New York State
Department of Environmental Conservation

Division of Lands & Forests

BROOME STATE FOREST
UNIT MANAGEMENT PLAN

FINAL

Broome County Towns of Sanford, Windsor, Vestal and Kirkwood
and the Tioga County Town of Owego

July 2006

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PREFACE

The Division of Lands & Forests within the New York State Department of Environmental Conservation (the Department) is responsible for the management of certain public lands in New York State including all of the State forests. It is not practical to develop a separate management plan for each, individual State forest. Instead, the forests are grouped into planning units. A planning unit considers the State lands that share close geographic proximity and common natural resource characteristics. The written plan for a unit is called a Unit Management Plan . This plan addresses eight State forests located in the southern and eastern portions of Broome County.

It is the policy of the Department to manage State lands for **multiple use*** to serve the People of New York State. This Unit Management Plan 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 years, with a review and update due in 5 years. 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. This management will ensure the sustainability, biological improvement, and protection of the Unit's ecosystems, as well as optimize the many benefits to the public that these State forests provide.

Article 9, Titles 5 and 7, of the NYS Environmental Conservation Law (ECL) authorizes the Department to provide for the management of lands acquired outside of the Adirondack and Catskill Parks. Management, as defined by these laws, includes watershed protection, the production of timber and other forest products, recreational uses, and kindred purposes. The Draft State Forest Land Master Plan provides the overall direction and framework for meeting these legal mandates. The Broome State Forests plan must conform to the objectives, guidelines, and policies set forth in the Master Plan.

These forests are part of a larger landscape, and so, the effects of each proposed action will be considered from this perspective. This plan is also intended to serve as an educational resource.

Six public meetings regarding State Forest management were held in the Broome County area during the past seven years. Two of the meetings were held in the village of Deposit for the Treaty Line Unit Management Plan and two were held in Johnson City for the Draft Region 7 Recreation Master Plan. In July of 2005, a public meeting was held in Windsor following the publication of the Draft Broome State Forests Unit Management Plan. In August of 2005, a public meeting was held in Vestal regarding oil and gas leasing at the Tracy Creek State Forest. Input received at these meetings was used to shape the management direction for the Broome State Forests. The Broome State Forests Unit Management Plan has been written to complement the Draft Region 7 Recreation Master Plan as well as other Unit Management Plans in the region.

* Highlighted (**bold**) terms are defined in the Glossary.

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HISTORICAL BACKGROUND INFORMATION

A. State Forest History.

The 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 the woodlands were cleared for cultivation and pasture.

Early farming efforts met with limited success. As the less fertile soils proved to be unproductive, farms were abandoned and settlement was attempted elsewhere. This set the stage for vegetative succession and new forests of young saplings began to occupy the ground once cleared.

The State Reforestation Law of 1929 and the Hewitt Amendment (of the NYS Constitution) of 1931 set forth the legislation which authorized the Conservation Department to acquire land by gift or purchase for reforestation areas. This legislation was used to purchase the Broome-Tioga Reforestation Area #1, as well as Broome Reforestation Areas # 3, 4, 5, 6, 7, 8 and 9. 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 Environmental Conservation Law.
In 1930, Forest Districts were established and the tasks of land acquisition and reforestation were started. Shortly after his inauguration in 1933, President Franklin Roosevelt signed legislation authorizing the Civilian Conservation Corps program. Under the supervision of Army personnel, men between the ages of 18 and 26 were employed to plant trees, construct ponds, bridges, and roads, as well as other forest improvement activities. Thousands of young men were assigned to plant millions of trees on the newly acquired State forests. Most of the plantations of red pine and Norway spruce on the forests of this Unit were planted in the 1930's by the CCC.

During the war years of 1941-1945, very little was accomplished on the reforestation areas. Plans for further planting, construction, facility maintenance, and similar tasks had to be curtailed. However, through postwar funding, conservation projects once again received needed attention. The Park and Recreation Land Acquisition Act of 1960 allowed for the acquisition of many additional State forests, including Broome Reforestation Areas # 8 and 9. The Environmental Quality Bond Acts of 1972 and 1986 also contained provisions for the acquisition of State forest lands. This funding has allowed for additional acquisitions of inholdings or parcels adjacent to existing State forests. All of these lands were acquired for the conservation and development of natural resources, including the preservation of scenic areas, watershed protection, forestry, and recreation.

In 1970, the New York State Department of Environmental Conservation (DEC) was established. This new agency joined the mission of the old Conservation Department with the missions of various State environmental quality bureaus. The DEC's Division of Lands & Forests is now responsible for the management and stewardship of the State forests.

New York State totals 30 million acres. The State-owned Forest Preserves in the Adirondack and Catskill Parks contain nearly 3 million acres, or 10 percent of the State's land area. These lands are to be forever kept by the State as wild forest lands. No timber may be cut from the Preserves.

State forests outside of the Adirondack and Catskill Preserves total nearly 700,000 acres. These lands are managed for a wide variety of purposes such as timber production, hiking, skiing, fishing, trapping, and hunting. All State forests are of tremendous importance economically and to the health and well-being of the People of the State.

B. Local History.

The first inhabitants of this land were the Native Americans, specifically the Iroquois. It is believed that they formed the Iroquois Confederacy or the "League of the Iroquois" in the middle of the 15th century as a means of maintaining peace between the nations, and each member nation was assigned a designated territory. The five nations of the League were the Onondagas, the Mohawks, the Senecas, the Cayugas, and the Oneidas. In 1712, the Tuscaroras were admitted to the League of the Iroquois as the "sixth nation" and they were assigned to a territory which included present day Broome county. One of the major settlements in this area was called Onaquaga and was located just north of present day Windsor, along the Susquehanna River. Others included Otseningo, located just north of Binghamton, and Ochenang, located nearer to present day Binghamton. There were smaller settlements at Chugnuts, Castle Creek and Vestal.

