springwater Creek.

The canopy of the peat swamp is primarily hemlock with lesser amounts of balsam fir, red maple, black ash, white pine and yellow birch, none with diameters over 8-10 inches. The shrub layer is very dense, nearly 100% cover, with about equal parts speckled alder, winterberry and mountain holly. Royal fern dominates the herbaceous layer. Hummock and hollow microtopography supports characteristic species such as wild sarsaparilla, woodlily, goldthread, fowl mannagrass, Indian cucumber root, cinnamon fern and at least two species of peat moss.

Balsam fir is not common in the western Finger Lakes region, so this community has some local significance. It is, however, small and not buffered by other natural communities, especially other wetland communities.

INLAND POOR FEN AT CANADICE HILL ROAD

Inland poor fen is one of two wetland communities that occurs on the watershed on the top of Canadice Hill. It is on private property and forms the headwaters of Reynolds Gully. The dominant species of this community are peat mosses. Round leaf sundew is imbedded among these. Other herbaceous plants include cinnamon fern and marsh St. John's wort. Shrubs present include highbush blueberry, low sweet blueberry, winterberry and speckled alder. The fen is surrounded by a treacherous moat dominated by three-way sedge and water horsetail. It is a very nice local example of a peatland, even though it is small and not imbedded in a large natural community complex.

HIGHBUSH BLUEBERRY BOG THICKET AT BALD HILL

Highbush blueberry bog thicket occurs as three tiny examples on the top of Bald Hill on private property. The shrubs in this bog thicket are dense and consist primarily of highbush blueberry, arrowwood and winterberry. Ferns are abundant and include royal fern, interrupted fern, crested fern and sensitive fern. The ground is wet underneath these shrubs and herbs and contains some peat moss. The community occurrences are pretty and in excellent shape. There is considerable potential habitat where more examples of this community might be found, especially on the tops of Bald and Canadice Hills

MAPLE-BASSWOOD RICH MESIC FOREST AT SPRINGWATER WOODS

Maple-basswood rich mesic forest lies within the rectangle formed by Canadice Road, Grouse Road, Price Road and Straight Road in the Town of Springwater. It is on private property. The community has formed along the limey seeps that flow west northwest through the site. The canopy consists of sugar maple and basswood that is mostly 12 to 15 inches in diameter. These are joined by an occasional bitternut hickory, white ash and tulip tree. Spring flowering herbaceous plants seen or reported by the owner include both red and white baneberry, wild leek, jack-in-the-pulpit, blue cohosh, spring beauty, virginia waterleaf, red trillium and white trillium.

The visit to this site was too late in the season for easy observation of nesting birds, but one would expect Hooded Warbler, American Redstart, Black-throated Green Warbler, Wood Thrush, Ovenbird, Great-crested Flycatcher, Peewee and Red-eyed Vireo to use this community.

MAPLE-BASSWOOD RICH MESIC FOREST AT MISSION ROAD GULLIES

Maple-basswood rich mesic forest is also present on a delta on the west shore of Hemlock Lake that has formed at the base of two large and several relatively small gullies. It is on property owned by the City of Rochester. Dominant tree species in the canopy are sugar maple, basswood and white ash. They are joined by lesser amounts of black walnut, tulip, bitternut hickory, white pine, black cherry and red oak. Maximum diameters are 12 to 15 inches. The shrub layer is fairly dense and includes a considerable amount of multiflora rose, which is an invasive alien. The herbaceous layer is also beset with aliens, the principle ones being garlic mustard and moneywort. Native species include small amounts of blue cohosh, Jack-in-the-pulpit, may apple, bloodroot, early meadow rue, foam flower and white trillium. Old roads and an old foundation are present as well as major deer beds and paths.

RICH HEMLOCK-HARDWOOD PEAT SWAMP IN WAYLAND TOWNSHIP

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
HEMLOCK	*Tsuga canadensis*	X	X		
BALSAM FIR	*Pseudotsuga menziesii*		X		
BLACK ASH	*Fraxinus nigra*		X		
RED MAPLE	*Acer rubrum*		X		
WHITE PINE	*Pinus strobus*		X		
YELLOW BIRCH	*Betula alleghaniensis*		X		
MOUNTAIN HOLLY	*Nemopanthus mucronatus*	X		X	
SPECKLED ALDER	*Alnus incana ssp. rugosa*	X		X	
WINTER BERRY	*Ilex verticillata*	X		X	
DWARF RASPBERRY	*Rubus pubescens*			X	
VIRGINIA CREEPER	*Parthenocissus quinquefolia*			X	
ROYAL FERN	*Osmunda regalis*	X			X
CANADA MAYFLOWER	*Maianthemum canadense*				X
CINNAMON FERN	*Osmunda cinnamomea*				X
FOWL MANNAGRASS	*Glyceria striata*				X
GOLDTHREAD	*Coptis trifolia*				X
INDIAN CUCUMBER ROOT	*Medeola virginiana*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
JOE PYE WEED	*Eupatorium maculatum*				X
MARSH MARIGOLD	*Caltha palustris*				X
PINK LADYSLIPPER	*Cypripedium acaule*				X
SEDGE	*Carex crinita*				X
SEDGE	*Carex leptalea*				X
SEDGE	*Carex scabrata*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
TALL MEADOW RUE	*Thalictrum pubescens*				X
WHITE SNAKEROOT	*Eupatorium rugosum*				X
WILD SARSAPARILLA	*Aralia nudicaulis*				X
WOODLILY, BLUEBEADS	*Clintonia borealis*				X
MOSS	*Campyllium sp.*				X
MOSS	*Thuidium delicatulum*				X
PEAT MOSS	*Sphagnum cf. centrale*				X
PEAT MOSS	*Sphagnum fimbriatum*				X

INLAND POOR FEN ON CANADICE HILL ROAD

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
RED MAPLE	*Acer rubrum*		X		
WHITE PINE	*Pinus strobus*		X		
BLACK CHOKEBERRY	*Aronia melanocarpa*			X	
HIGHBUSH BLUEBERRY	*Vaccinium corymbosum*			X	
LOWBUSH BLUEBERRY	*Vaccinium angustifolium*			X	
SPECKLED ALDER	*Alnus incana ssp. rugosa*			X	
WINTERBERRY	*Ilex verticillata*			X	
BEDSTRAW	*Galium cf. tinctorium*				X
CINNAMON FERN	*Osmunda cinnamomea*				X
MARSH ST. JOHN'S WORT	*Triadenum virginicum*				X
ROUND LEAF SUNDEW	*Drosera rotundifolia*				X
SEDGE	*Carex cf. interior*				X
THREE-WAY SEDGE	*Dulichium arundinaceum*				X
WATER WILLOW	*Decodon verticillatus*				X
PEAT MOSS	*Sphagnum centrale*				X
PEAT MOSS	*Sphagnum fuscum*				X
PEAT MOSS	*Sphagnum magellanicum*				X
PEAT MOSS	*Sphagnum palustre*				X

HIGHBUSH BLUEBERRY BOG THICKET ON BALD HILL

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
AMERICAN CHESTNUT	*Castanea dentata*		X		
RED MAPLE	*Acer rubrum*		X		
ARROWWOOD	*Viburnum dentatum var. lucidum*	X		X	
HIGHBUSH BLUEBERRY	*Vaccinium corymbosum*	X		X	
WINTERBERRY	*Ilex verticillata*	X		X	
LOWBUSH BLUEBERRY	*Vaccinium angustifolium*			X	
SPICEBUSH	*Lindera benzoin*			X	
WITCH HAZEL	*Hamamelis virginiana*			X	
CRESTED FERN	*Dryopteris cristata*				X
INTERRUPTED FERN	*Osmunda claytoniana*				X
ROYAL FERN	*Osmunda regalis*				X
SEDGE	*Carex lupulina*				X
SEDGE	*Carex scoparia*				X
SEDGE	*Carex livida*				X
SENSITIVE FERN	*Onoclea sensibilis*				X
PEAT MOSS	*Sphagnum lescurii*				X
PEAT MOSS	*Sphagnum palustre or henryense*				X
PEAT MOSS	*Spagnum russowii*				X

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MAPLE-BASSWOOD RICH MESIC FOREST IN SPRINGWATER TOWNSHIP

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BASSWOOD	*Tilia americana*	X	X		
SUGAR MAPLE	*Acer saccharum*	X	X		
BITTERNUT HICKORY	*Carya cordiformis*		X		
TULIP	*Liriodendron tulipifera*		X		
WHITE ASH	*Fraxinus americana*		X		
CURRANT or GOOSEBERRY	*Ribes sp.*			X	
HOPHORNBEAM	*Ostrya virginiana*			X	
MAPLE-LEAVED VIBURNUM	*Viburnum acerifolium*			X	
BLUE COHOSH	*Caulophyllum thalictroides*				X
CUT-LEAVED TOOTHWORT	*Cardamine concatenata*				X
HEPATICA	*Hepatica nobilis*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
MAY APPLE	*Podophyllum peltatum*				X
NEW YORK FERN	*Thelypteris noveboracensis*				X
RED BANEBERRY	*Actaea spicata ssp. rubra*				X
RED TRILLIUM	*Trillium erectum*				X
SEDGE	*Carex plantaginea*				X
SPRING BEAUTY	*Claytonia sp.*				X
TROUT LILY	*Erythronium americanum*				X
VIRGINIA WATERLEAF	*Hydrophyllum virginianum*				X
WHITE BANEBERRY	*Actaea pachypoda*				X
WHITE TRILLIUM	*Trillium grandiflorum*				X
WHITE WOOD ASTER	*Aster divaricatus*				X
WILD LEEK	*Allium tricoccum*				X
ZIG ZAG GOLDENROD	*Solidago flexicaulis*				X

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MAPLE-BASSWOOD RICH MESIC FOREST AT MISSION ROAD GULLIES

Common Name	Species Name	Dominant	Tree	Shrub/Vine	Herb
BASSWOOD	*Tilia americana*	X	X		
SUGAR MAPLE	*Acer saccharum*	X	X		
WHITE ASH	*Fraxinus americana*	X	X		
BITTERNUT HICKORY	*Carya cordiformis*		X		
BLACK CHERRY	*Prunus serotina*		X		
BLACK WALNUT	*Juglans nigra*		X		
MUSCLEWOOD	*Carpinus caroliniana*		X		
RED OAK	*Quercus rubra*		X		
SHAGBARK HICKORY	*Carya ovata*		X		
TULIP	*Liriodendron tulipifera*		X		
WHITE PINE	*Pinus strobus*		X		
BLACK RASPBERRY	*Rubus occidentalis*			X	
CURRANT or GOOSEBERRY	*Ribes sp.*			X	
MULTIFLORA ROSE	*Rosa multiflora*			X	
POISON IVY	*Toxicodendron radicans*			X	
RIVERBANK GRAPE	*Vitis riparia*			X	
VIRGINIA CREEPER	*Parthenocissus quinquefolia*			X	
GARLIC MUSTARD	*Alliaria petiolata*	X			X
MONEYWORT	*Lysimachia nummularia*	X			X
WHITE SNAKEROOT	*Eupatorium rugosum*	X			X
BEDSTRAW	*Galium mollugo*				X
BLOODROOT	*Sanguinaria canadensis*				X
BLUE COHOSH	*Caulophyllum thalictroides*				X
BOTTLEBRUSH GRASS	*Elymus hystrix*				X
COMMON BLUE VIOLET	*Viola sororia*				X
CUT-LEAVED TOOTHWORT	*Cardamine concatenata*				X
DOWNY YELLOW VIOLET	*Viola pubescens*				X
EARLY MEADOW RUE	*Thalictrum dioicum*				X
FOAM FLOWER	*Tiarella cordifolia*				X
JACK IN THE PULPIT	*Arisaema triphyllum*				X
JUMPSEED	*Polygonum virginianum*				X
MAY APPLE	*Podophyllum peltatum*				X
TROUT LILY	*Erythronium americanum*				X
TWO-LEAVED TOOTHWORT	*Cardamine diphylla*				X
WHITE AVENS	*Geum canadense*				X
WHITE TRILLIUM	*Trillium grandiflorum*				X
WHITE VERVAIN	*Verbena urticifolia*				X
WILD GERANIUM	*Geranium maculatum*				X

CONCLUSION

With their wild and undeveloped shorelines and wooded hillsides, the dramatic and unspoiled setting of Hemlock and Canadice Lakes sets them apart from all the other Finger Lakes. Their watersheds, too, are still largely rural, with 55% forested, 11% agricultural, 20% post-agricultural and only 4% developed plant communities. It is hoped that the Finger Lakes Land Trust, The Nature Conservancy and the Ontario County Planning Department will be able to use the information provided in this report in their cooerative conservation effort.

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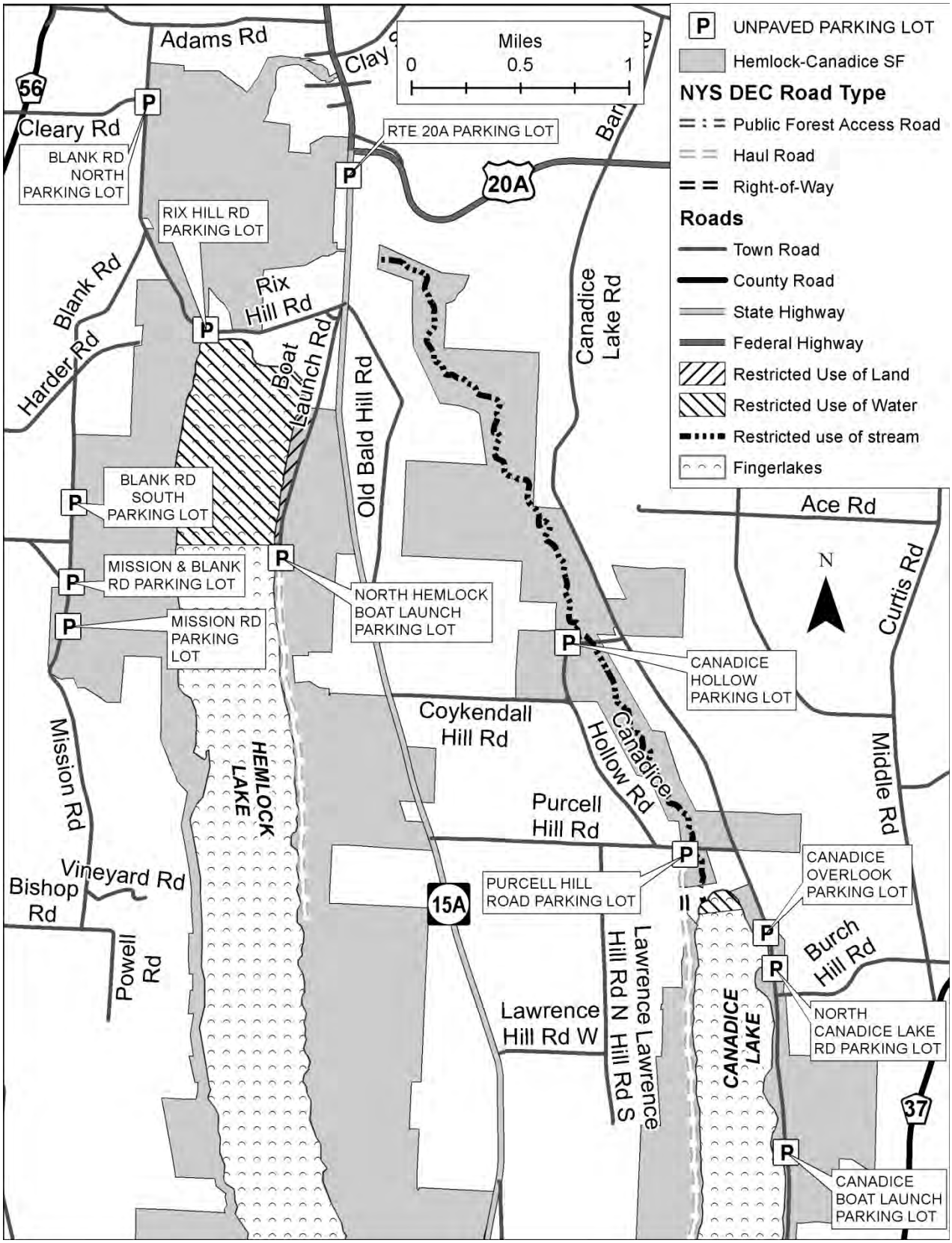
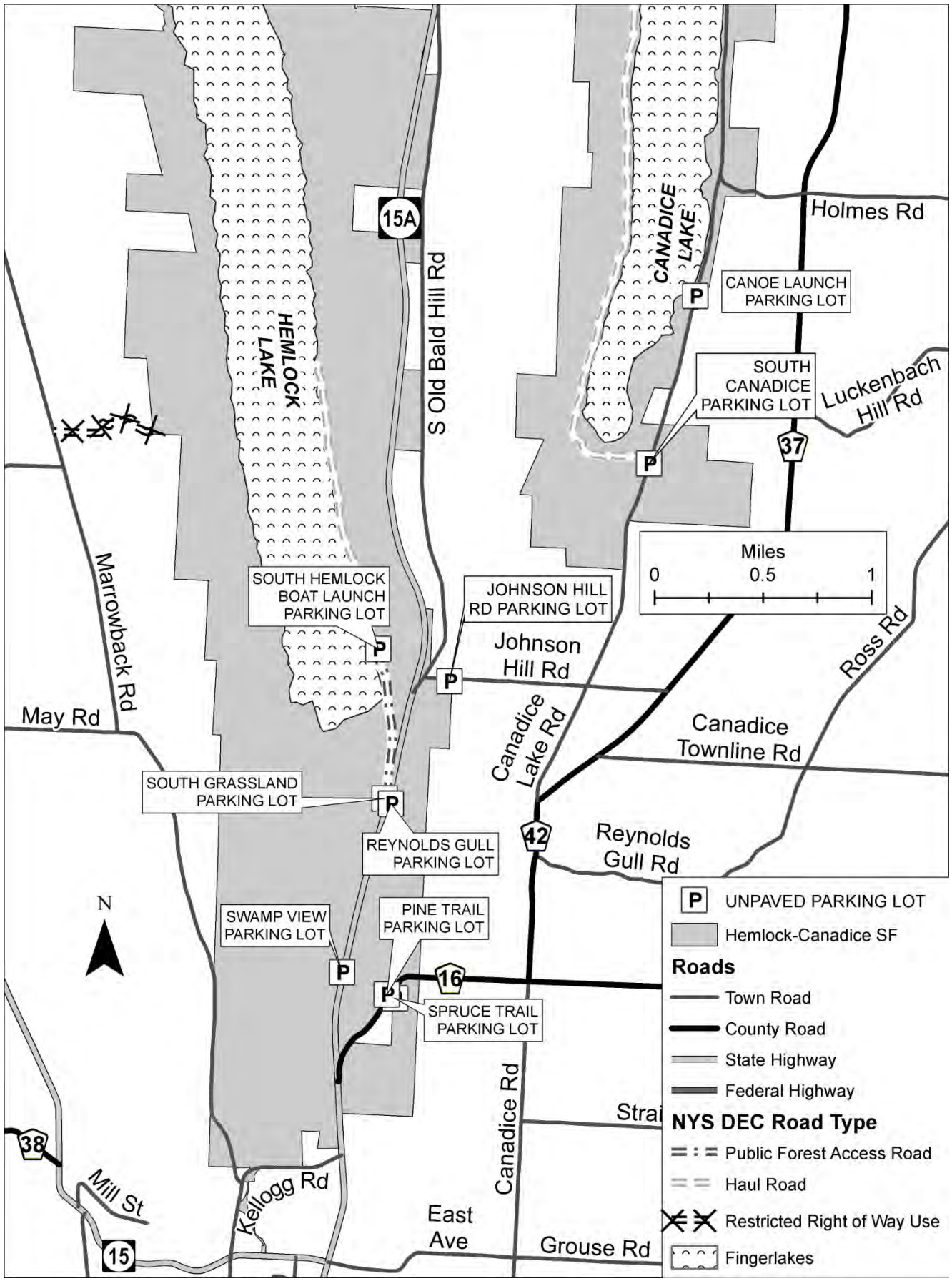
Appendix M: Maps
Roads and Parking Lots