The first recorded European settlement in the area now known as Broome County was a trading post and mission established by the Church of England near the present village of Windsor around 1750.

On November 5, 1768, one of the greatest real estate transfers in history was signed at Fort Stanwix (present day Rome, NY). This treaty established a line of division between the English Territory and the Indian Territory. For the sum of $50,000, the land east and south of the treaty line was deeded from the Native Americans to King George III. One portion of the line was located near the present border between Broome and Delaware counties.

In 1779, the Sullivan-Clinton campaign, or Sullivan's March, was carried out for the purpose of opening the frontier to European settlement and cutting off supplies to the British troops. This military campaign resulted in the destruction of many Native American villages and marked the last year that this land would be occupied primarily by Native Americans. The significance of the Fort Stanwix Treaty Line had been greatly diminished. Lieutenant Erkuies Beatty, a soldier in Sullivan's March, reached the site of present day Binghamton on August 18, 1779 and described the land as "very rich and well-timbered country."

Many of the early settlers in this land were veteran's of Sullivan's army who, impressed by the country seen during the Revolutionary War, came back to make their homes here.

In 1787, a compromise to the land disputes between New York and Massachusetts became known as the Boston Purchase. This included much of the eastern portion of Broome county, and a small portion of what is now the City of Binghamton. After the Revolutionary War, land was sold to land speculators such as William Bingham. Mr. Bingham, along with two other partners, was granted a patent for a tract of land comprised of 30,600 acres from the State of New York. This land included parts of the present day towns of Union, Vestal, Binghamton, Conklin, and Kirkwood.

Beginning in the year 1800, a system of roadways was established in the area. Perhaps the first road to penetrate the wilderness in this part of the country was one which followed the course of the Susquehanna River, along its northern banks in a westerly direction, to a point now known as Brandywine Creek. The Chenango Canal was built between 1833 and 1837 at a cost of $1,737,703. The canal was an important transportation corridor for moving products, including lumber, to and from the Broome County area. In 1835, work was begun to build a railroad through Broome County. By 1875, many railroads had been established in New York State causing the Chenango Canal to be closed as an artery of travel.
Broome County was founded on March 28, 1806. It is named after John Broome, who was the Lieutenant Governor of New York. By 1920, the current political boundaries of 16 towns, seven villages and the City of Binghamton were established in the county.

The following information and quotes have been obtained from the historic reference, Binghamton and Broome County: A History (1924). They are intended to provide an early-era view of the landscape within Broome County and to emphasize the historic importance of the forests in this area.

> "The forest trees of Broome county...originally covered every part of this territory. Many of the original forests have quite disappeared, although here and there may still be found tracts of good hemlock and maple, with now and then a small area of second growth pine. The question of reforestation is one which now (1924) occupies the attention of dwellers of the county."
>
> In reference to the Town of Union, "By the time the New York & Erie Railroad had passed through Union (1849), the timber had been for the most part removed and the settlers were directing their attention to farming."
>
> In April of 1793, the settlers of the Town of Union voted to pay a bounty of, "two pounds for every grown wolf and panther killed in the township, and 1 pound for every young animal of the same species."
>
> In reference to the Hamlet of Tracy Creek, "The Osincups and the Cambells, at a very early date, settled and carried on a lumbering business, the latter probably having built the first dwelling in the village."

Lumbering had begun in many areas of Broome County in the late 1700's. From 1800 to 1850, lumbering was the leading industry in the county. By 1875, this industry was beginning to decline due to the depletion of the forest resources in the area. By the turn of the 20th century, most of the land had been cleared of forest cover and lumbering had been reduced to a minor industry. Some of the first sawmills built included Nathan Lane's mill (prior to 1800) in the Town of Windsor and Nathan Dean's mill (1791) on Ouaquaga Creek near Deposit. By 1835, there were 15 sawmills operating in the Town of Windsor, 13 mills in the Town of Conklin, and nearly a dozen mills in each of the other townships. By 1838, sawmills were reported at one mile intervals along the West Branch Delaware River. Much of the lumber produced in the Broome county area was loaded onto rafts and floated down the Susquehanna or Delaware Rivers to markets of metropolitan areas such as Philadelphia. In the year 1875 alone, more than 3,000 rafts were floated down the Delaware River.

From a few settlers in 1790, the population of the county grew to 22,339 in 1840. By 1960, the population of Broome County was 212,661. The 2000 census for Broome County and the City of Binghamton lists the populations, respectively, as 212,160 and 53,008.

Binghamton is the largest city in Broome County and it is located at the junction of three main highway systems. Interstate 81 crosses the county from north to south, connecting to cities such as Syracuse and Scranton. Route 17, which is currently being upgraded to I-86, crosses the county from east to west, connecting to cities such as Middletown and Elmira. Interstate 88 connects Binghamton with the State capitol. The railroad system in Broome County is well established and continues to provide for the transportation of products through the county. Commercial airline service is available at the Broome County Airport.

The 1920 agricultural census lists 3,594 farms in Broome County. These farmlands comprised nearly 1/3 of the county acreage, or 133,807 acres. The 1960's probably represented the height of agriculture in the county. In 1964, about 46% of the county land, or 210,846 acres, was being utilized as farmland. Today, there are significantly fewer farms. The 1997 agricultural census shows a total of 511 farms in the county, covering a total of 85,804 acres. The amount of forest land in the county has increased greatly since the early part of the 20th century. In 1993, 57% of Broome county, or 260,600 acres, was identified as forest land.

During the past 20 years on several occasions, logging has stirred controversy in the county. Many concerned residents have expressed their desire to preserve the character of forests in both public and private ownership. Ordinances regulating timber harvesting were enacted in the Towns of Barker and Vestal, though Barker's

has recently been rescinded. The Vestal Ordinance requires buffer strips where special logging restrictions apply. Such buffers are required along streams, roads and adjacent land ownerships. Proposals to harvest timber on County Park land were withdrawn after public comments in opposition were received. In 1996, a proposal by Broome County to harvest timber at the Aqua-Terra property generated much concern among county residents. As a result, the County formed the Aqua-Terra Advisory Committee to seek public input and make recommendations to the County Legislature regarding the vision and intended uses for the park. Passive recreational uses such as birdwatching, cross-country skiing, and picnicking were identified as the primary ownership goals. To preserve forest aesthetics, the proposed timber sale was cancelled. Forest management decisions continue to be an important issue in Broome County, especially when they relate to public lands.

The majority of the lands comprising Broome-Tioga #1 and Broome State Forests 3 thru 7 were acquired by New York State between 1933 and 1941. Nearly all of the lands now known as Broome 8 & 9 were acquired in 1964. The following table lists the acquisitions for each of the eight State forests in the Unit.

TABLE I. LAND ACQUISITION HISTORY - BROOME STATE FORESTS UNIT

Forest	Year of State Acquisition	Acres Acquired	Names of Previous Owners
Broome #3	1932	506.88	Thomas Beavan
	1997	30.17	Melious
	1998	3.17	Miller
Broome #4	1932	735.5	George Alger, G. Havens, L. J. Collins, & J. M. Quick
	1933	157.86	R. A. Siefring
Broome #5	1933	533.03	H. Decker, Estella Underhill, E.&F. Colsten, C. Blatchley, & Isabelle Roberts
Broome #6	1937	533.28	Franklin L. Goodenough
Broome #7	1940	530.57	Ray T. Cass, Harry Salisbury, Homer Hare, & Edgar Fuller
	1941	237.27	Lester J. Skellett
	1981	0.37	Westfall
	1989	23.13	Bonadio
Broome #8	1964	809.63	Elizabeth Wilson Graff
	1979	2.04	Gelatt
Broome #9	1964	758.54	Elizabeth Wilson Graff
Broome/Tioga #1	1933	512.31	Noyes, Lainhart, Krom, Glenn, Moffitt, & Fish

A. Geographical and Geological Information

The Broome State Forests Unit is located in the towns of Vestal, Kirkwood, Windsor, and Sanford within Broome County and in the town of Owego in Tioga County. Most of the State Forest land within the Unit is located south of Route 17, near the New York State - Pennsylvania border. Two of the State Forest lands are located north of Route 17, but still within 9 miles of the New York State - Pennsylvania boundary line.

The Unit is comprised of eight State forests:

Reforestation Number	Common Name	Acres
Broome Reforestation Area #3	"Hawkin's Pond State Forest"	540.22
Broome Reforestation Area #4	"Marsh Pond State Forest"	893.36
Broome Reforestation Area #5	"Skyline Drive State Forest"	533.03
Broome Reforestation Area #6	"Cascade Valley State Forest"	533.28
Broome Reforestation Area #7	"Beaver Pond State Forest"	791.34
Broome Reforestation Area #8	"Whittaker Swamp State Forest"	811.67
Broome Reforestation Area #9	"Cat Hollow State Forest"	758.54
Broome-Tioga Reforestation Area #1	"Tracy Creek State Forest"	512.31
	Total Acreage:	**5,373.75**

Approximately 5,294 acres of these forests are located in Broome County and 80 acres are located in Tioga County. The total area of Broome County is 452,367 acres. Therefore, the acreage of State forests addressed in this Plan is 1.17% of Broome County's total acreage. Much of the following geographic information is specific to Broome County.

Elevations on these State Forests range from 1170 to 2010 feet. The low elevation is at the northern end of Broome #5 and the high elevation is at the northern end of Broome #7. The surrounding topography within Broome County has a low elevation of about 800 feet near the Susquehanna River at the far west end of the county and a high elevation of 2085 feet at Slawson peak in the far east end of the county. The elevations found on the State Forest lands within the unit are relatively high in comparison with the elevations of other lands in Broome County. The elevation in the southern part of the county, where most of the State Forests are located, is consistently several hundred feet higher than the elevation in the northern part of the county due to the erosion-resistant sandstone that caps the hills in the area.

The Unit is located within two separate, major watersheds. Broome-Tioga #1, Broome #3, Broome #5, and Broome #6 all lie within the northern section of the Chesapeake Bay watershed. All of the watercourses on these lands flow into the Susquehanna River, which in turn flows to the Chesapeake Bay. Broome #7, Broome #8, and Broome #9 are located within the Delaware Basin watershed. All of the watercourses on these forests flow into the West Branch of the Delaware River. This river enters the Delaware Bay on the east coast, just north of the Chesapeake Bay. Broome #4 actually lies within both watersheds, with the watershed boundary running along the south and east shores of Marsh Pond. This pond has the unusual