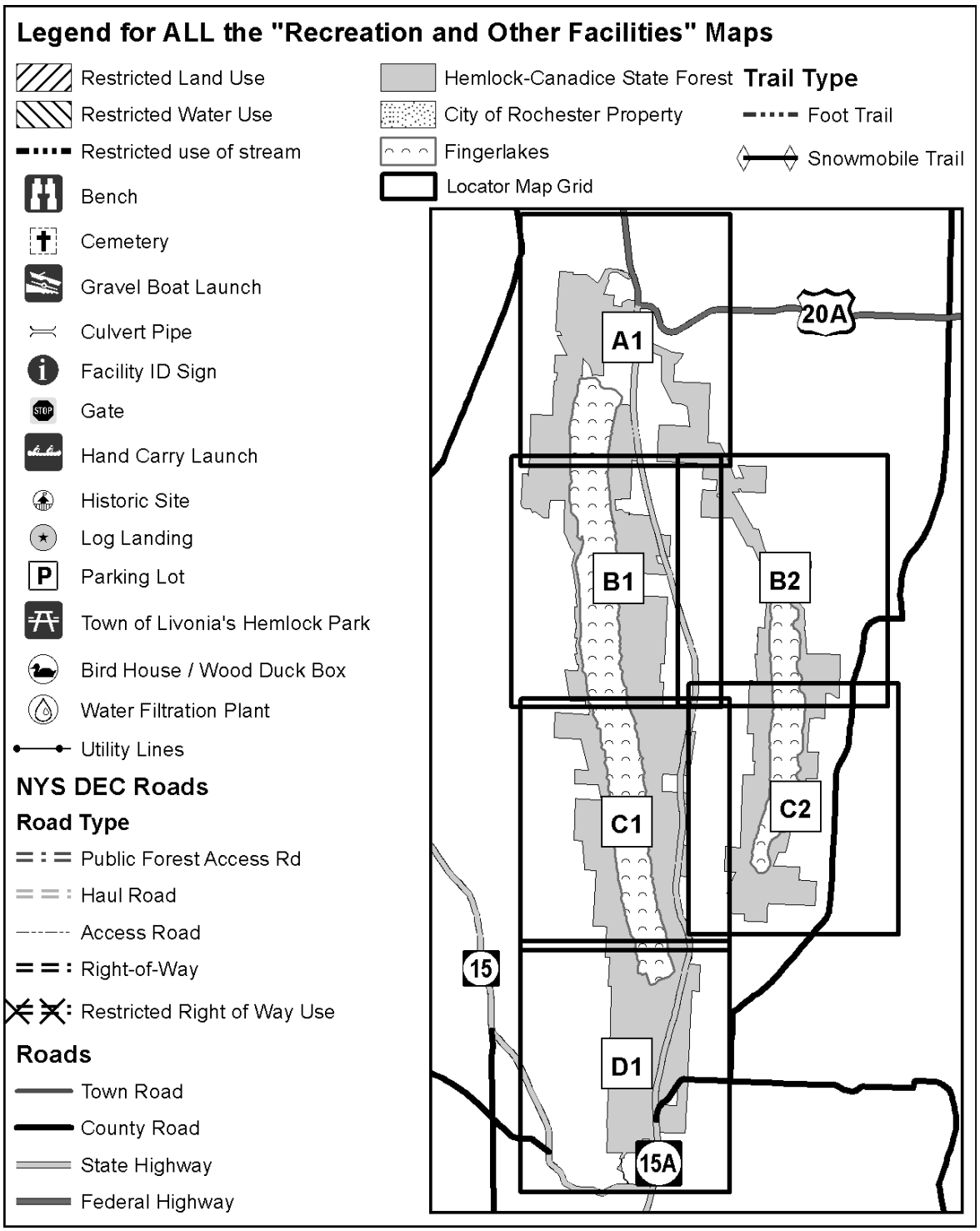


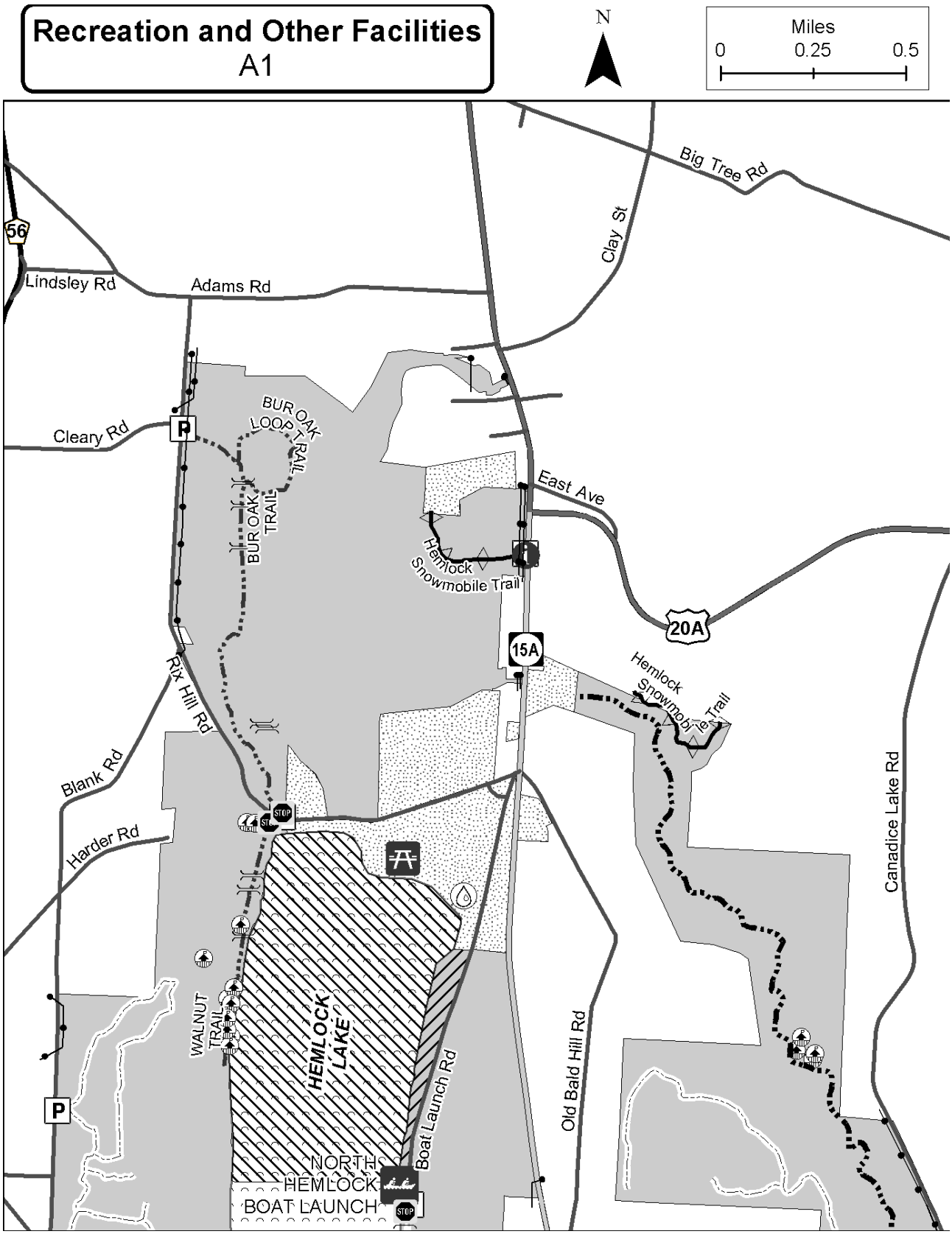

HEMLOCK LAKE
CANADICE LAKE
15A
S Old Bald Hill Rd
Holmes Rd
CANOE LAUNCH PARKING LOT
SOUTH CANADICE PARKING LOT
Luckenbach Hill Rd
37
Miles
0
0.5
1
Marrowback Rd
SOUTH HEMLOCK BOAT LAUNCH PARKING LOT
JOHNSON HILL RD PARKING LOT
Johnson Hill Rd
Ross Rd
May Rd
Canadice Lake Rd
Canadice Townline Rd
SOUTH GRASSLAND PARKING LOT
REYNOLDS GULL PARKING LOT
42
Reynolds Gull Rd
N
SWAMP VIEW PARKING LOT
PINE TRAIL PARKING LOT
16
SPRUCE TRAIL PARKING LOT
Canadice Rd
38
Mill St
Kellogg Rd
East Ave
Grouse Rd
15
P UNPAVED PARKING LOT
Hemlock-Canadice SF
Roads
Town Road
County Road
State Highway
Federal Highway
NYS DEC Road Type
Public Forest Access Road
Haul Road
Restricted Right of Way Use
Fingerlakes

Recreation and Other Facilities

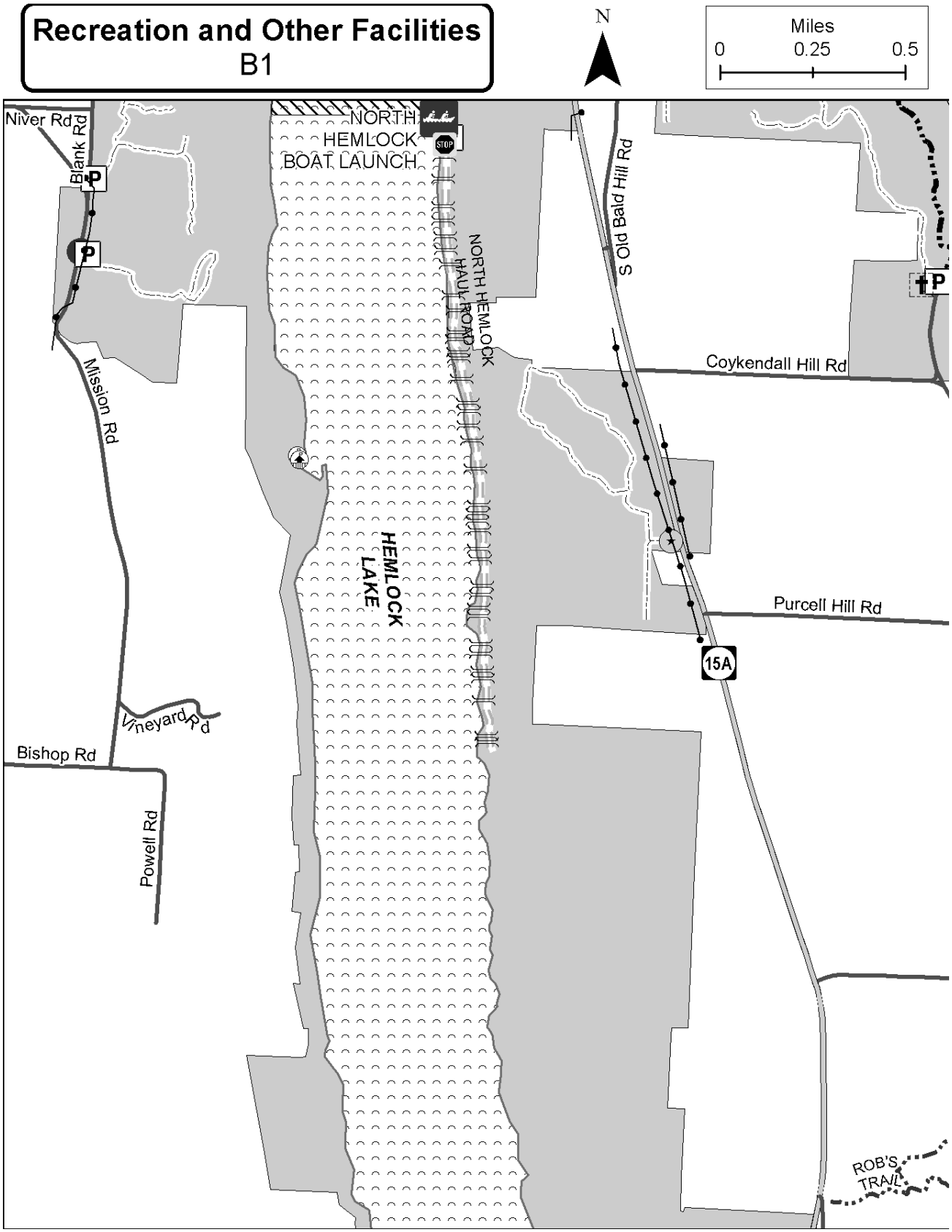
For additional information see: Roads page 39, Access page 69, Public Recreation and Use page 42 and 100, Maintenance and Facilities Management page 111.

Some facilities will be missing from these maps. For example many culverts, bird/duck houses, historic sites and some log landings and access trails (old farm lanes) have not yet been GPSed.





See Legend and map grid on page 222.



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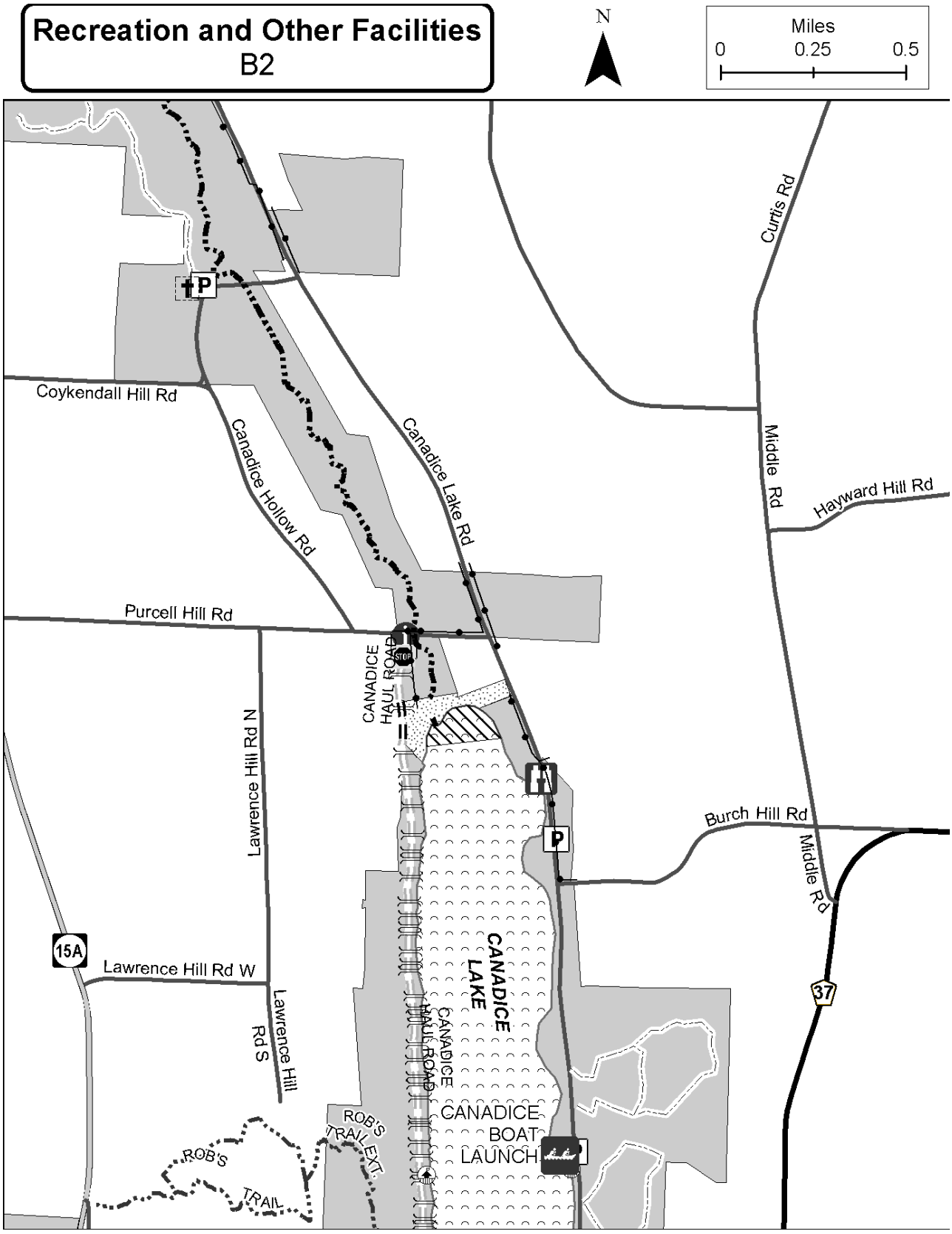

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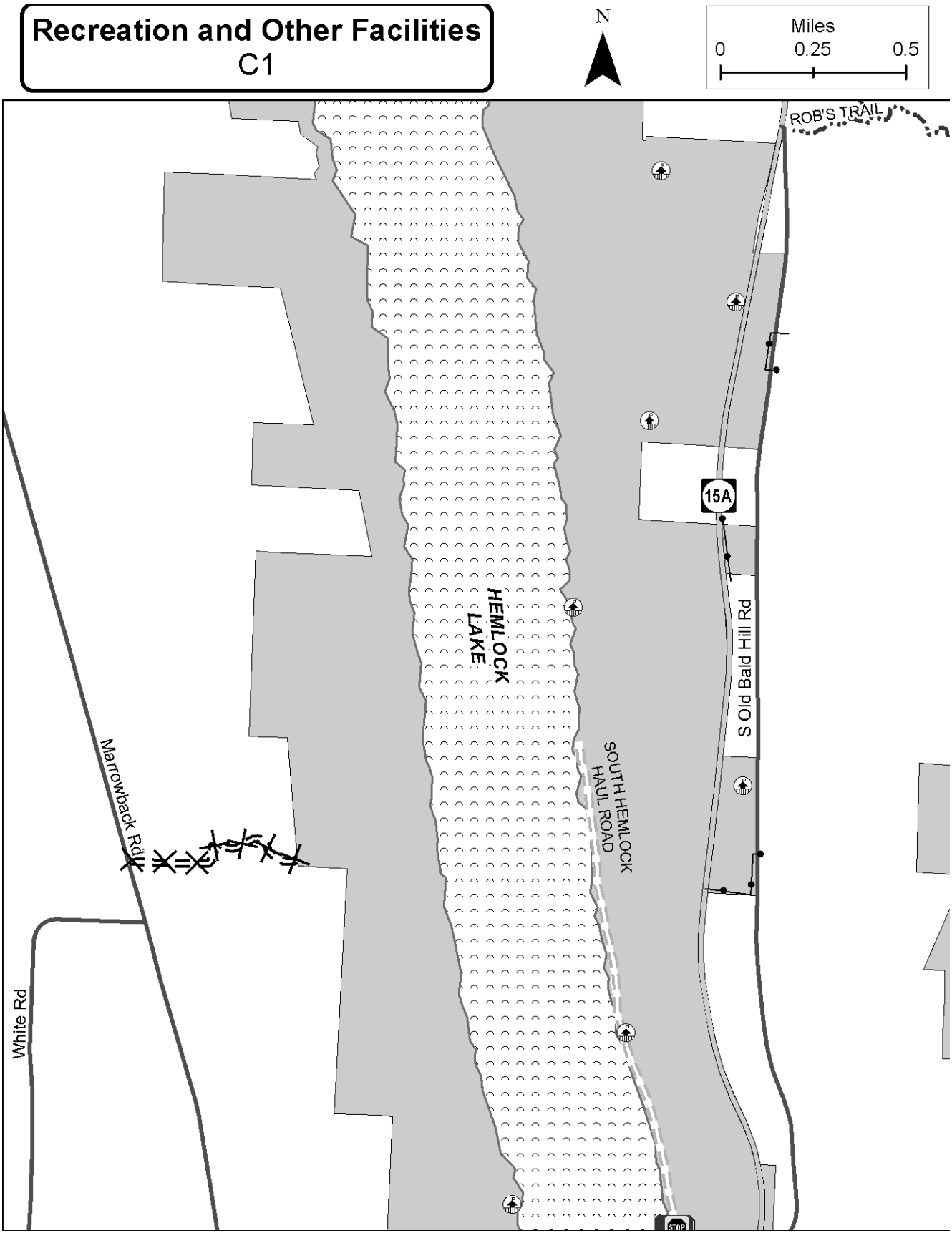