feature of two separate outflows. The primary outflow, in the northwest corner of the pond, flows into the Chesapeake Bay watershed. The second outflow, which is intermittent, flows into the Delaware Basin watershed. The major rivers within Broome County are the Susquehanna, the Chenango, and the Tioughnioga. The West Branch of the Delaware River forms a portion of the county boundary in the southeastern section, near Deposit. The Otselic River enters the northern part of the county. Other large streams are Nanticoke Creek, Choconut Creek, Snake Creek, Little Snake Creek, and Oquaga Creek.
Broome County has a humid, continental type of climate. The conditions are usually cold & dry when the atmospheric flow is from the north or northwest. However, it is usually warm and occasionally humid when the flow is from the south or southwest. The climate of the county favors a considerable amount of cloudiness. In fact, on average, there are 215 cloudy days each year in Broome County. The Great Lakes are too distant to have a significant effect on the climate of this area. A temperature of 90°F or higher can be expected on an average of 2 to 4 days each year. A temperature of 0°F or lower may occur on 6 to 10 days each winter. Freezing temperatures usually do not occur between May 5th and October 5th. The average annual precipitation within Broome County varies by as much as 4 inches. It ranges from about 36 inches per year in the southwestern section of the county to about 40 inches per year in the northeastern section. The precipitation is usually in the form of rain showers or thunderstorms during the warm season, and in the form of snow or freezing rain during the winter months. The average annual snowfall ranges are between 55 to 70 inches in the lower regions of the county and between 85 to 95 inches in the uplands. Occasionally, the combination of melting snow and heavy springtime rains can cause significant flooding in the river valleys of the county. Severe flooding has occurred in the years of 1935, 1936, 1940, 1942, 1948, 1964, 1972, 1979, 1983, 1986, 1993, and 1996. The prevailing winds are usually from the west. The wind speeds are generally mild, but severe thunderstorms and vigorous storm systems have caused property damage in the county. Tornados in Broome County are rare, but they have occurred as recently as 1998, when a tornado damaged several homes and woodlands in the southern and eastern portions of the county.

Most surface geology in the Allegheny Plateau of the 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. The retreat of these glaciers left behind numerous sedimentary deposits and surficial features; including elongated scour features. Some elongate scour features filled with water, creating ponds and small lakes, while others simply channeled the flow of water; creating river valleys that inundate the region today. The resulting surface geology is very similar across all of the State forests in this Unit. It consists of glacial till (clays and silts that were deposited beneath glacial ice) as the dominant deposit in the area. Bedrock outcrops and subcrops of Upper Devonian shales, siltstones and intermittent limestones of the West Falls Group are located intermittently on the sides and crests of ridges and hills in these areas. These bedrock exposures are most likely due to the erosion of overlying glacial till. 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.*

Bedrock underlying the Allegheny Plateau of the Southern Tier of New York is inclusive of sedimentary rock units deposited in association with ancient seas and their marine-fluvial-deltaic environments of deposition during the Cambrian (550-500 million years ago (mya)), Ordovician (500-430 mya), Silurian (430-400 mya) and Devonian (400-350 mya) Periods of the Paleozoic Era. Younger bedrock units deposited during the post-Devonian Periods (such as Mississippian and Pennsylvanian Periods) have been subsequently eroded away by erosional and glacial processes. Underlying the Paleozoic rocks are pre - Paleozoic Era rocks or Pre-Cambrian rocks generally considered to be composed of igneous and metamorphic rocks. These rocks are generally referred to as “basement” rocks. (See Appendix X, Stratigraphic Profile of Southwestern NY)

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 (1) degree or deepens 100 feet per each mile traveled to the south-southwest. The *Geologic map of New York - Finger Lakes Sheet #15, 1970*, depicts progressively older rock

units outcropping farther to the north, confirming the southerly dip of strata in the region. Lineament, faulting and anticlinal/synclinal structures in the region generally trend in a northeast to southwest direction. North-south trending faults have also been identified in the region. These structures are thought to be due to compressional stress and resulting strain associated with plate tectonics and the opening of the Atlantic Ocean Basin that began at the end of the Paleozoic Era. Structural reference is available at the *Preliminary Brittle Structures Map of New York, New York State Museum-Map and Chart Series No.31E, 1974*.
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 presence of rounded igneous and metamorphic clasts are indicative of past glacial activity transporting material into the region from the Canadian Shield to the north. On the higher hills in the southern and eastern portions of the county, depth to sandstone is less than 40 inches. Oquaga soils are dominant in these areas, but smaller areas of Lordstown, Arnot, Tuller, and the moderately shallow Mardin soils also occur. The Oquaga soil series is characterized by well-drained, strongly acid loamy soils that formed in medium-textured till. These soils are found on slopes, ranging from gentle to steep. The root zone in these soils consists mostly of the 20 to 40 inches of permeable soil over bedrock. In general, these soils are well-suited for forest production. More detailed information on the soils in this area can be obtained from the SOIL SURVEY of BROOME COUNTY, NEW YORK (USDA, 1971).

B. History of the Forest Cover and Tree Species Descriptions

Prior to settlement in the late 18th century, New York State was extensively forested. Large trees including American chestnut and white pine were common components of these forests. Throughout the 19th century, these forests were cleared for the use of the lumber and to raise agricultural crops on the land. Much of the cleared land, outside of the fertile river valleys, proved to be unsuccessful for farming. In the early 20th century, efforts were made to reforest these lands. Some areas were left to regenerate or reforest naturally, while other areas were planted. Many of the tree species planted were not native to this region including red pine, Norway spruce, Scotch pine, white spruce, and Japanese larch. The chestnut blight has led to the near extinction of American chestnut trees in the forests. The forests found in Broome County today contain several different species and the canopy structure is different from the virgin forests of the region. However, the forest cover is much more extensive today than it was during the early settlement period. The forest land area in New York has increased from 7 million acres in 1870 to over 18 million acres today.

The forests presently found in the eastern United States are generally defined as eastern deciduous forests. This major forest type is comprised of hundreds of tree species, most of them hardwoods. In order to further define the forest cover types found in specific regions of the eastern United States, the eastern deciduous forest type can be divided into several subcategories. The three subcategories that are found in New York State are the oak-hickory type, the spruce-fir type, and the maple-birch-beech type. The south-central area of New York State, where all of the Broome State forests are located, has the oak-hickory forest cover type. As the name indicates, this forest cover type consists of a high percentage of oak and hickory tree species. However, this is still a broad category, and there are many more specific forest cover types found within the forests of the Broome Unit. These include the northern hardwood type, the oak-pine type, the northern hardwood-hemlock type, and several types of plantation species, such as red pine and Norway spruce. These forest cover types are listed on page 36, and they are defined by their component tree species.