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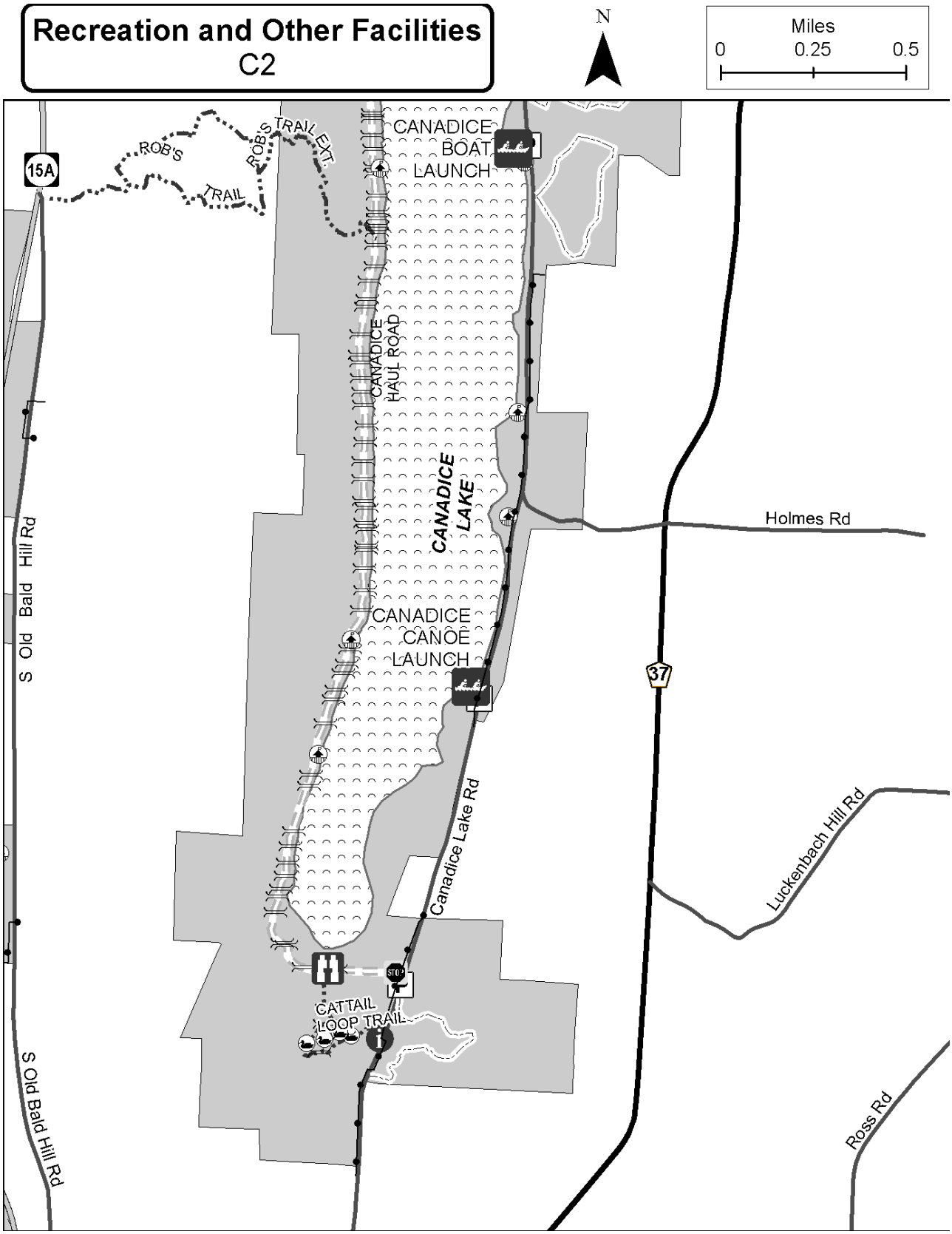

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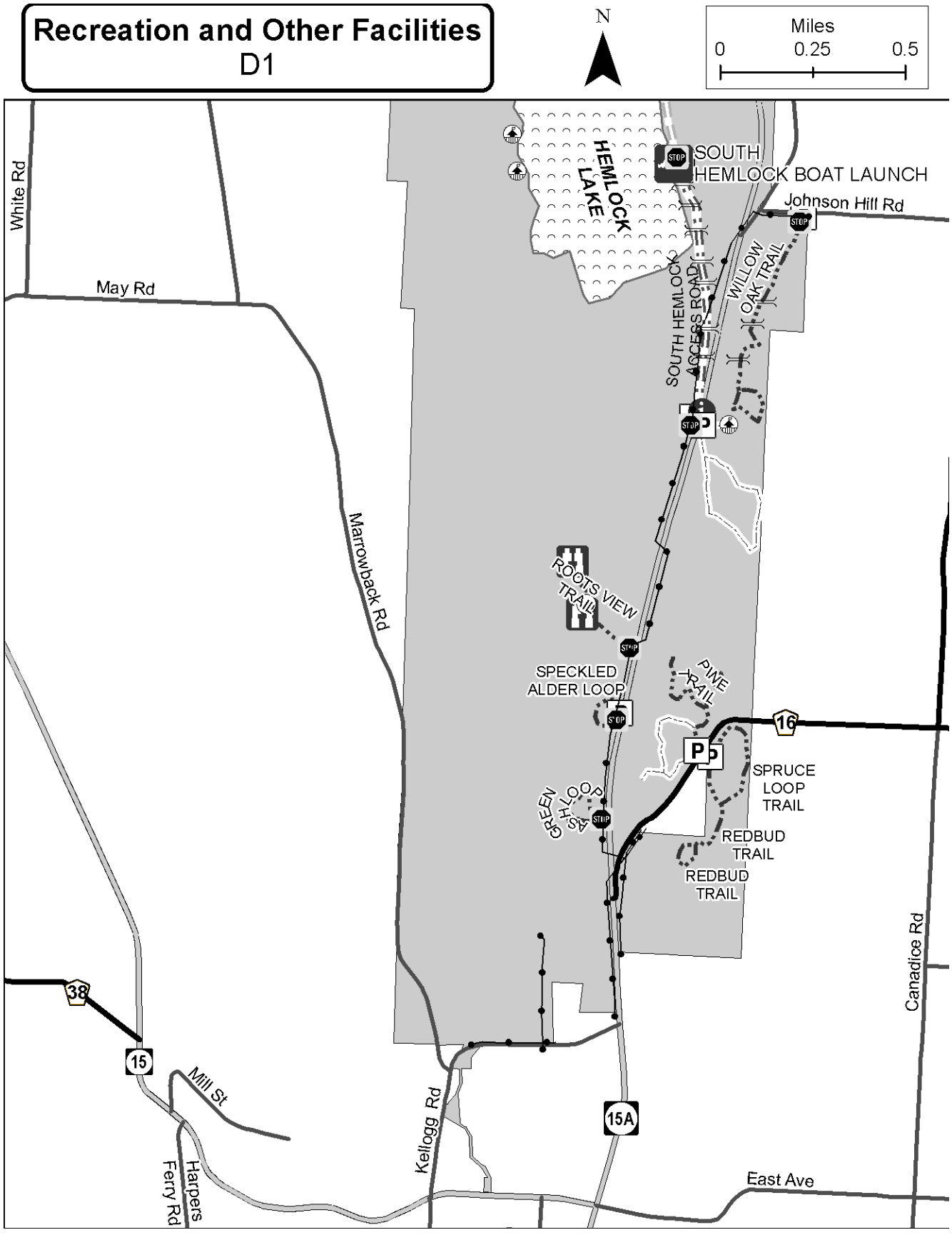
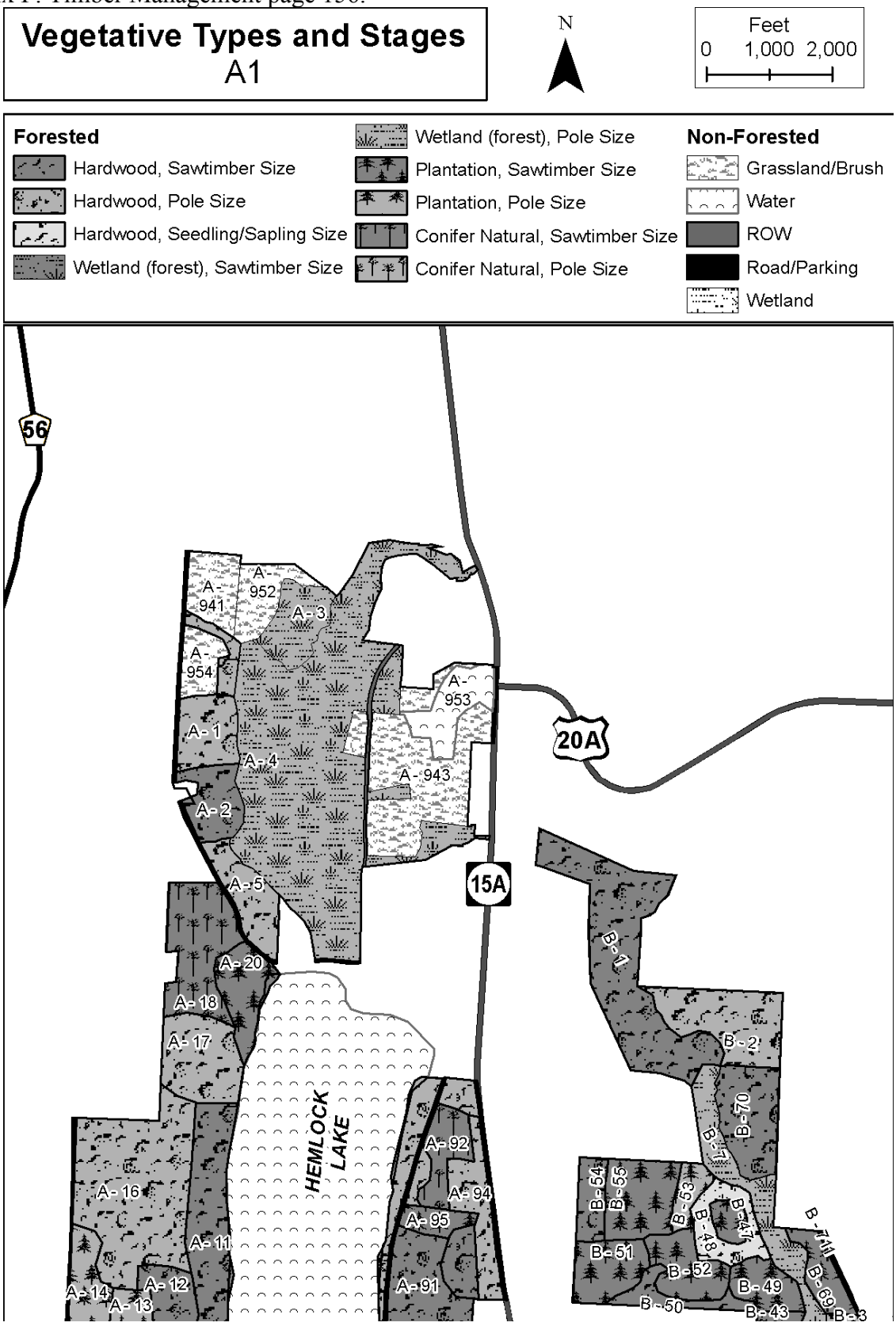


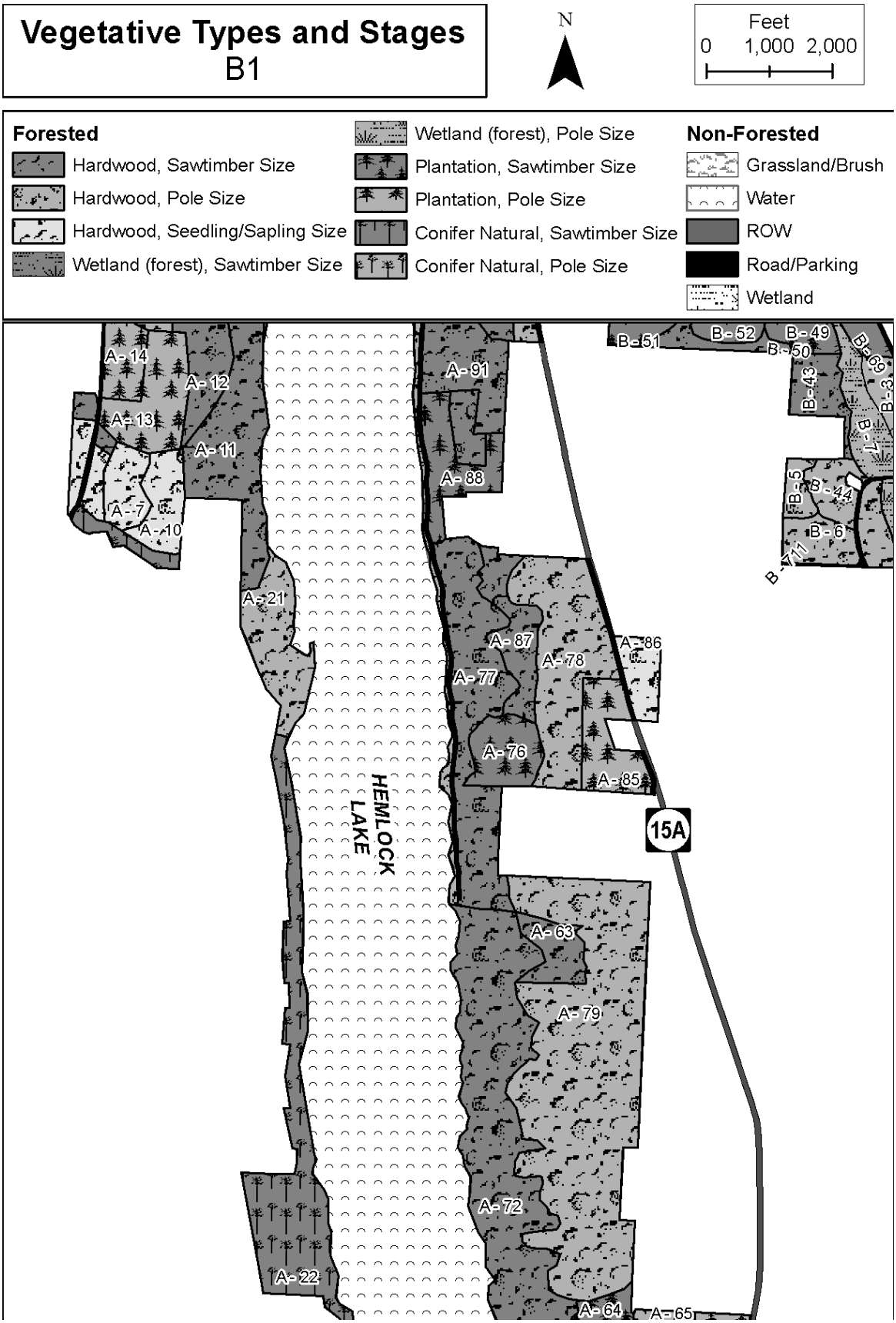
See Legend and map grid on page 222.

Vegetative Types and Stages

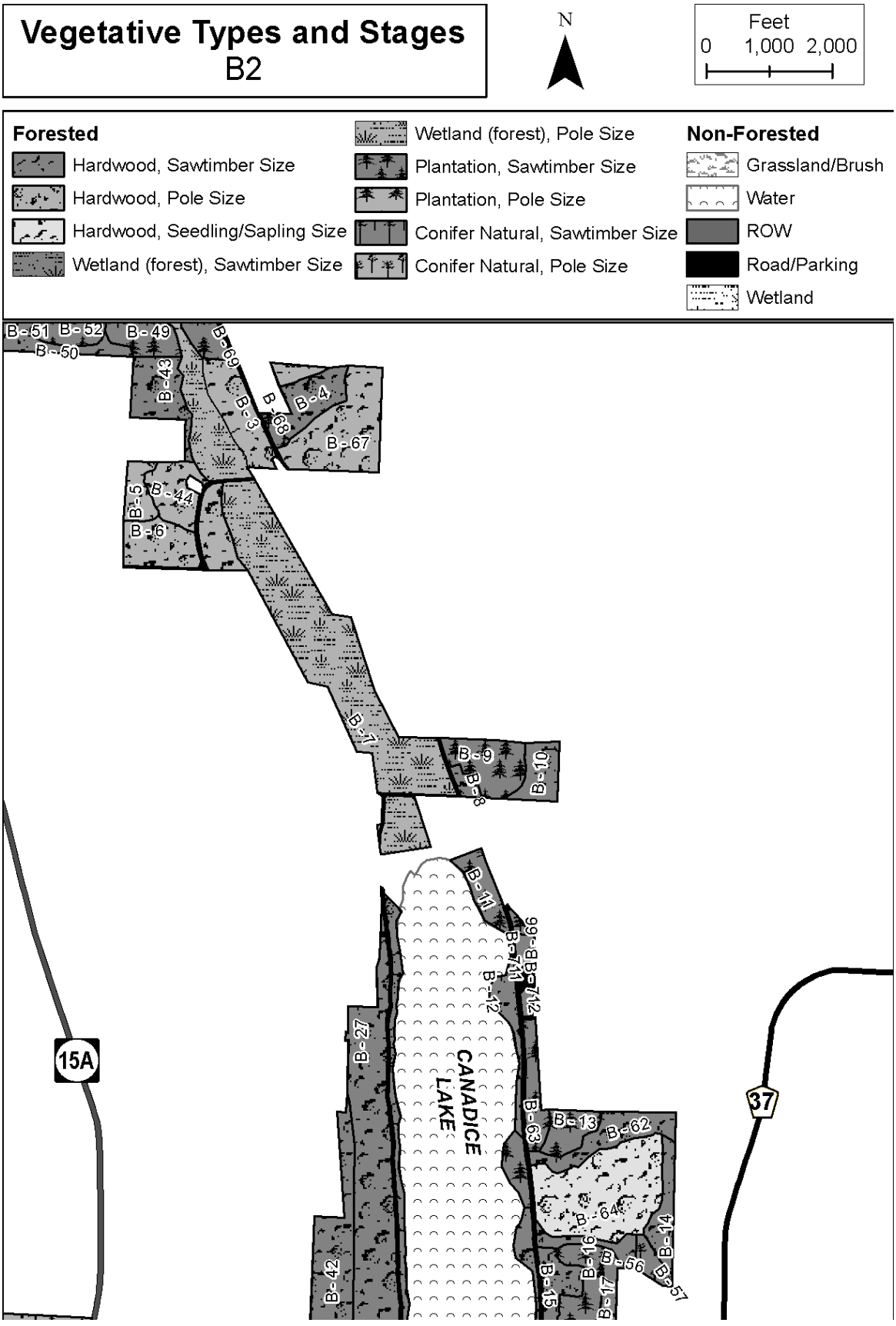
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