The term “forest cover type” refers to the type of tree or vegetation that dominates the site. However, many more species of plants and animals are found within the type. The interrelationship of these species is known as an ecological community. Three of the most prevalent ecological communities found on the forests of the Broome State Forests Unit are the Appalachian Oak-Hickory Forest, the Beech-Maple **Mesic** Forest, and the Hemlock-Northern Hardwood Forest. The following descriptions (edited) of these communities were developed by the New York State Natural Heritage Program.

1.) Appalachian Oak-Hickory Forest: a hardwood forest that occurs on well-drained sites, usually on ridge

tops, upper slopes, or south and west facing slopes. The soils are usually loams or sandy loams. The dominant trees include one or more of the following oaks: red oak, white oak, and black oak. Mixed with the oaks, usually at lower densities, are one or more of the following hickories: pignut, shagbark, and sweet pignut. Common associates are white ash, red maple and Eastern hop hornbeam. There is typically a sub-canopy stratum of small trees and tall shrubs including flowering dogwood, witch hazel, shadbush, and choke cherry. Common low shrubs include maple-leaf viburnum, blueberries, red raspberry, gray dogwood, and beaked hazelnut. The shrub layer and ground layer may be diverse. Characteristic herbs include wild sarsaparilla, false Solomon's seal, Pennsylvania sedge, tick-trefoil, black cohosh, rattlesnake root, white goldenrod, and hepatica. Characteristic animals include red-bellied woodpecker, whip-poor-will, and wild turkey.

2.) Beech-Maple Mesic Forest: a hardwood forest with sugar maple and beech co-dominant. These forests occur on moist, well-drained, usually acidic soils. Common associates are basswood, red maple, white ash, yellow birch, and Eastern hop hornbeam. There are relatively few shrubs and herbs. Characteristic small trees or tall shrubs are American hornbeam, striped maple, witch hazel, hobblebush, and alternate-leaf dogwood. Characteristic ground layer species are blue cohosh, christmas fern, jack-in-the-pulpit, white banebery, wild leek, wild ginger, false Solomon's seal, and bloodroot. There are many spring ephemerals which bloom before the canopy trees leaf out. Typically, there is also an abundance of tree seedlings, especially of sugar maple. Beech and sugar maple saplings are often the most abundant "shrubs" and small trees. Hemlock may be present at a low density. Characteristic birds include the American redstart, red-eyed vireo, ovenbird, black-throated blue warbler, least flycatcher, Acadian flycatcher, and red-bellied woodpecker.

3.) Hemlock-Northern Hardwood Forest: a mixed forest that typically occurs on middle to lower slopes of ravines, on cool, mid-elevation slopes, and on moist, well-drained sites at the margins of swamps. In any one stand, hemlock is co-dominant with any one to three of the following: beech, sugar maple, red maple, black cherry, white pine, yellow birch, black birch, red oak, and basswood. The relative cover of hemlock is quite variable, ranging from nearly pure stands in some steep ravines to as little as 20% of the canopy cover. The shrub layer may be sparse. Characteristic shrubs are hobblebush, maple-leaf viburnum, and raspberries. Canopy cover can be quite dense, resulting in low light intensities on the forest floor and hence a relatively sparse ground layer. Characteristic ground layer plants are Indian cucumber-root, Canada mayflower, shining clubmoss, common wood fern, mountain wood fern, Christmas fern, star flower, bellwort, common wood-sorrel, partridge berry, foamflower, round-leaf violet, twisted stalk, and purple trillium. In forests that have beech as a co-dominant, beech-drops is a common herb. Characteristic birds include wild turkey, pileated woodpecker, golden-crowned kinglet, black-throated green warbler, and Acadian flycatcher.

There are about 30 different tree species that are commonly found on the Broome State forests. Although additional species exist, such as American chestnut, American elm, and butternut, their occurrence is quite rare. Following is a list of the most common tree species along with some of their characteristics.

Native Hardwood Species

<u>Black Cherry</u>
Cherry wood is prized by furniture makers and it is the most valuable timber species in Broome County. It is shade intolerant, and the cherries are a valuable food for wildlife.

<u>White Ash</u>
Ash wood is used for baseball bats and furniture. Ash is dioecious, a single tree has either male pollen or female flowers, not both.

<u>American Beech</u>

Beech nuts are important to wildlife. Imported beech bark disease has killed many trees. This disease is described on page 20.

Basswood
This tree has relatively soft wood. The wood is often used for carving and moldings.

Red Maple
Also called "soft maple", it is very common in the Unit's forests. It has bright red fall foliage.

Sugar Maple
This tree has very high timber value and is used to produce syrup. Sugar maple or "hard maple" is also the official New York State tree.

Aspen (big tooth & quaking)
Aspen can sprout prolifically after cutting, creating dense wildlife nesting areas.

Northern Red Oak
This is the most commercially valuable oak timber species in Broome County. Acorns provide food for wildlife called "mast."

BlackOak
Black oak is not abundant in Broome County but it does occur in mixtures with other oak species near the Pennsylvania line.

White Oak
The water-tight wood of white oak is well-known for making wine barrels. Acorns are important wildlife food.

Chestnut Oak
This "rock oak" has deeply fissured bark and its leaves resemble those of American chestnut.
It is in decline due to Gypsy Moth defoliation.

Yellow Birch
More commonly associated with the Adirondacks, it is at the southern extent of its range in Broome Co.