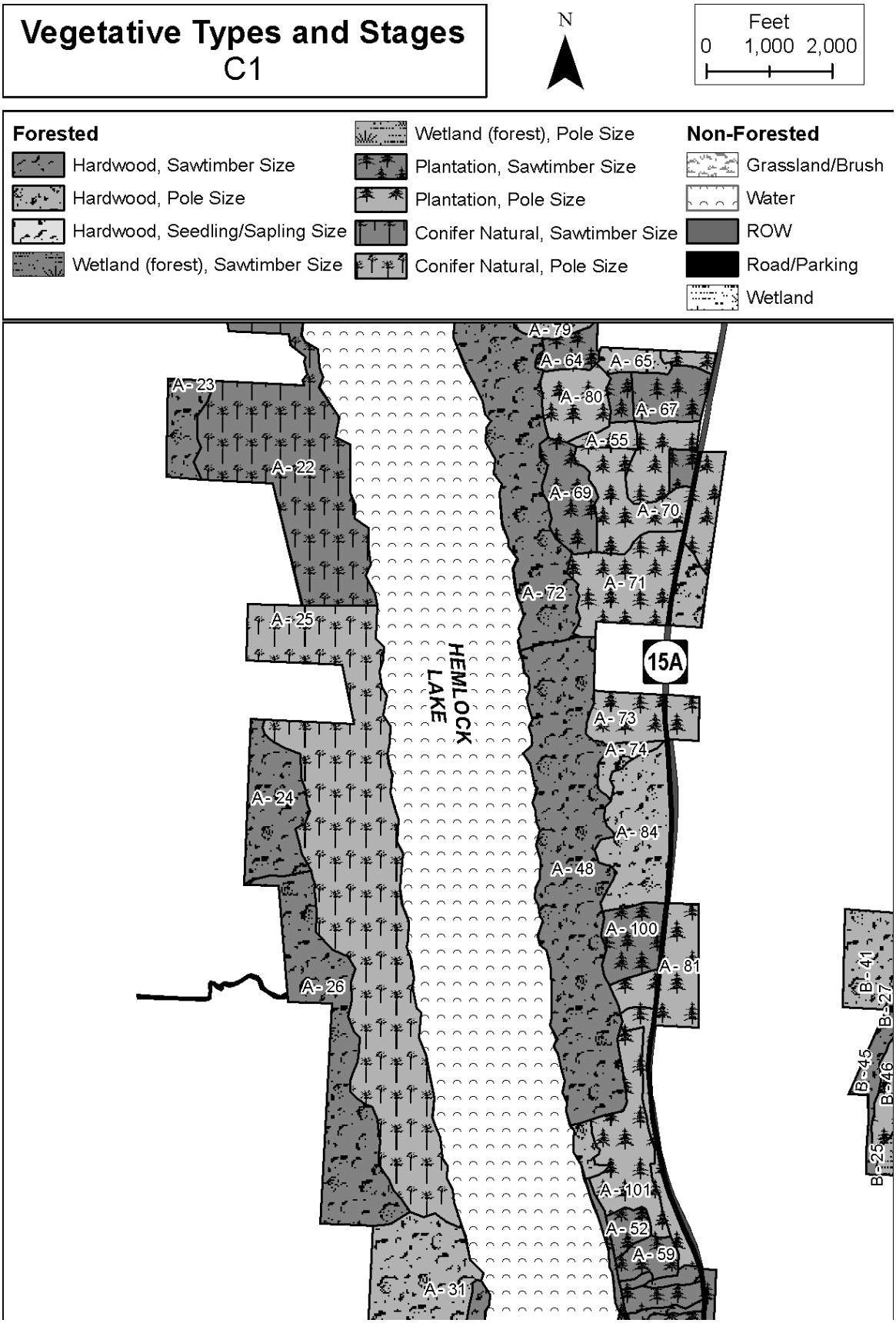
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



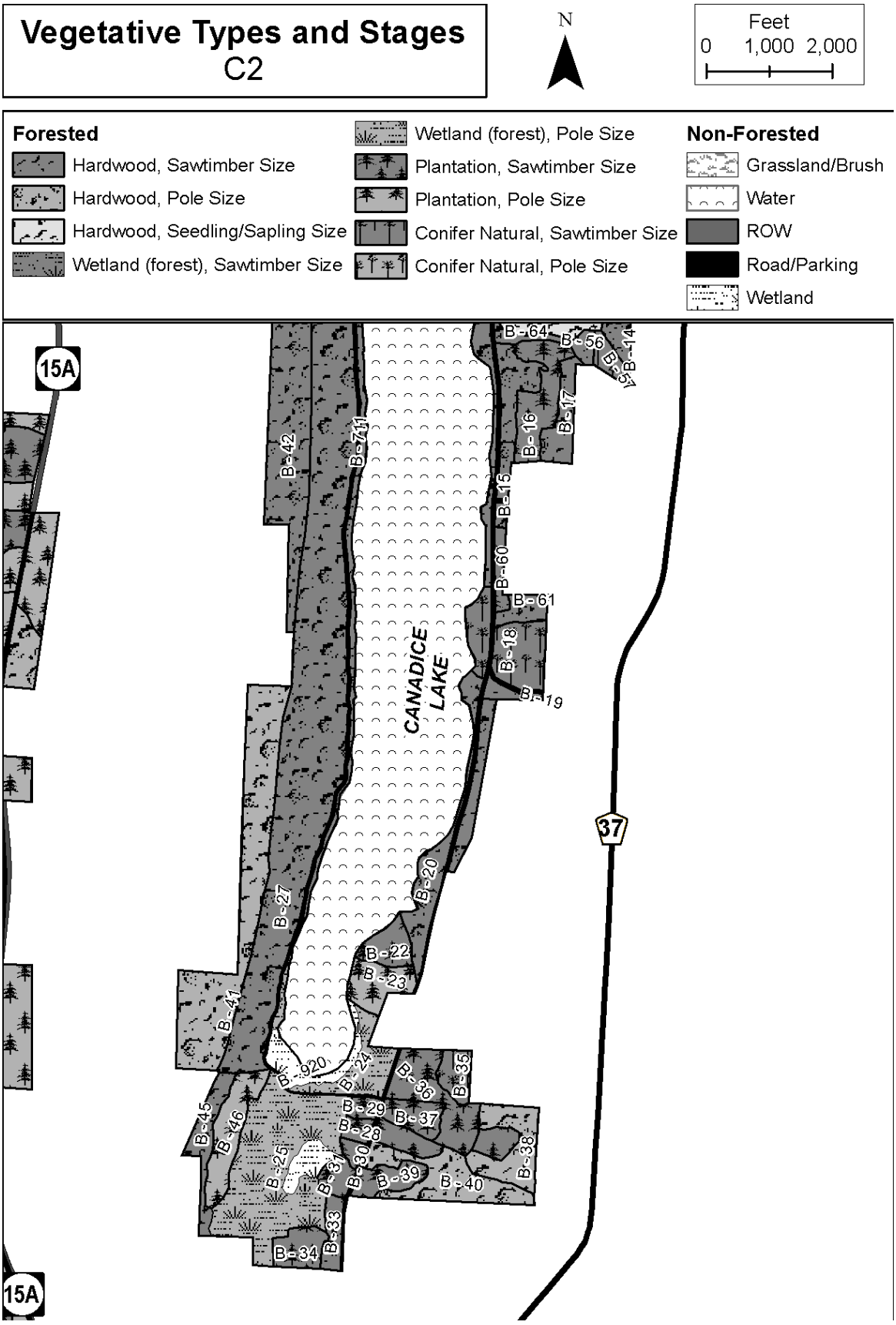
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



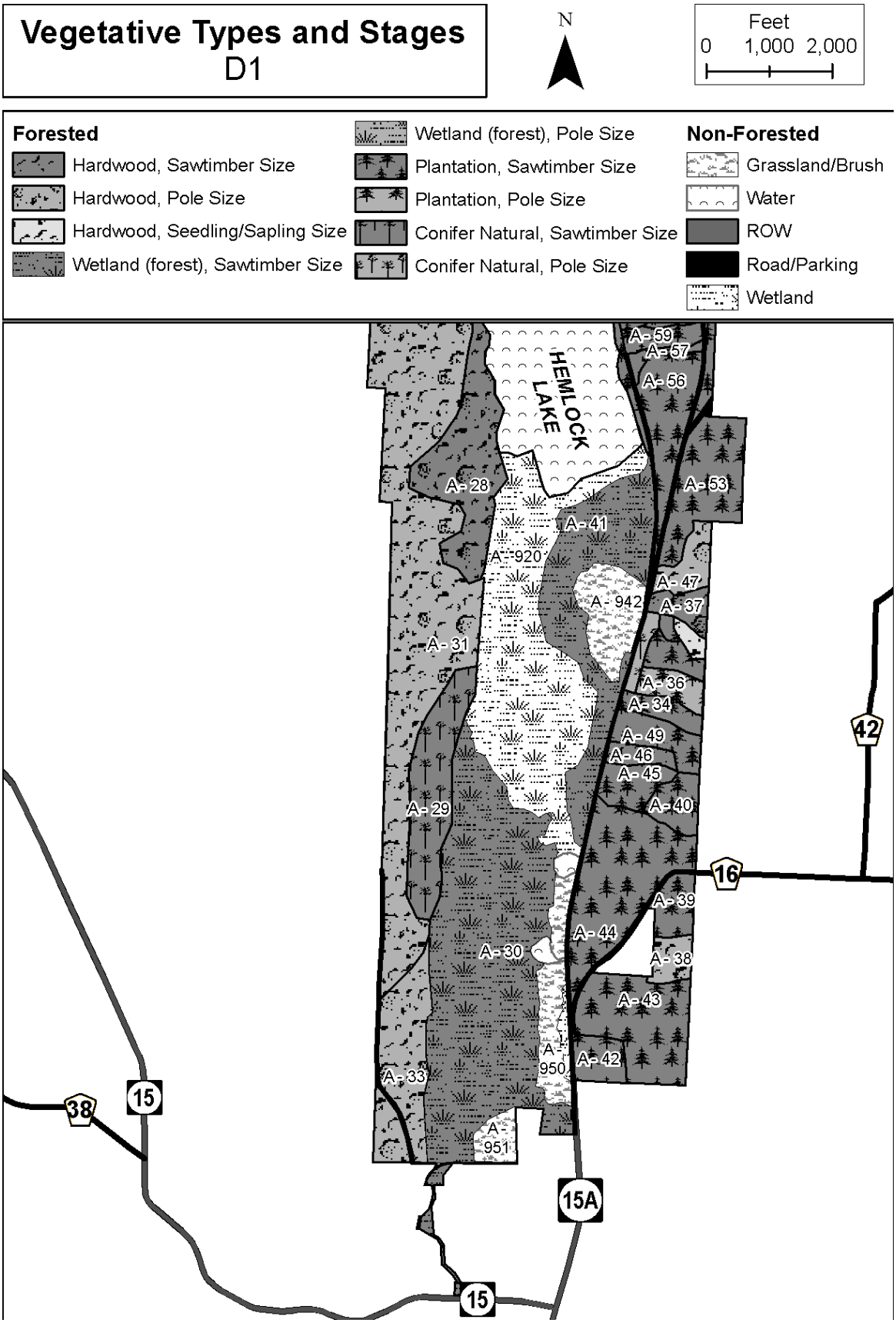
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.

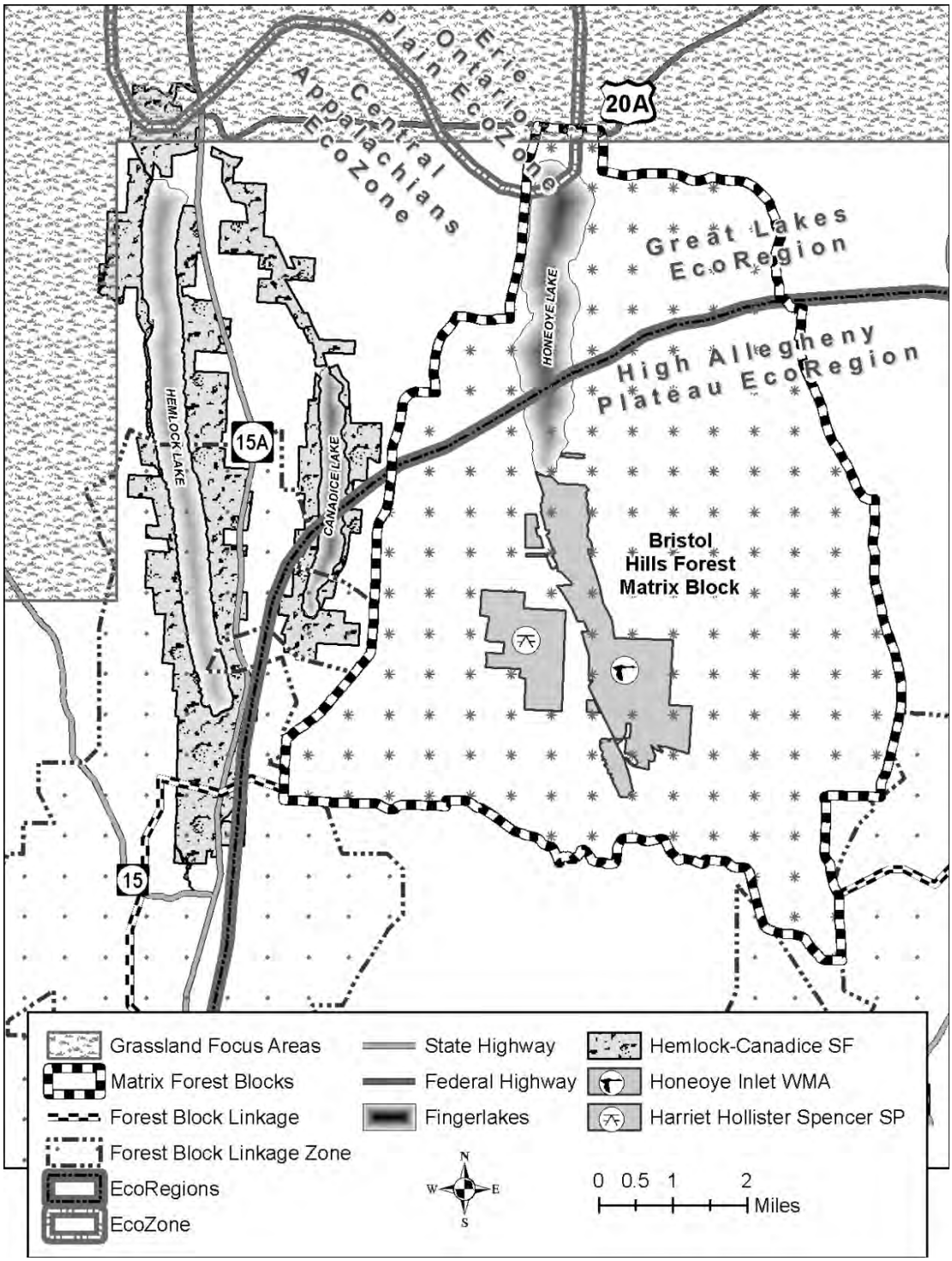


See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



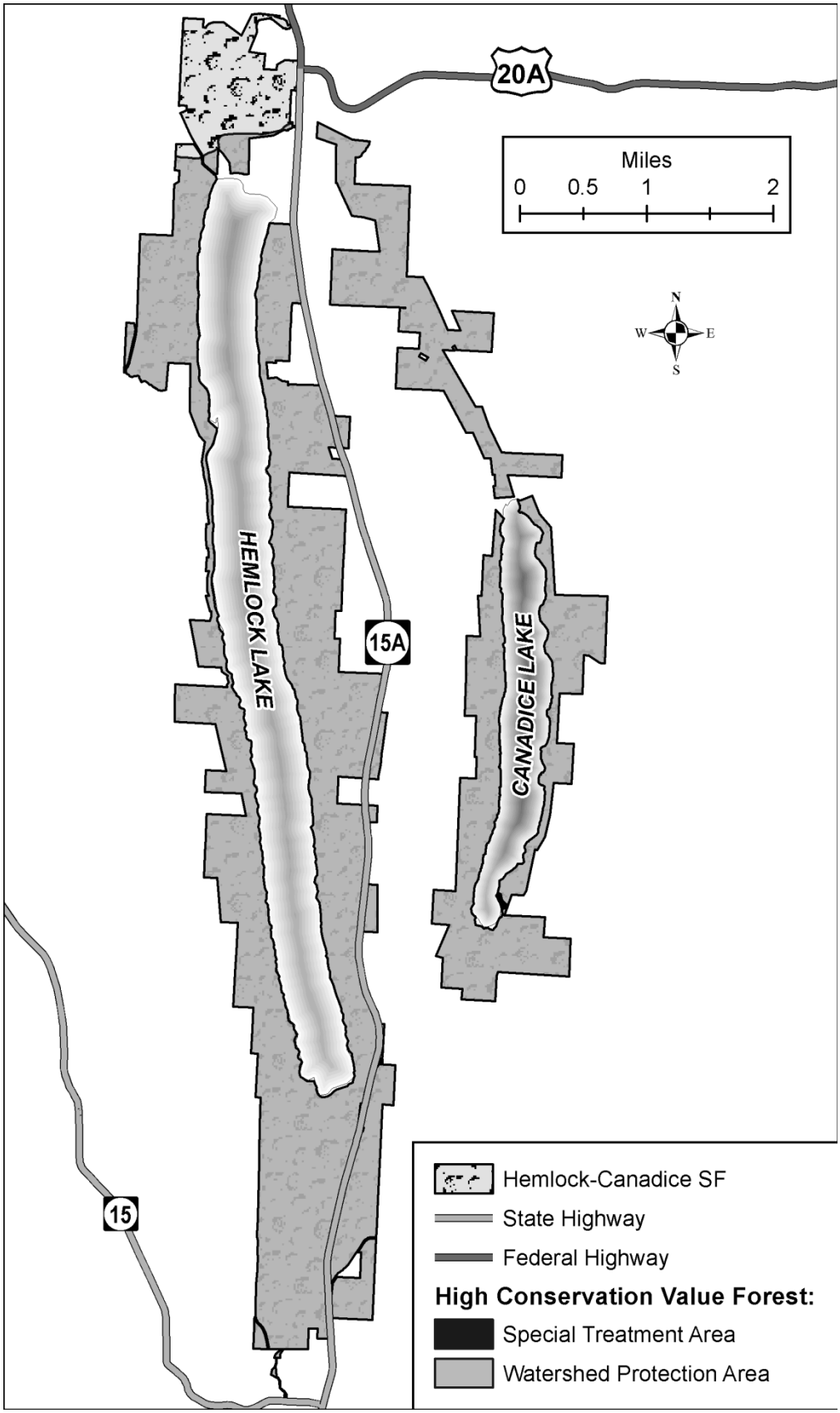
Ecoregions, Forest Matrix Block and Least Cost Path Corridors, Grassland Focus Areas

For additional information see the Ecological Zones and EcoRegions, Forest Matrix Blocks and Least Cost Path Corridors, and Grassland Focus Areas sections. In addition, this plan does not, and cannot, cover any actions or activities on private land outside the boundaries of the Hemlock-Canadice Unit. For assistance in managing your own forest, please contact the DEC Bureau of Private Land Services for help. Visit www.dec.ny.gov/lands/4972.html or call the Bath or Avon DEC offices.