Black Birch
This "sweet" birch is relatively short-lived. The sap of this tree has a wintergreen scent.

Shagbark Hickory
The trunk of this tree often exhibits a "shaggy" appearance due to the loose bark.

Pignut Hickory
The wood is often used for tool handles. The nuts are an important wildlife food.

Bitternut Hickory
Smooth bark, like pignut hickory, but more leaflets per leaf (7 -11). The nuts are bitter.

Black Locust
Well-known for its use as fence posts. The wood is very dense and rot-resistant.

American Hornbeam (blue beech)

Also known as “musclewood” due to the stem characteristics. A hard, dense wood.

Eastern Hop hornbeam (ironwood)
Extremely hard, dense wood. Typically used for firewood, but not lumber.

Striped Maple
Also known as “moosewood.” Often referred to as “undesirable” when it competes with timber species. Short-lived.

Shadbush
Also known as serviceberry or June berry. White spring-time flowers. A tall shrub.

Apple (various species)
Commonly found near sites of early settlement. An important wildlife food.

Native Softwood Species

Eastern White Pine
White pine is a long-lived conifer, and can grow to be one of the largest trees in the northeastern forests. Evergreens provide winter cover for wildlife.

Eastern Hemlock
Hemlock bark was used for tanning leather. This evergreen is usually found on moist sites, and is also a long-lived species.

Plantation Softwood Species

Norway Spruce
Used for producing paper & construction lumber. Though this species is “exotic” or non-native, it is not considered invasive since it does not displace native conifers. It is a first choice for evergreen planting since it is inexpensive to plant and it tolerates the poorly-drained, high-clay soils commonly found in central New York. In addition, Norway spruce regenerates naturally, and suffers relatively little damage from insects, disease and deer.

Japanese Larch
Larch is a deciduous conifer, as it loses its needles in the winter. The wood is rot-resistant.

Red Pine
Grows tall and straight. Since it grows best on sandy, well-drained sites, it is in decline where planted on the wetter, high-clay soils. The wood takes preservatives well, and is used for utility poles, deck lumber, and log home construction.

Scotch Pine
This tree often has a crooked stem, probably due to poor quality seed sources at the time of planting. The bark on the upper stem turns orange.

Invasive Exotic Plants

Invasive exotic plant species found in central New York include purple loosestrife, giant hogweed and non-native honeysuckles. Invasive exotics are not presently threatening native plants on the Unit.

C. Major Land Classifications Within the Unit.

Table II identifies eight major categories of land found within the Unit. Some of these categories are quite broad, but they are useful in developing forest management goals from a landscape perspective. Definitions for each category are listed below.

Ponds - these are bodies of water with an average depth greater than 12 inches.

Native hardwoods - at least 90% of the forest cover within these stands consists of native hardwood species (oak, ash, maple, beech, cherry, aspen, hickory, birch, etc.).

Native conifers with hardwoods - these stands are mixtures of native hardwoods and native conifers (white pine and eastern hemlock).

Conifer plantations - these stands were planted, usually by the Civilian Conservation Corps. (CCC's), with conifer species (red pine, Norway spruce, white spruce, Japanese larch, white pine, and Scotch pine).

Shale pits - These areas have no vegetative cover. They have been disturbed for the purpose of removing shale, which is used to harden the surface of the Forest Access Roads.

Wetlands - these are areas of poorly-drained
ground, that often contain some standing water (less than 12-inch depth) and may contain a variety of vegetation (grasses, brush, or trees).

Brush - at least 50% of the vegetative cover within these areas consists of brush species (thornapple, alder, dogwood, brambles, viburnum, spirea, etc.)

Grass - these fields typically were agricultural hay fields or pasture lands. The majority of vegetation is grass species with other forbs, (thistle, milkweed, asters, goldenrod, etc).

TABLE II. Land Classifications Within the Unit.

The following table identifies eight different categories of land found within the Broome State Forests Unit. Some of these categories are quite broad, but they are useful in developing forest management goals from a landscape perspective.

TABLE II				1"-5" Tree Diameter (**DBH**)		6"-11" DBH		12"-18" DBH		19" + DBH	
CATEGORY	TOTAL STANDS	TOTAL ACREAGE	% OF UNIT TOTAL ACREAGE	# OF STANDS	# OF ACRES	# OF STANDS	# OF ACRES	# OF STANDS	# OF ACRES	# OF STANDS	# OF ACRES
NATIVE HARDWOODS	134	3,014	56.1	14	184	43	835	74	1,871	3	124
NATIVE CONIFERS & HARDWOODS	70	1,408	26.2	0	0	12	158	52	1,068	6	182
CONIFER PLANTATION	69	789	14.7	2	6	31	309	36	474	0	0

PONDS	9	71	1.3	-	-	-	-	-	-	-	-
BRUSH FIELDS	8	46	0.9	-	-	-	-	-	-	-	-
WETLANDS	7	44	0.8	-	-	-	-	-	-	-	-
GRASS FIELDS	1	1	<0.1	-	-	-	-	-	-	-	-
SHALE PITS	1	1	<0.1	-	-	-	-	-	-	-	-
TOTAL	299	5,374	100.0	16	190	86	1,302	162	3,413	9	306

D. Wetlands and Water Resources

It is the public policy of New York State, as set forth in the Freshwater Wetlands Act, to preserve, protect, and conserve freshwater wetlands and the benefits derived from them. All freshwater wetlands larger than 5 hectares (approximately 12.4 acres) are protected. A freshwater wetland smaller than 5 hectares may be protected if it is demonstrated that the wetland is locally unique or significant. In all cases an upland area 100 feet wide surrounding a protected wetland, defined as the adjacent area, is also protected. The Federal Government considers all wetlands larger than one acre to be significant. Administration and federal guidelines protecting wetlands over one acre fall under the jurisdiction of the Army Corps of Engineers.

The Act recognizes the values and functions of wetlands; flood and storm water control, wildlife habitat, water quality, recreation, open space, education and scientific research, among others, and serves to prevent unnecessary loss of these values and functions in a manner consistent with the general welfare and beneficial economic, social, and agricultural development of the State.

Two implementing regulations have been developed to direct the Department's efforts in meeting the intent of the Act. Part 664 establishes 4 classes of wetland based on each wetland's specific type, characteristics, size and location in the landscape. Part 663 defines actions that require permits and sets forth the procedures the Department must follow in reviewing applications for required permits.

There are a total of three class II wetlands located within the Broome State Forests Unit, one each within Broome 4, Broome 7, and Broome 8. The classification of these wetlands is based on two characteristics; 1. They are adjacent or contiguous with streams classified C(t) or higher, and 2. They are located within a publicly owned recreation area. There are other freshwater wetlands located within the Unit which are not protected by the Act because they are less than 5 hectares in size. Information on all wetland resources within the Unit is found in Appendix I.

Wetlands are characterized by soils saturated for a significant period during the growing season supporting a plant community adapted to life in those saturated conditions. Wetlands can be dominated by trees, shrubs, grasses and herbs or a combination of these plant types thriving in saturated or inundated soils. Ponds and lakes are typically open bodies of water not demonstrating wetland characteristics although, in some cases, very shallow ponds and the shallow areas of lakes support wetland plant communities. Marsh Pond, Beaver Pond and Whittaker Swamp, located within the Broome State Forests Unit, are examples of ponds that are considered wetlands. Shallow ponds are susceptible to a condition known as "winter kill." During winters when deep snow covers the ice, photosynthesis slows, and oxygen levels in the water decline. As a result, fish may begin to die in the pond, with the largest fish dying first.

All of the perennial streams on the State forests within the unit are classified as either C(t), C, or D. A stream

is given a C(t) classification if it is suitable for the survival and propagation of trout, as well as other fish species. The C classification is given to steams that are suitable for fish (not including trout) survival and propagation. The D classification means that the stream is suitable for fish survival, but not propagation. The intermittent streams on the forests are not classified.

The small streams of the Unit support varying levels of wild trout reproduction. Several streams on the Unit are large enough to provide an opportunity for trout fishing. Appendix IV lists the more common fish species found in some of the Unit's waters.

E. Wildlife

An ecozone can be considered an area bounded such that topography, altitude, soil types and drainage characteristics are generally the same across the subject area. The U.S. Forest Service 1995 mapping classified the area containing the Broome State Forests Unit as the Western Catskill Ecological Zone. Chambers, in his handbook Integrating Timber and Wildlife Management (1983), compiled an extensive list of wildlife species *presumed* to live within the Central Appalachian Ecozone, a 8,830 square mile area which overlaps the Western Catskill Ecological Zone and containing a wide array of habitat from mountains, hills and valleys to extensive low-lying riverine systems, notably the Susquehenna River. The Broome State Forests Unit is but a small part of this ecozone. Chambers qualified his wildlife list by categorizing wildlife species by forest type, stage and special habitat. Based on these general characteristics he offers a list of 52 species of mammals, 22 species of reptiles and 23 species of amphibians likely to be found on the Unit (Appendix II).

Records compiled from 1980-85 for The Atlas of Breeding Birds in New York State (1988) list all bird species that are considered possible, probable or confirmed breeders in any given Atlas block surveyed. For the blocks in which the Unit is located, 126 species were identified (see Appendix III).
White-tailed deer are an important component of the Unit's faunal community. Unmanaged populations can cause significant damage to the plant community, actually eliminating some species, and severely hampering regeneration of others, ultimately leading to problems for the deer herd itself. The Department's Bureau of Wildlife manages the deer population within Wildlife Management Units (WMU). Deer Management Permits and Deer Management Assistance Permits are the major tools which provide for a prescribed removal of adult females during the annual hunting seasons. In instances where localized high populations are responsible for unacceptable damage to agricultural or forest industry crops, deer nuisance permits are authorized for removal of animals outside of the usual hunting seasons.

The Bureau of Wildlife uses several methods of obtaining the information necessary to develop management goals. Citizen Task Forces are formed for each WMU. Made up of various representatives of community interests, the task force considers hunting and agricultural interests, deer/auto collision data, residential shrubbery damage and other impacts. The Task Force then makes recommendations as to a preferred future deer population. Mandatory reporting by successful hunters, data from examination of deer at deer check stations, meat processing facilities and random road side checks during the hunting season rounds out the information gathering necessary for a successful deer management program.

The Broome State Forests Unit is southwest of the primary Catskill black bear range. Bear, however, are becoming more common in the Unit. More sightings have been reported in recent years, and the number of nuisance complaints has risen as well. Black bears are commonly harvested in the Delaware County Towns of Colchester, Andes and Roxbury to the east (WMU 4R and 4W), however bear hunting is prohibited in Broome County at this time.

The New York Natural Heritage Program's Biological and Conservation Data System frequently depends on data from surveys such as The Atlas of Breeding Birds in New York State and the New York Amphibian and

Reptile Atlas Project. These formal surveys collect data for blocks of land laid out in a gridwork over the face of the land. The blocks are uniform in size. Blocks in The Atlas of Breeding Birds in New York State are five kilometers square in size. Those used in the New York Amphibian and Reptile Atlas Project are U.S. Geological Survey topographic quadrangle maps. Species can be found in a block and not be on the Unit. For example, Unit lands may be at the top of a hill on one end of a survey block and the species may be found along a river at lower elevations at the other end of the survey block.