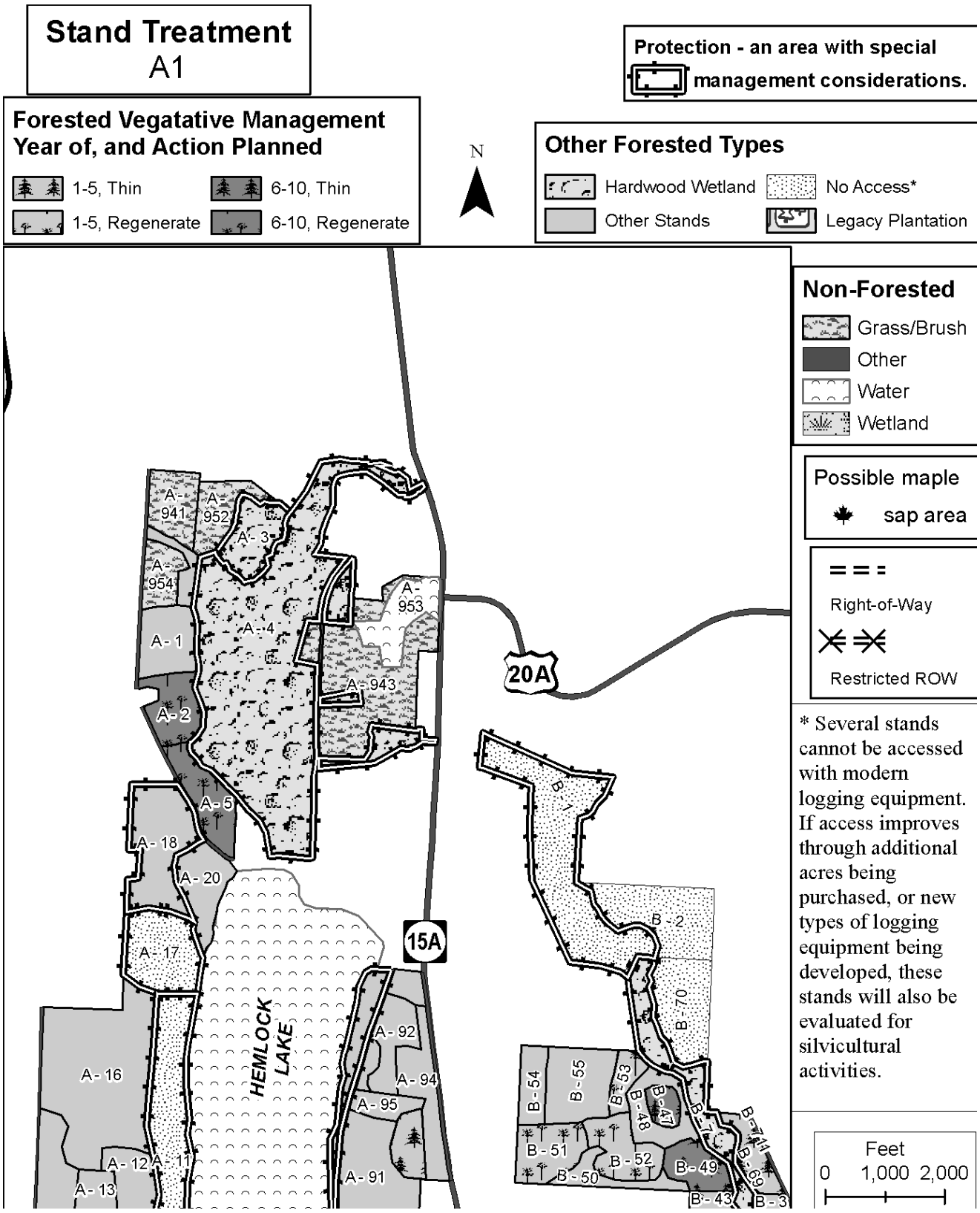
High Conservation Value Forests

For additional information see the High Conservation Value Forest (HCVF) section on page 32.

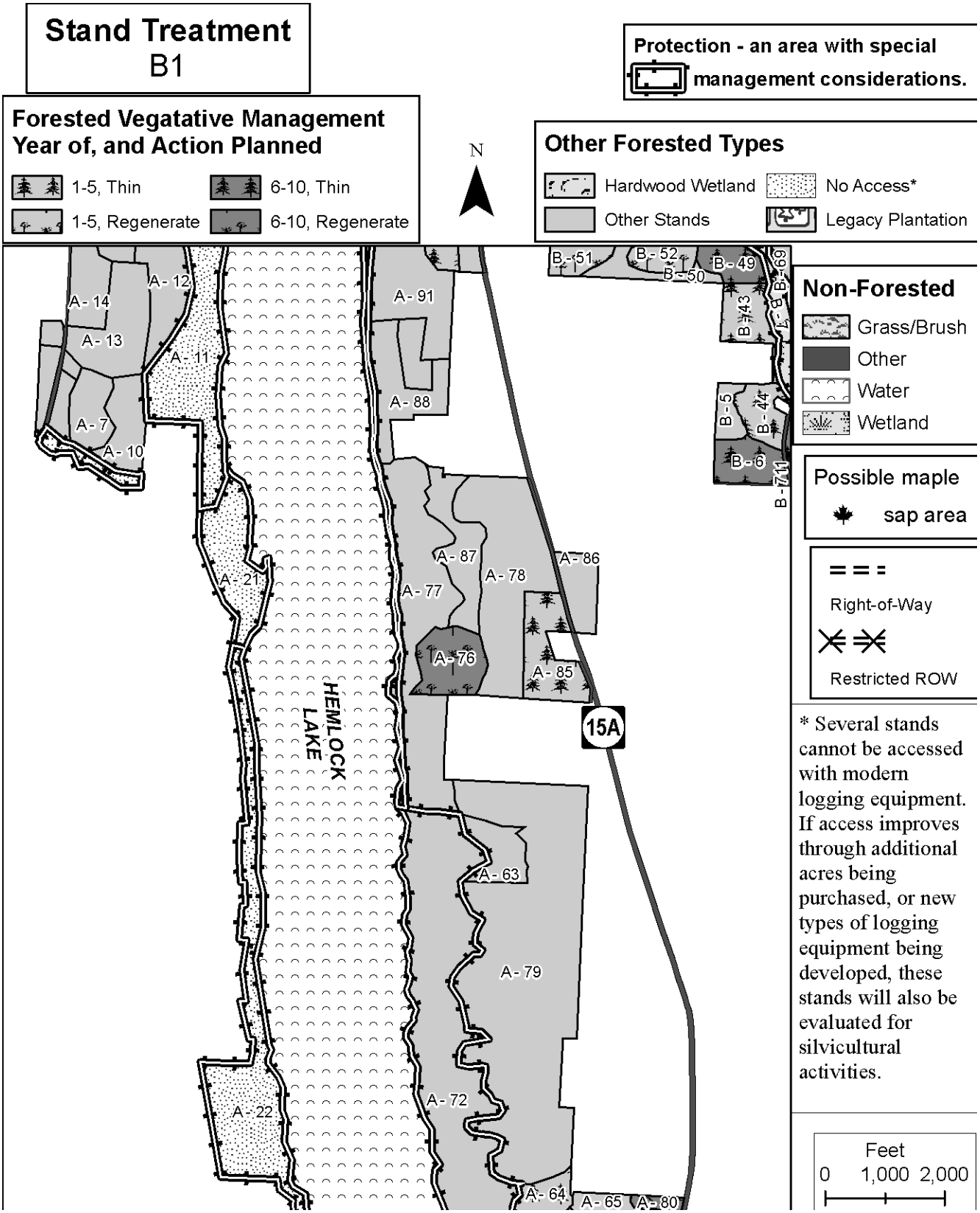


Vegetative Management

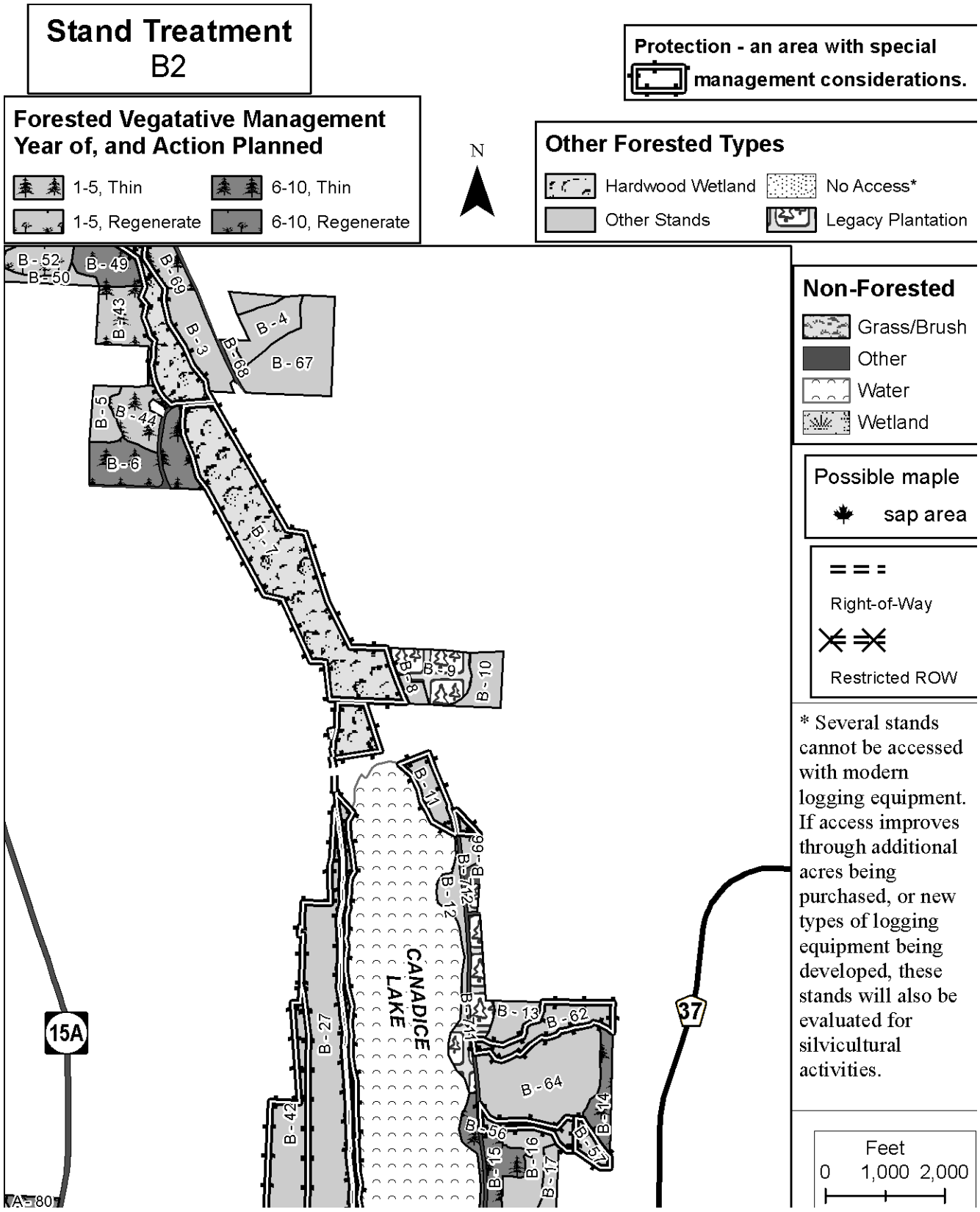
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



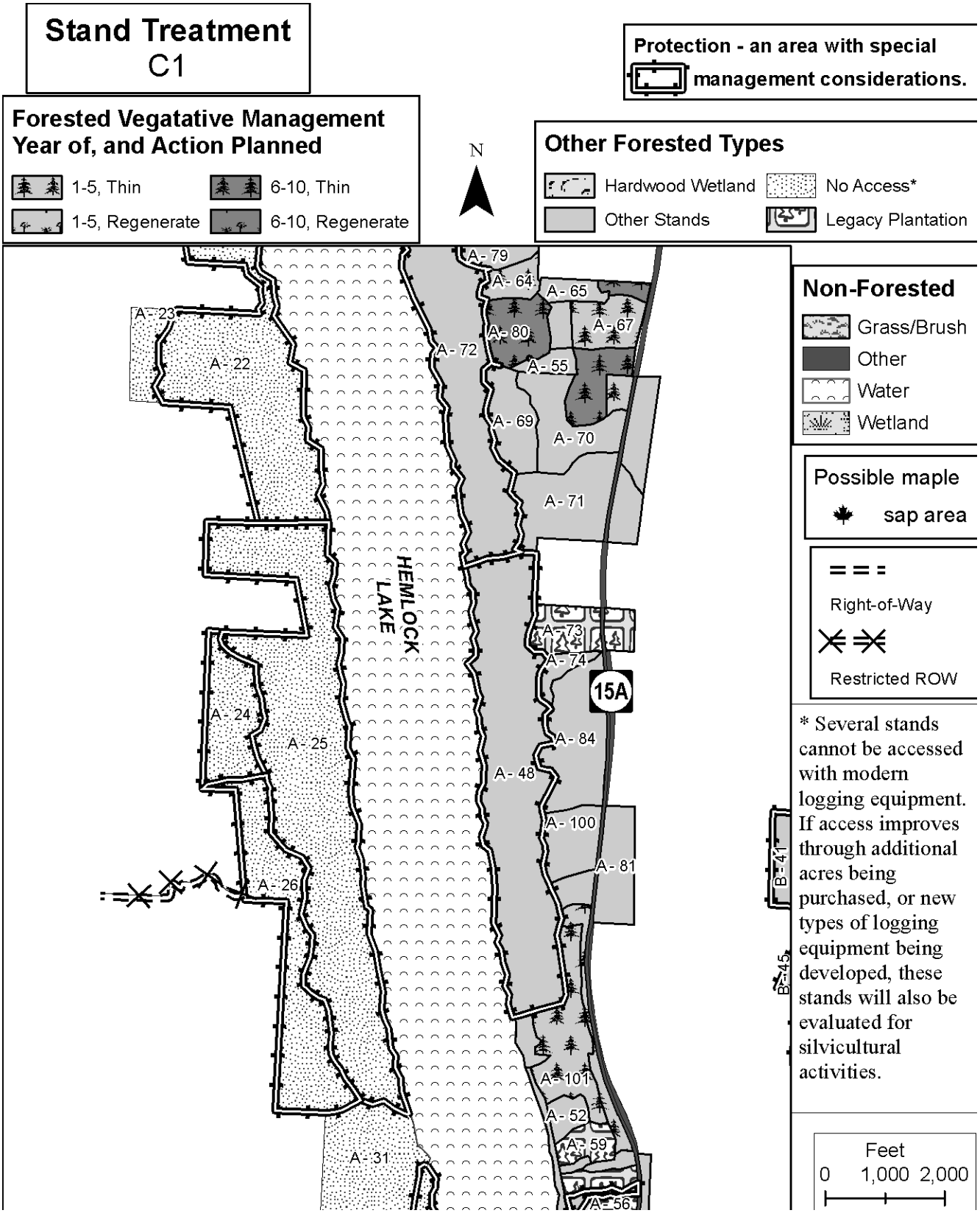
See Also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



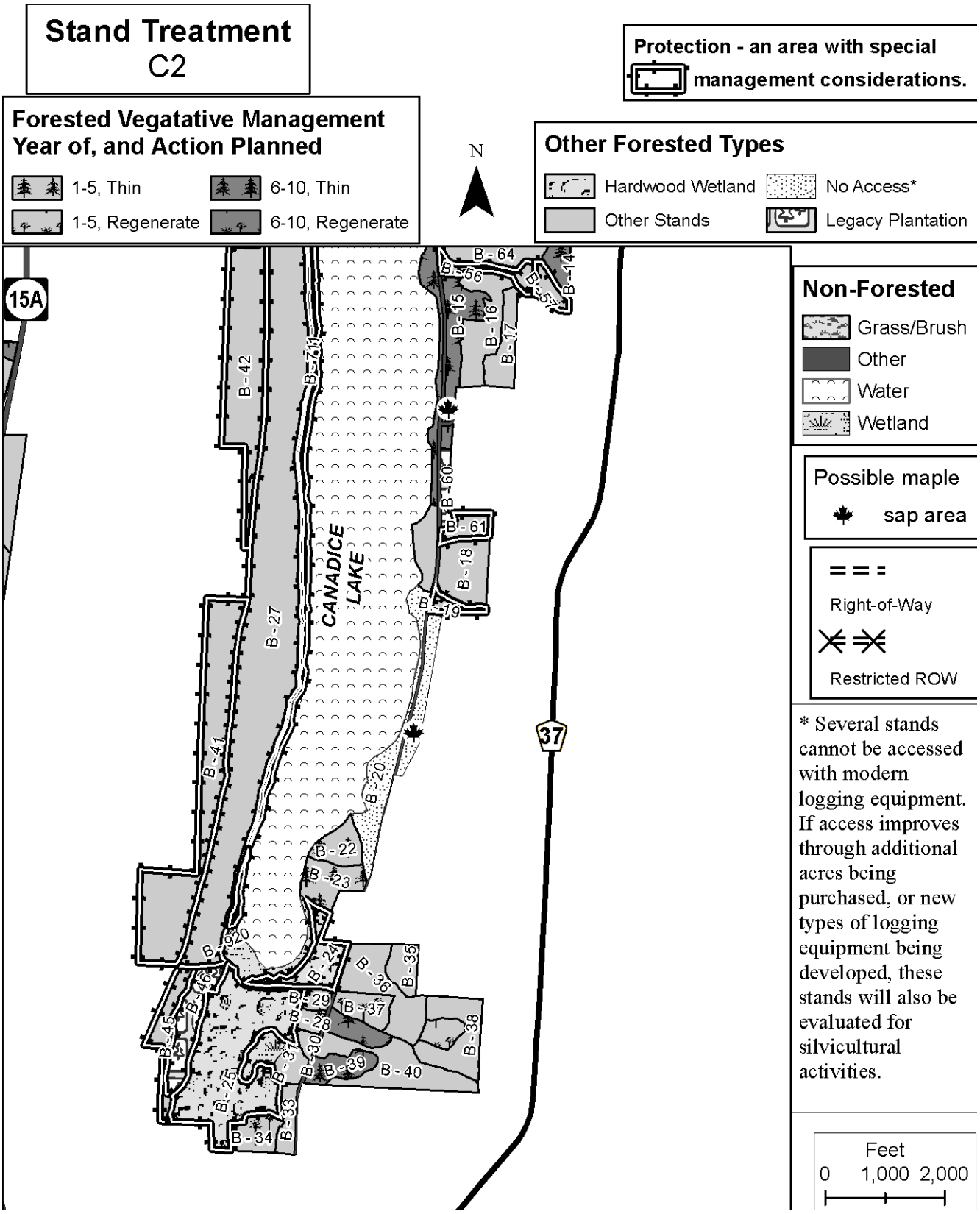
See also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



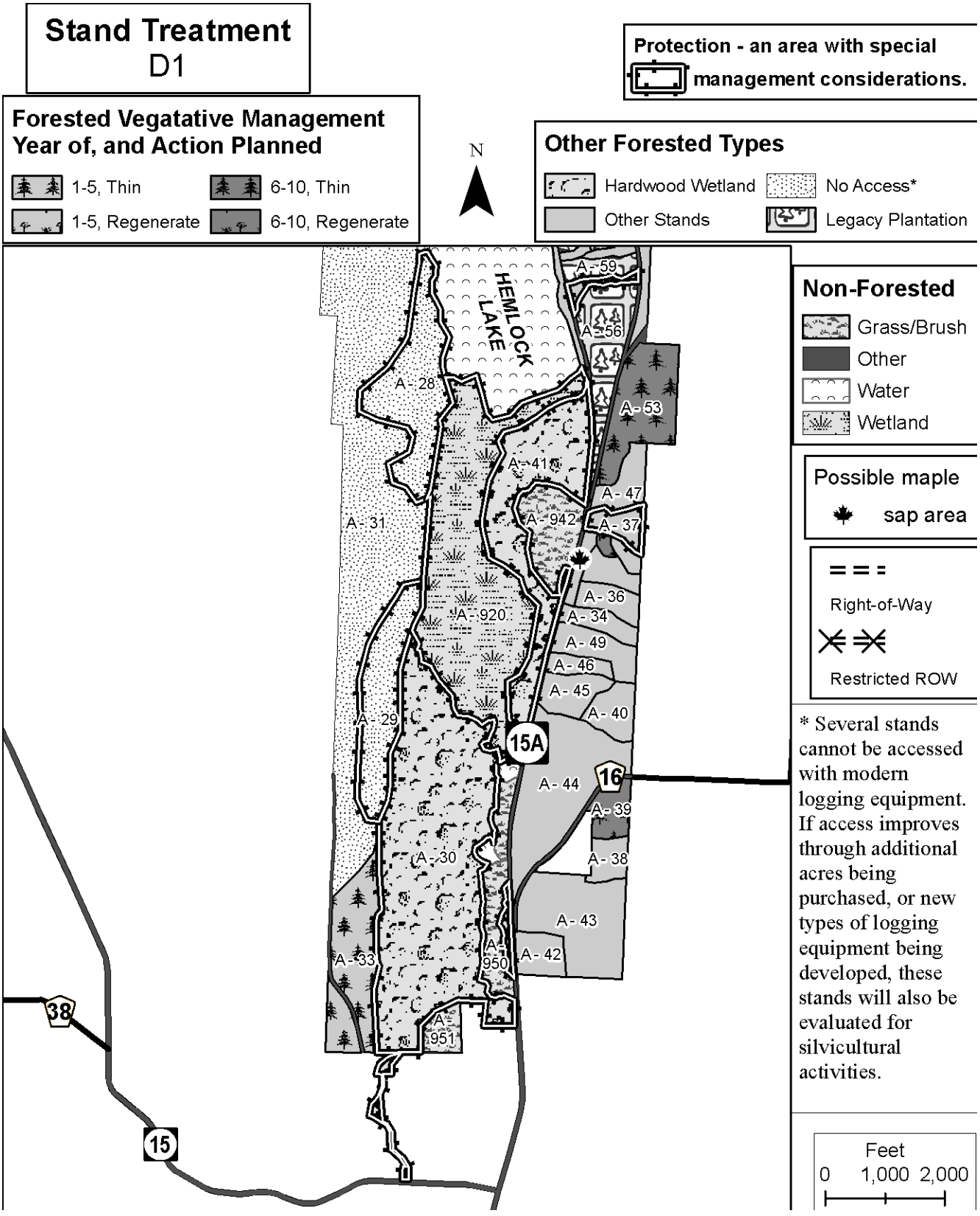
See also: Timber and Vegetation page 28 Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.



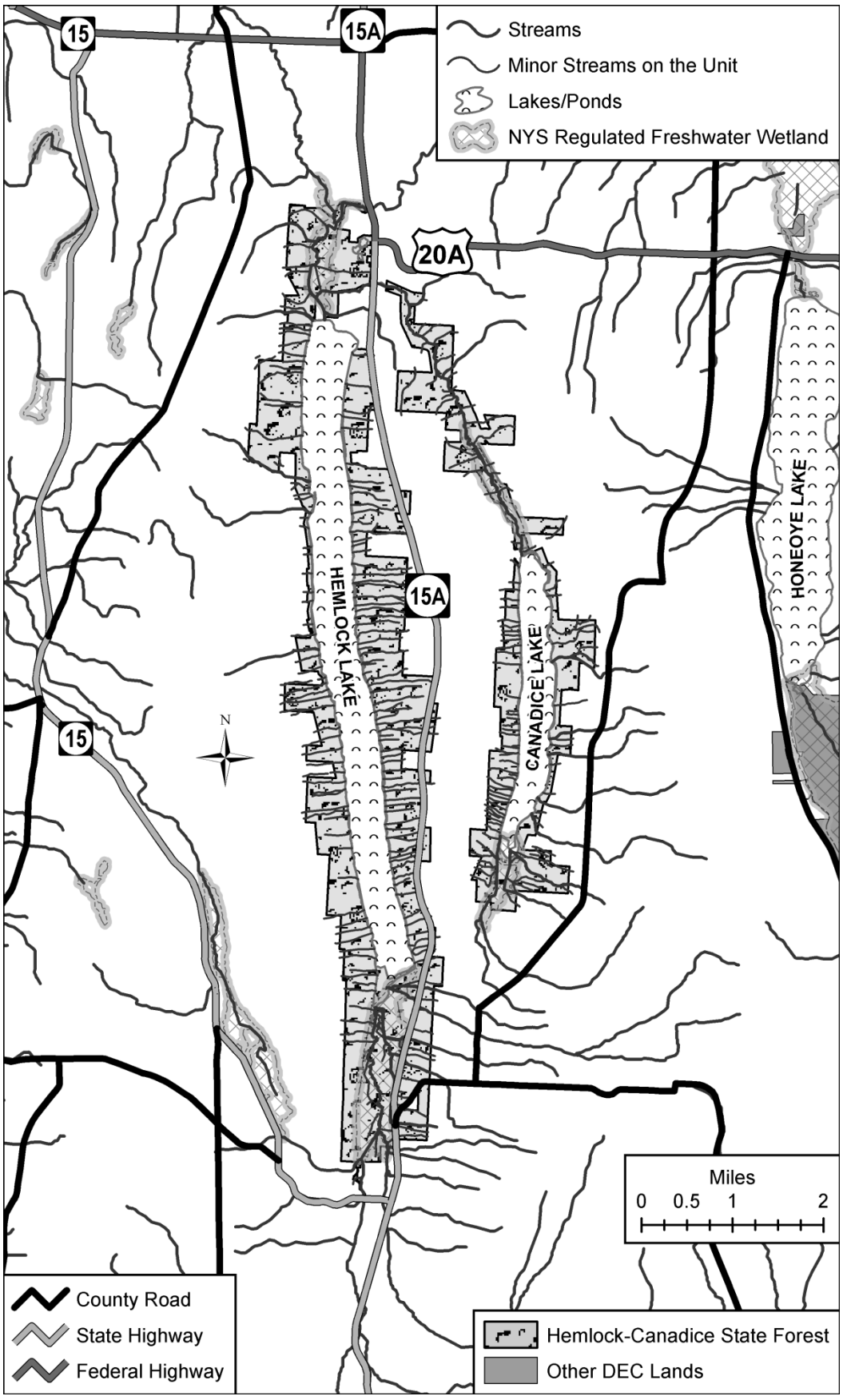
See Also: Timber and Vegetation page 28 Timber and Vegetation Management page 73 Appendix F: Timber Management page 156.



See also: Timber and Vegetation page 28, Timber and Vegetation Management page 73, and Appendix F: Timber Management page 156.

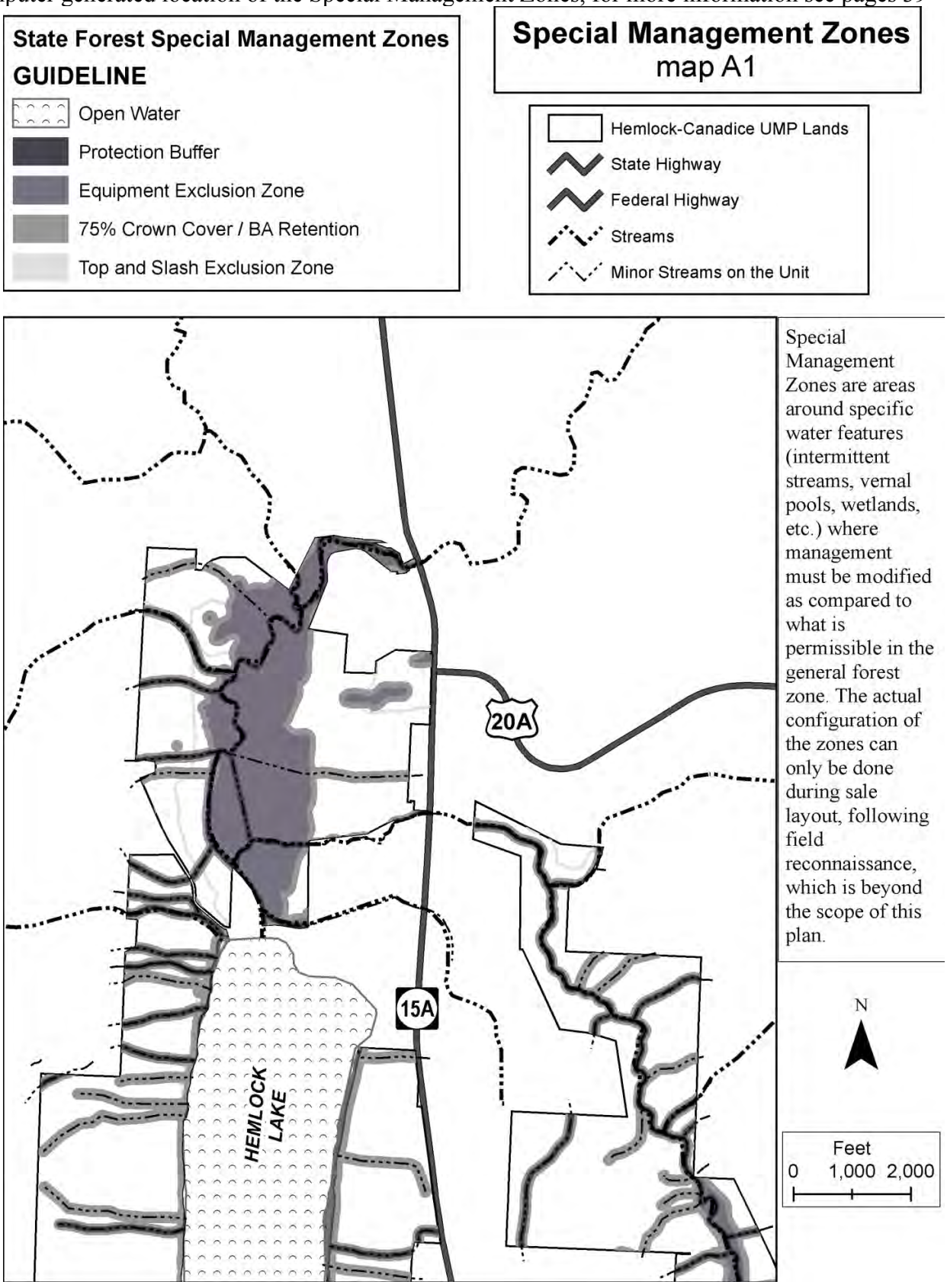


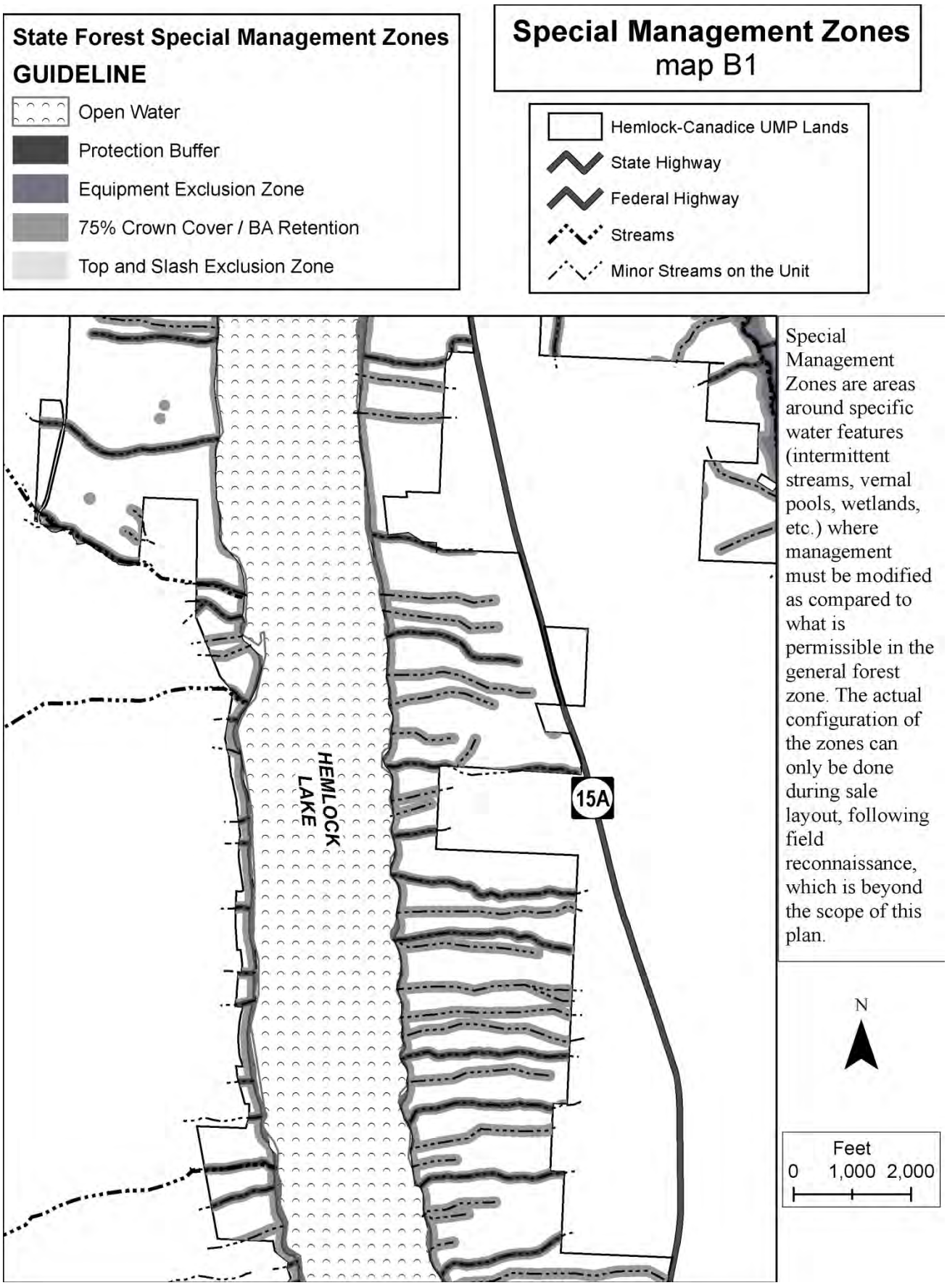
Streams, Ponds and Wetlands

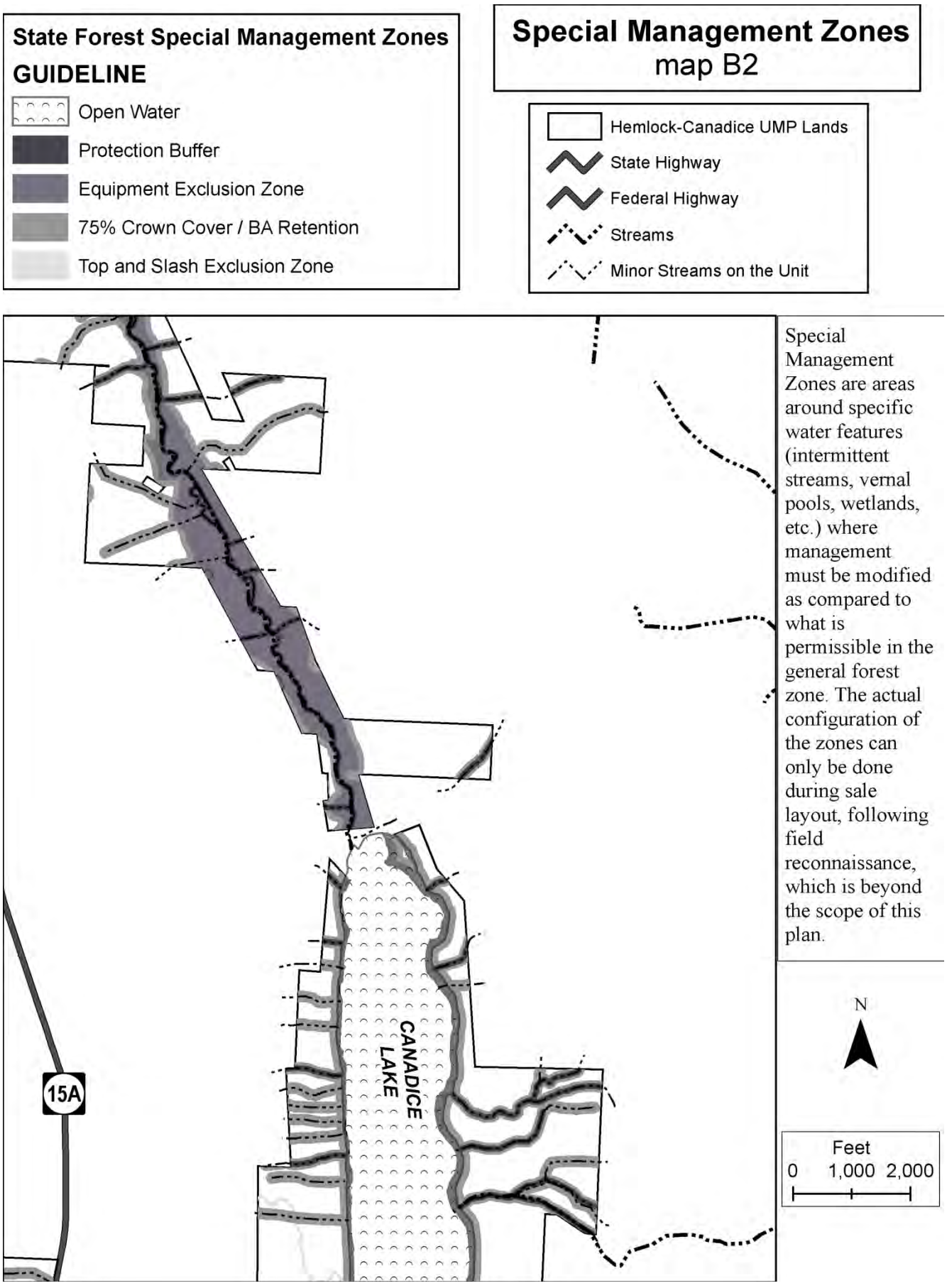


Special Management Zones

Computer generated location of the Special Management Zones, for more information see pages 39 and 81.




State Forest Special Management Zones
GUIDELINE
Open Water
Protection Buffer
Equipment Exclusion Zone
75% Crown Cover / BA Retention
Top and Slash Exclusion Zone
Special Management Zones
map B1
Hemlock-Canadice UMP Lands
State Highway
Federal Highway
Streams
Minor Streams on the Unit
HEMLOCK LAKE
15A
Special Management Zones are areas around specific water features (intermittent streams, vernal pools, wetlands, etc.) where management must be modified as compared to what is permissible in the general forest zone. The actual configuration of the zones can only be done during sale layout, following field reconnaissance, which is beyond the scope of this plan.
N
Feet
0 1,000 2,000

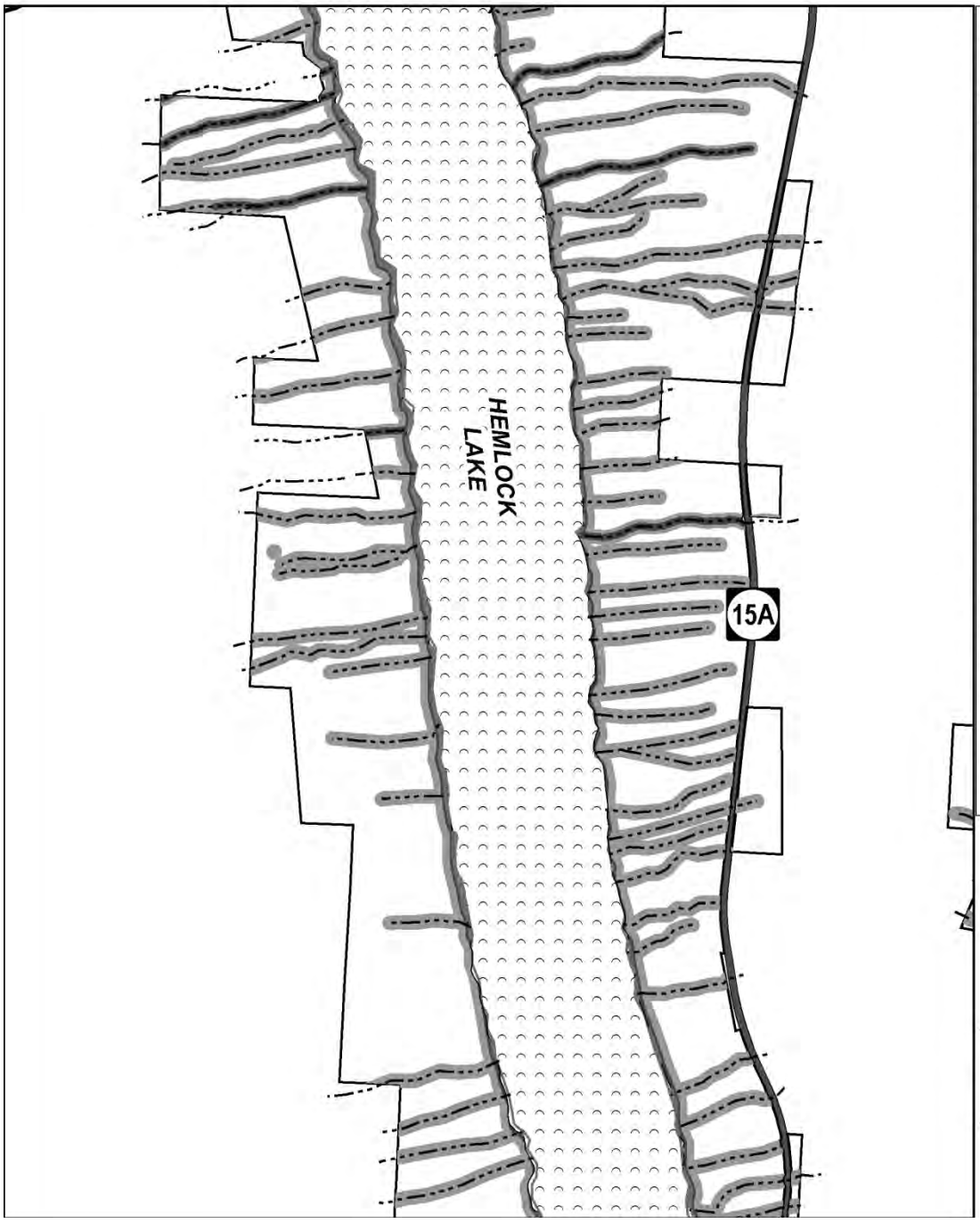

State Forest Special Management Zones
GUIDELINE
Open Water
Protection Buffer
Equipment Exclusion Zone
75% Crown Cover / BA Retention
Top and Slash Exclusion Zone
Special Management Zones
map B2
Hemlock-Canadice UMP Lands
State Highway
Federal Highway
Streams
Minor Streams on the Unit
Special Management Zones are areas around specific water features (intermittent streams, vernal pools, wetlands, etc.) where management must be modified as compared to what is permissible in the general forest zone. The actual configuration of the zones can only be done during sale layout, following field reconnaissance, which is beyond the scope of this plan.
CANADICE LAKE
15A
N
Feet
0 1,000 2,000

State Forest Special Management Zones
GUIDELINE

- Open Water
- Protection Buffer
- Equipment Exclusion Zone
- 75% Crown Cover / BA Retention
- Top and Slash Exclusion Zone

Special Management Zones
map C1

- Hemlock-Canadice UMP Lands
- State Highway
- Federal Highway
- Streams
- Minor Streams on the Unit



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N

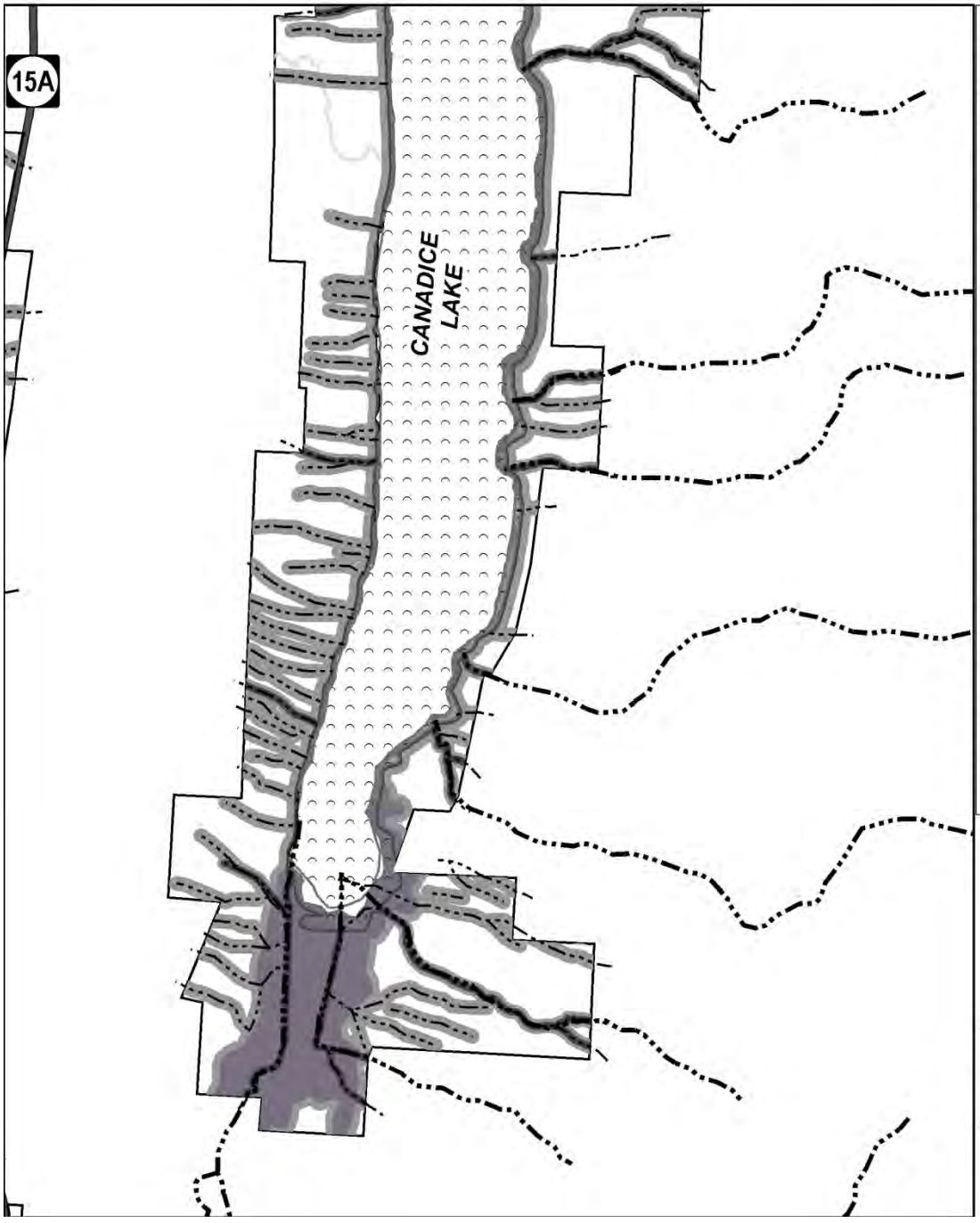
Feet
0 1,000 2,000

State Forest Special Management Zones
GUIDELINE

- Open Water
- Protection Buffer
- Equipment Exclusion Zone
- 75% Crown Cover / BA Retention
- Top and Slash Exclusion Zone

Special Management Zones
map C2

- Hemlock-Canadice UMP Lands
- State Highway
- Federal Highway
- Streams
- Minor Streams on the Unit



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N

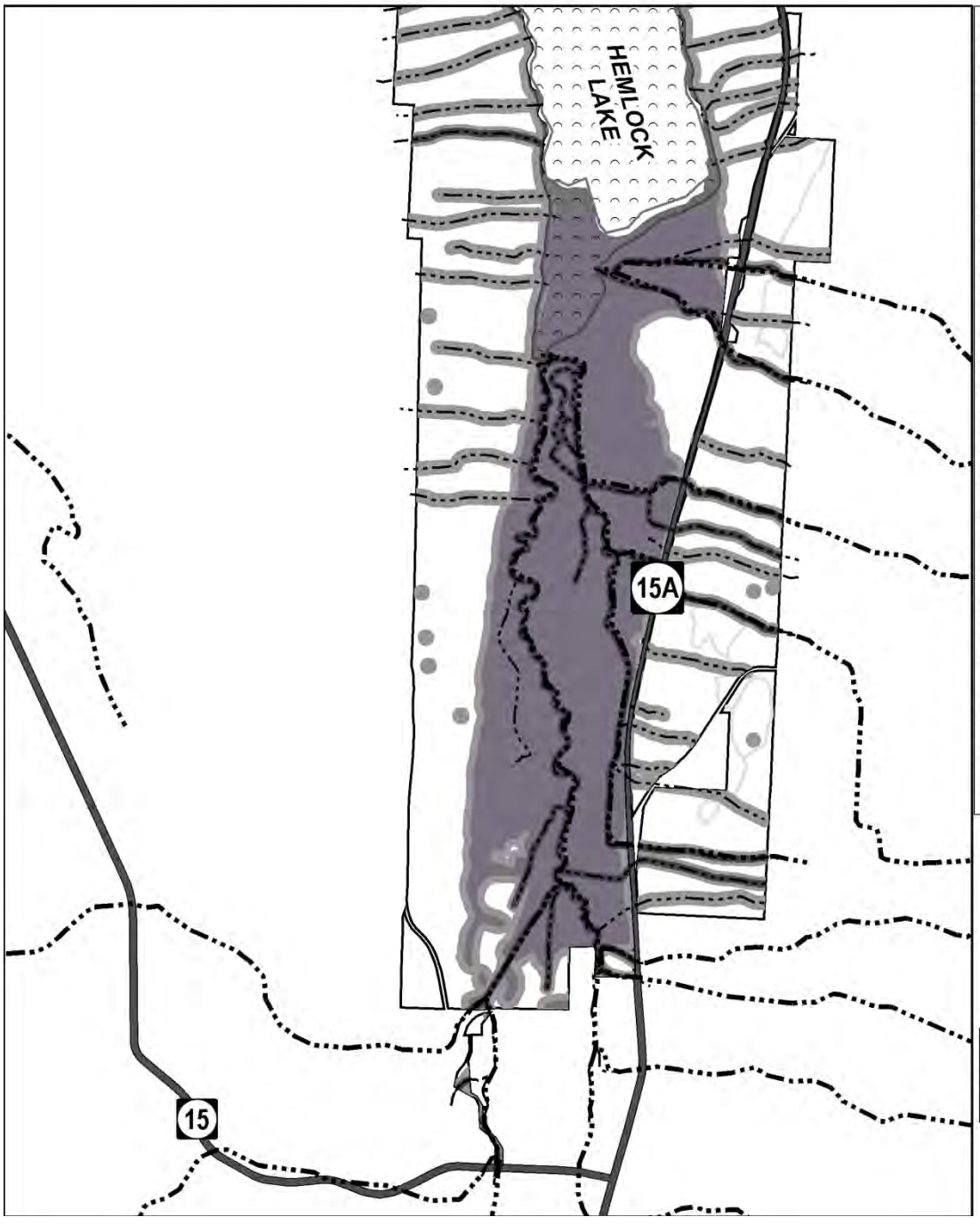
Feet
0 1,000 2,000

State Forest Special Management Zones
GUIDELINE

- Open Water
- Protection Buffer
- Equipment Exclusion Zone
- 75% Crown Cover / BA Retention
- Top and Slash Exclusion Zone

Special Management Zones
map D1

- Hemlock-Canadice UMP Lands
- State Highway
- Federal Highway
- Streams
- Minor Streams on the Unit



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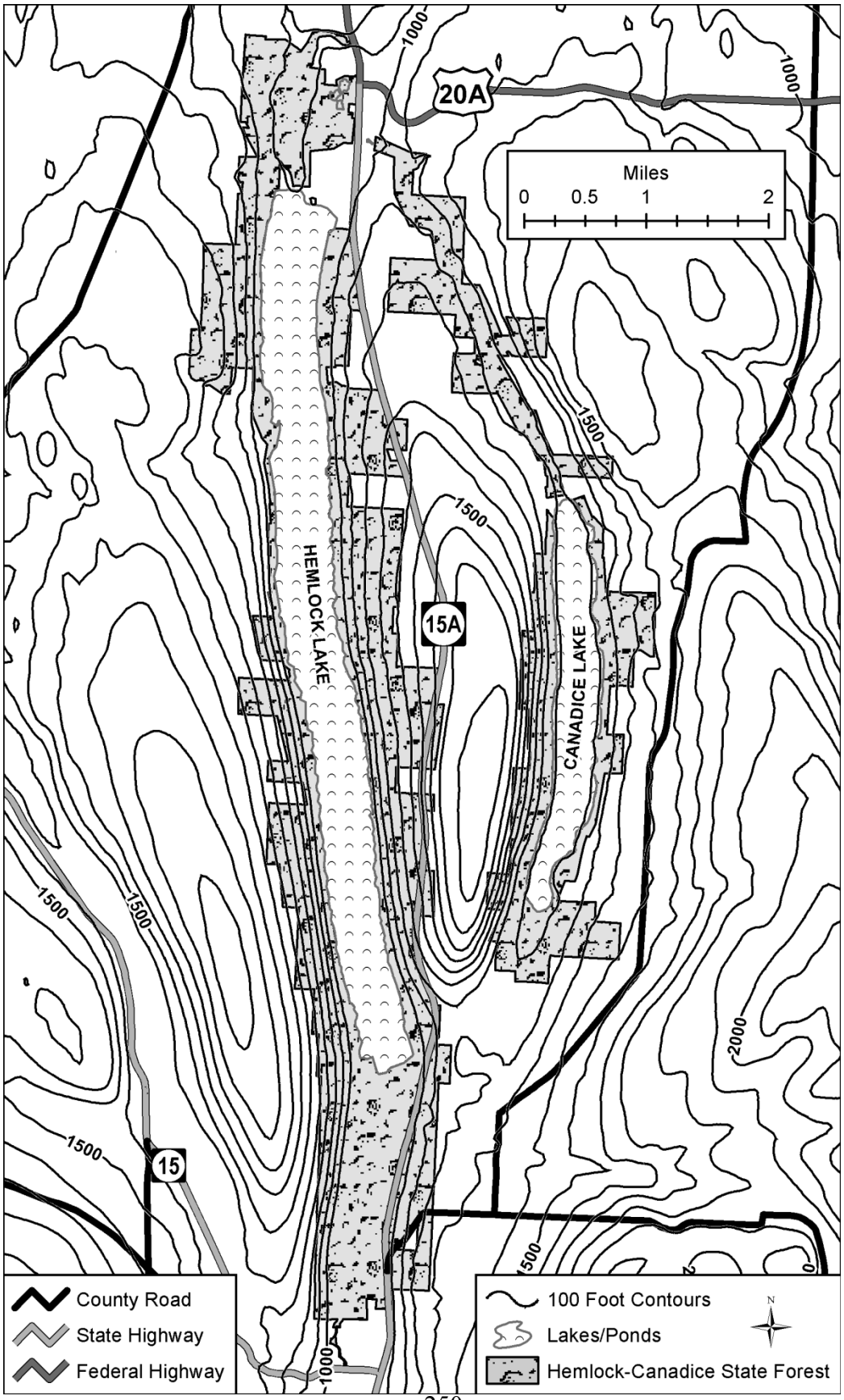
N

Feet
0 1,000 2,000

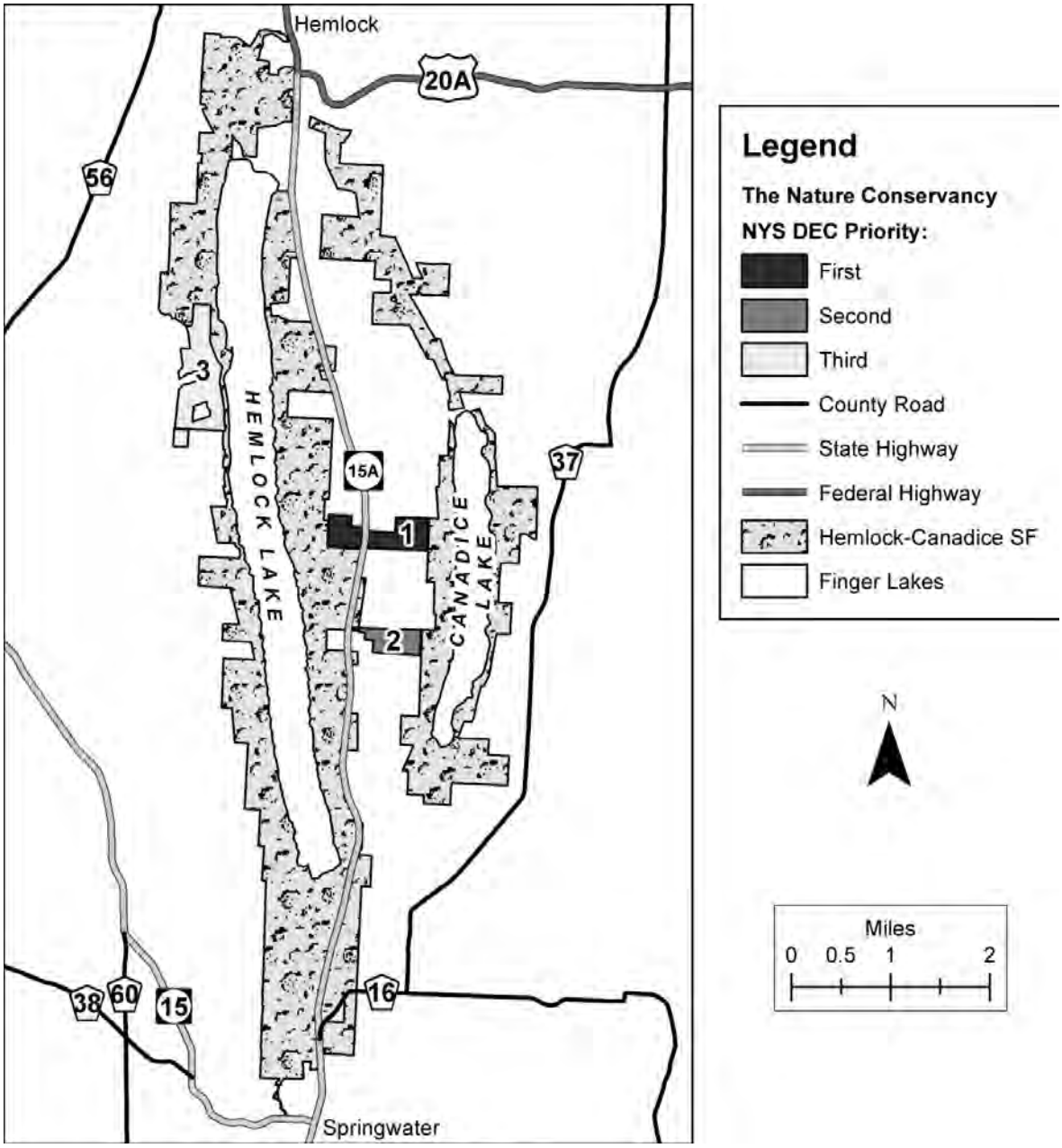
Contour Lines



Land Acquisition from The Nature Conservancy

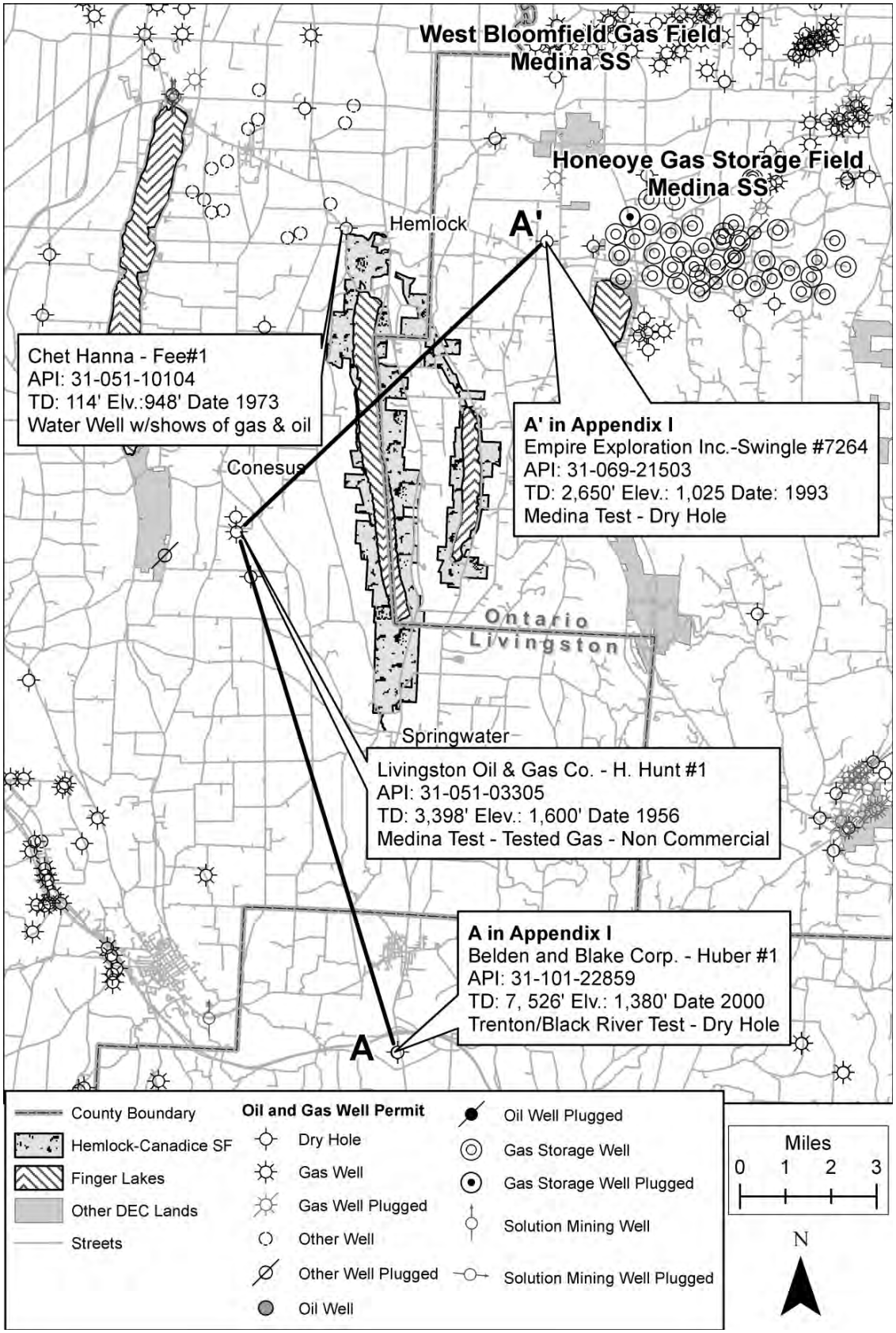
This map shows NYS DEC's land acquisition priorities for the adjoining properties that are owned by The Nature Conservancy. They were one of NYS DEC's partners in the acquisition of Hemlock-Canadice State Forest from the City of Rochester. The Nature Conservancy owns significant acreages around the outside of the State Forest, and it seems reasonable to assume that at least some of this property might be offered to the state for acquisition at some point in this planning period.

NYS DEC will consider parcels if they; they improve access; consolidate public ownership by eliminating in holdings; enhance recreational opportunity; protect significant ecological area, especially within Forest Matrix Blocks; are scenically important; contain threatened or endangered species; are of exceptional historical or cultural importance; improve watershed protection; or resolve other issues. It should be clearly understood that the NYS DEC intends to acquire these parcels only from willing sellers as funding becomes available. (See Land Acquisition, page 113)



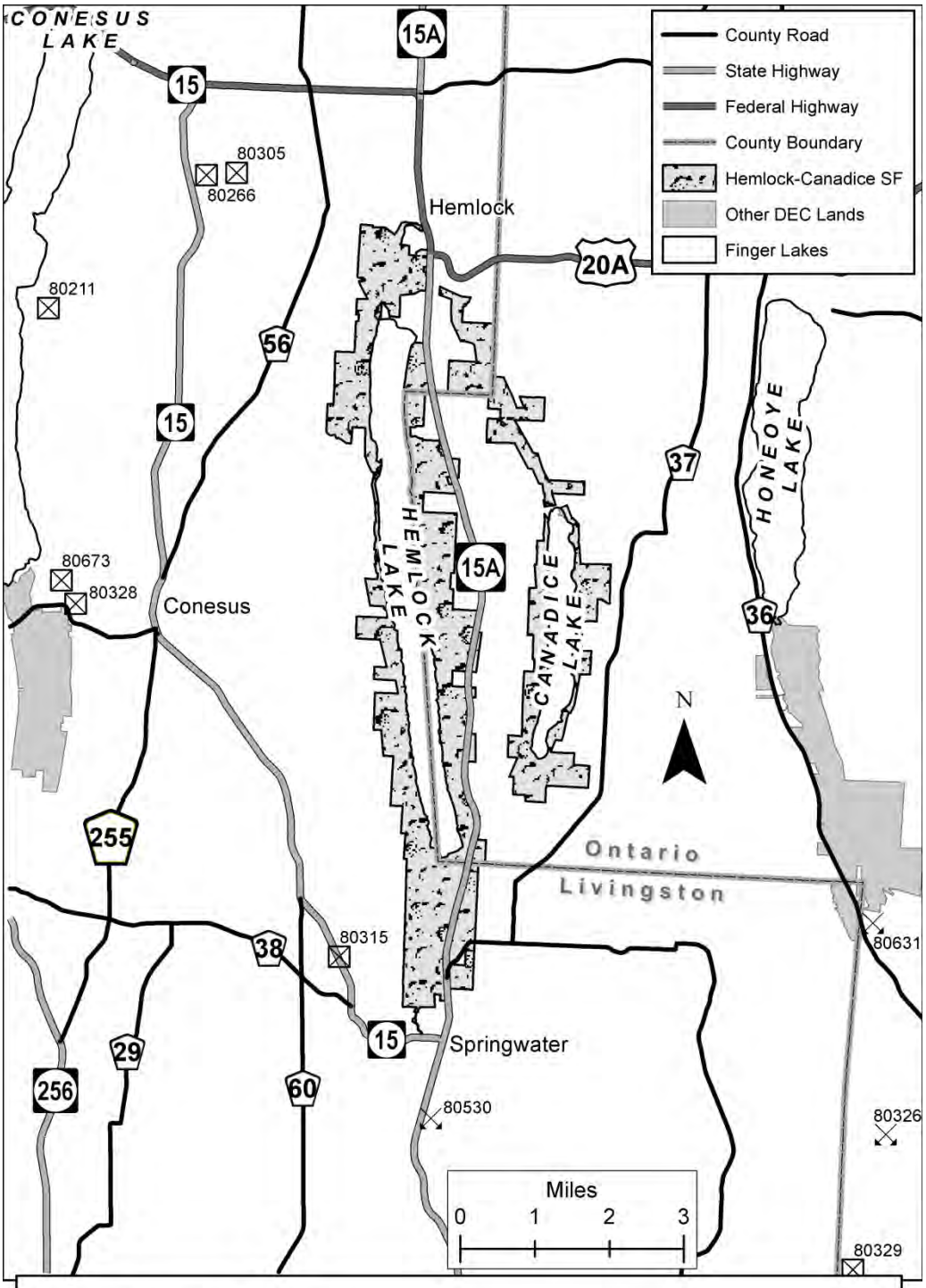
Geology – Oil, Gas, and Solution Mining Map

See also Appendix I: Bedrock Cross Section, and Mineral Resources.



Geology - Sand, Gravel and Other Mine Locations

See also Mining section on page 27.

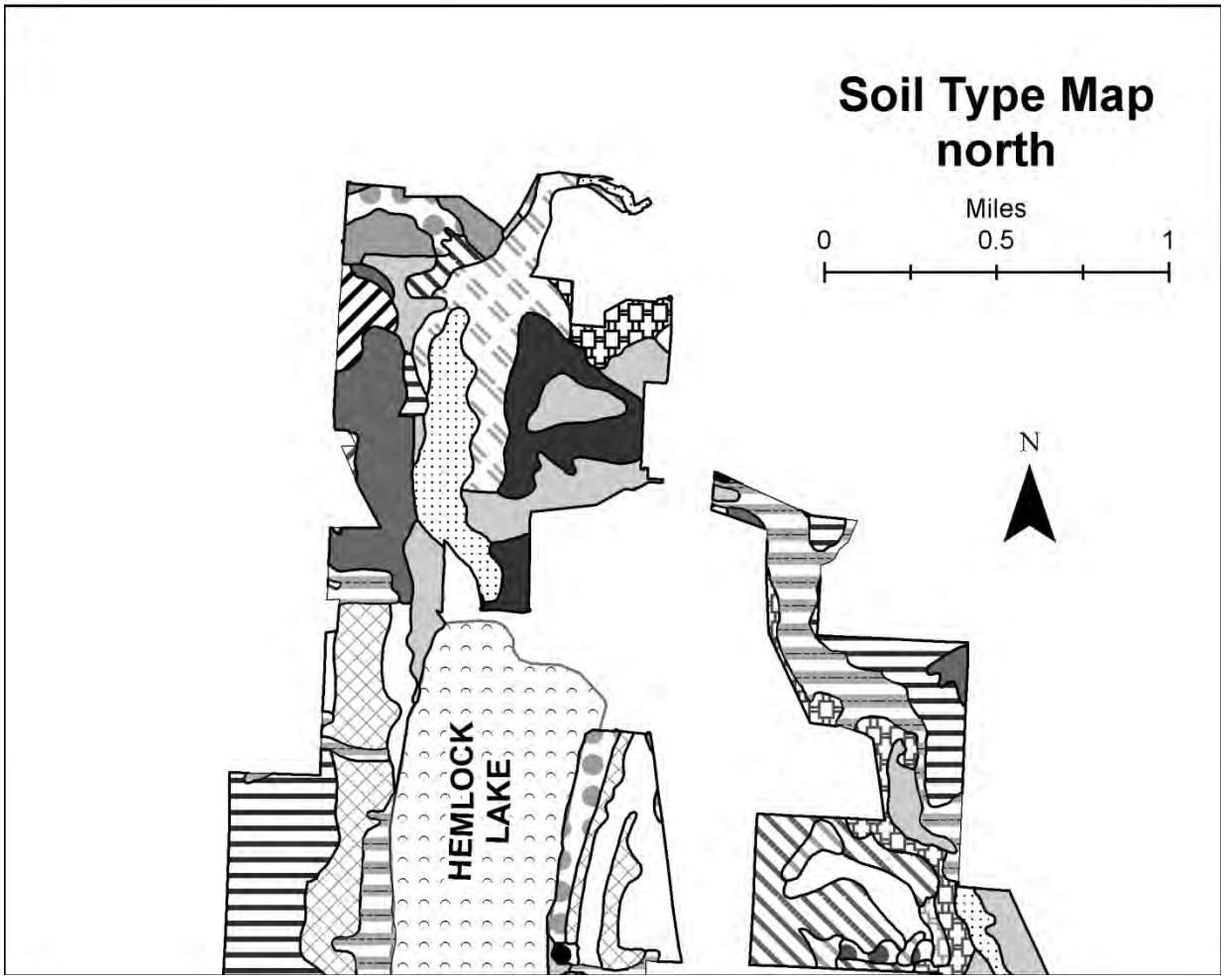


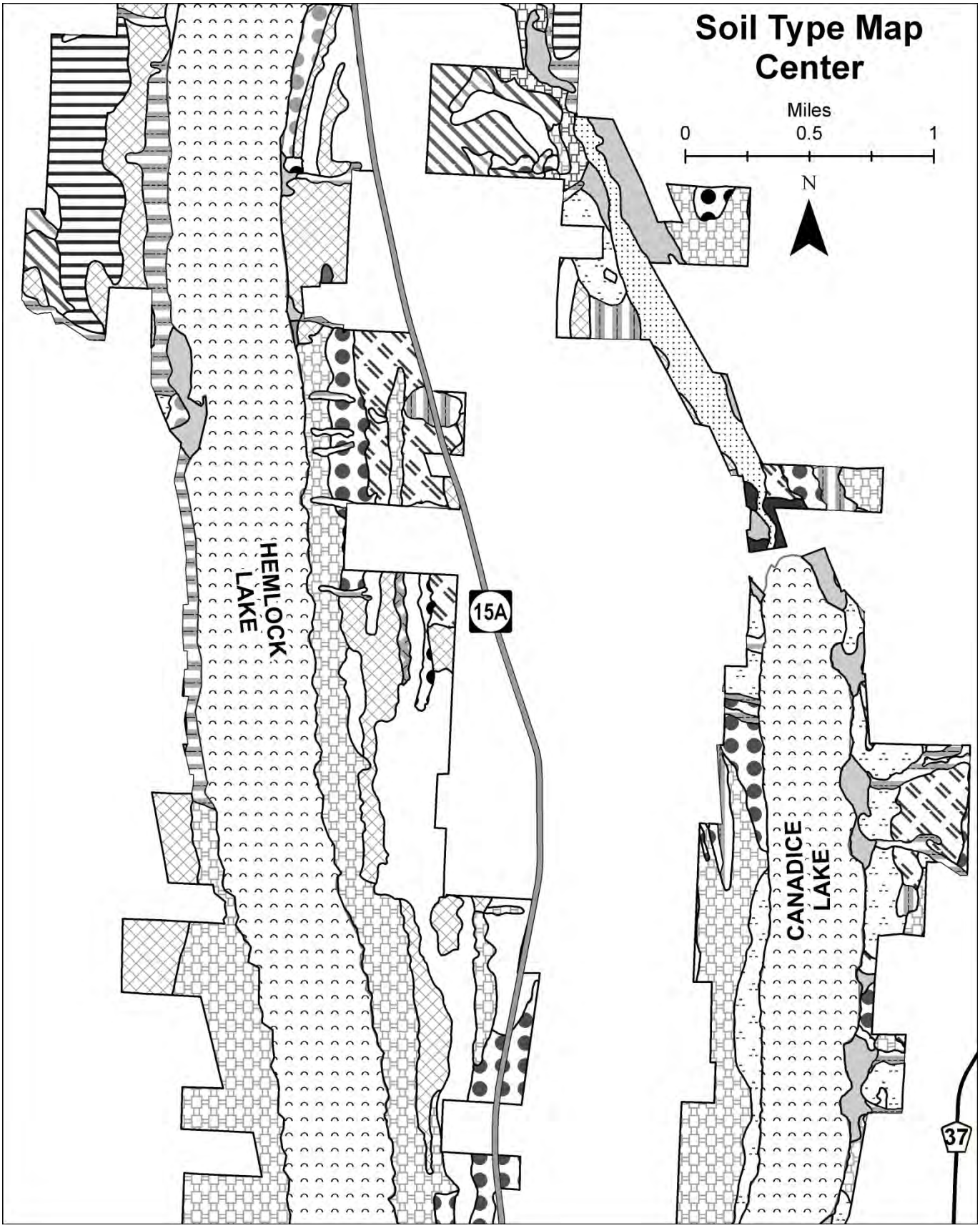
Soil Maps

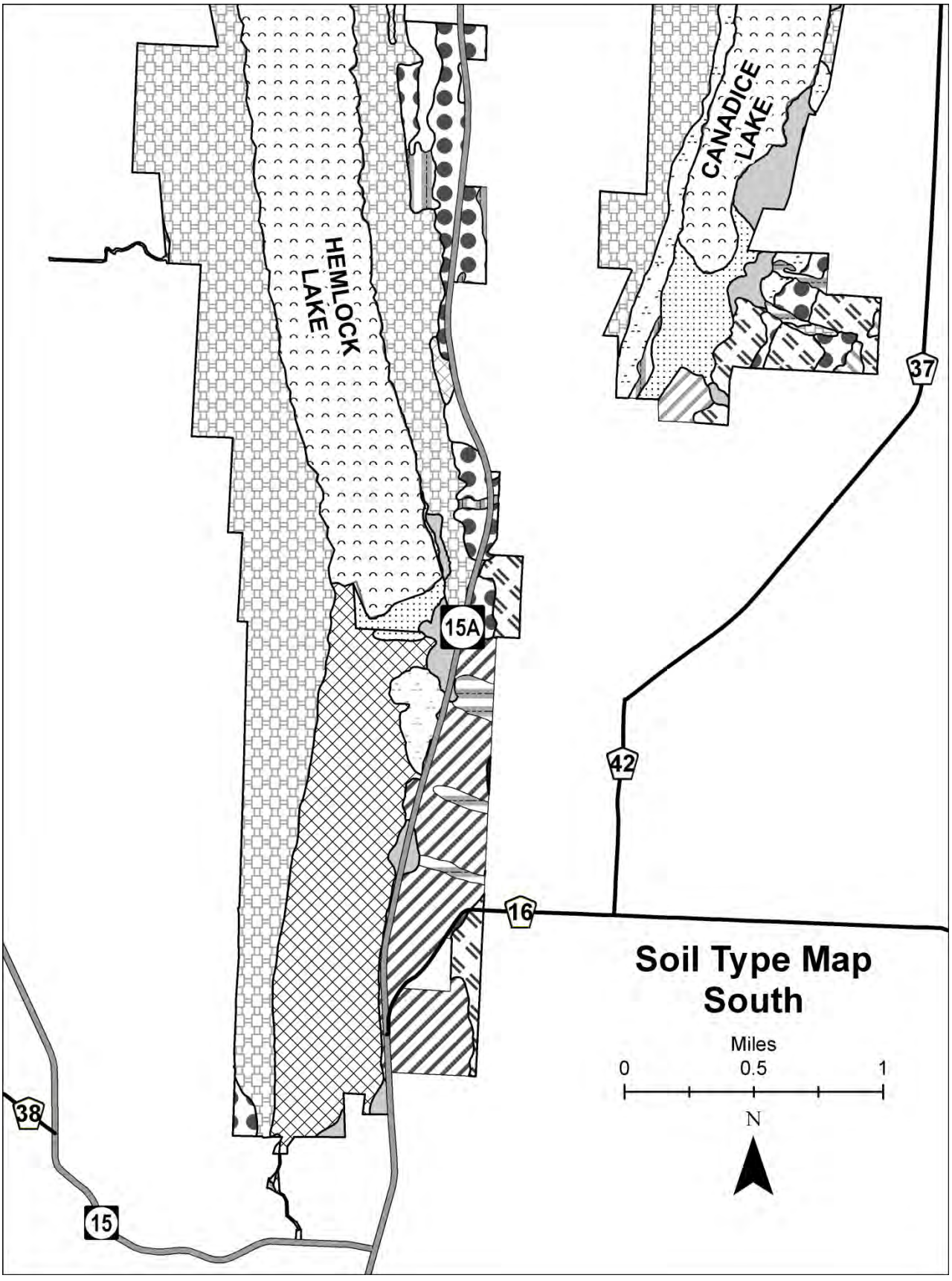
To make these maps easier to read, the following soil type maps have been greatly simplified. For greater detail and information please look online at http://soildatamart.nrcs.usda.gov or contact the Livingston or Ontario NRCS offices. See also the Soils section on page 23.

Key - for all the following soil type maps:

Soil Type:		
Allis	Erie channery	Mardin channery
Arkport	Fulton	Odessa
Aurora	Holly	Retsof
Braceville	Honeoye	Toledo
Caneadea	Hornell	Volusia
Canfield	Lakemont	Water
Cazenovia	Langford	Wayland
Chenango	Lansing	Woostern, Bath, and Valois soils
Chippewa	Lordstown	Steep ledgy broken undifferentiated land
	Manlius shaly	Alluvial soils, undifferentiated




Soil Type Map
Center
Miles
0
0.5
1
N
HEMLOCK
LAKE
15A
CANADICE
LAKE
37


HEMLOCK LAKE
CANADICE LAKE
15A
37
42
16
38
15
Soil Type Map
South
Miles
0
0.5
1
N

For additional information contact:

NYS DEC
State Land Management
7291 Coon Rd
Bath, NY 14810

607-776-2165

www.dec.ny.gov

R8.UMP@dec.ny.gov

This plan will be located at: www.dec.ny.gov/lands/68822.html