F. Rare Plants and Significant Ecological Communities

The New York State Natural Heritage Program is an ongoing scientific inventory with a goal of compiling and maintaining systematic information on New York State's rare plants, rare animals, and significant ecological communities. The information that is collected from the inventory is stored in the Biological and Conservation Data System (BCD). This international collection of information is used to identify, track, protect, and manage biological diversity. All rare flowering plants, ferns, and fern allies are actively surveyed and monitored. The animal species that are surveyed and monitored include rare species of all vertebrate groups and selected rare species from invertebrate groups including, butterflies, beetles, and freshwater bivalve molluscs. Significant ecological communities surveyed include all rare ecological communities as well as the best examples of common communities.

Part 193.3 of the New York State Code of Rules and Regulations identifies a list of protected plants in New York State pursuant to Section 9-1503 of the New York State Environmental Conservation Law. The list is divided into four categories: endangered, threatened, exploitably vulnerable, and rare. The term "rare", as used in Part 193.3, does not correspond to the New York State Natural Heritage Program's use of this term. In general, the New York State Natural Heritage Program's list of rare plants includes all of the endangered and threatened species listed in Part 193.3, and it may include some of the plants listed as exploitably vulnerable or rare in Part 193.3.
The New York State Natural Heritage Program has not identified any rare plants or significant ecological communities on any of the forests in the unit. A few rare animals have been identified on the forests. These include the Timber Rattlesnake, Red- Shouldered Hawk, and the Northern Harrier. The New York Status of all three species is Threatened.

G. Cultural Resources

Presently, there are no historic sites or cultural resources on the forests of the Broome unit that are listed in the New York State Archaeological Inventory.

The New York State Archaeological Inventory establishes a list of places where evidence of past human activities, from all periods of the human past, have been found. These sites include settler homesteads, mills, villages, cemeteries, sites with prehistoric artifacts, and other sites with historic significance. These sites may be legally protected if they meet the criteria for listing in the State and National Registers of Historic Places (Registers). In general, an archaeological site would be eligible for listing in the Registers if the site contains artifacts and information in a sufficiently undisturbed context to help us better understand some aspect of the human past. The protection of these sites ensures that the historic information from the site will be preserved. Sites listed in the Archaeological Inventory that are not eligible for listing in the Registers, may also be protected, depending upon where they are located. On public lands (State and federal), archaeological resources are considered to be a part of the values to be preserved within the landscape. On New York State forest lands, no materials can be removed from a site listed in the Archaeological Inventory without a permit issued jointly by the State Museum and the Department of Environmental Conservation. State and federal agencies are not obligated to release detailed information, including specific locations, about archaeological resources to the public. This data is exempt from both State and federal Freedom of Information Laws.

Stone walls are not listed in the Archaeological Inventory and they do not usually qualify, individually, as State or National Register resources. However, the stone walls from the early settlement period are still important cultural resources. There are numerous stone walls on the forests of the Broome State Forests Unit. Most of these walls were constructed by the early settlers who began farming the land. Some of the walls may date back to the late 1700's. When these lands were first cleared for farming, the land owners removed the stones from the fields and then used the stones to construct walls along their property boundaries or the borders of the fields. These stone walls are now part of the landscape and they provide us with information about past land uses and human history. Although these cultural resources are not specifically protected by regulations, the Department has implemented management practices to preserve the integrity of the walls. Since the value of field stone has increased significantly in the past 10 years, many stone walls on privately owned land are being dismantled for the purpose of selling the stones. The Department does not sell field stones from the State forests.

H. Roads

The State Public Forest Access Road System provides for both public and administrative access to the Unit. The roads are constructed by DEC to standards that will provide reasonably safe travel and keep maintenance costs at a minimum. These roads are not normally plowed or sanded. There are three types of roads - Public Forest Access Roads (formerly called Truck Trails), haul roads and access trails - and they provide different levels of access depending on the standards to which they are constructed.

Public Forest Access Roads (PFAR) are permanent, unpaved roads. They may be designed for all-weather use depending on their location and surfacing. These roads provide primary access within the Unit. The standards for these roads are those of the Class A and Class B access roads as provided for in the DEC Forest Road Handbook.
Haul Roads are permanent, unpaved roads, but are not designed for all weather use. They are constructed primarily for the removal of forest products and provide only limited access within the Unit. As such these roads may or may not be open for public use. The standards for these roads are those of Class C roads as provided for in the Forest Road Handbook.

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 recreational trails. These trails are constructed according to Best Management Practices.

Town roads serve as access to the State land of the Unit. When town roads are no longer used, they may be declared qualified abandoned. Such roads are still open for public use, but receive no town maintenance. If they are then declared completely abandoned, they are no longer open to the public, but may be used by affected landowners. Appendix VI lists the un-maintained town roads serving as access to lands of the Unit.

I. Recreation

New York's State forests offer many outdoor recreational opportunities for the public. The types of recreational activities associated with State forests include hiking, camping, hunting, fishing, cross country skiing, mountain biking, horseback riding, and snowmobiling. In November of 2001, the DEC published the Region 7 Draft Recreation Master Plan For State Forests. To receive public input for the Plan, the Department held four Public meetings in the Region during the spring of 1999. One of the meetings was held in Johnson City. Additionally, a questionnaire was distributed through several local businesses and clubs involved in outdoor recreation. A total of 223 people attended the 1999 meetings and 341 people responded to the questionnaire. After the Draft Plan was published, four additional meetings were held to receive comments about the Plan. The information received from these sources will be used to improve the quality of recreation on State forests. It is anticipated that the final Region 7 Recreation Master Plan will be released

in 2005.

Facilities on State forests, such as recreational trails, camping sites, or parking areas will be primitive in design. For example, camping sites on State forests may have a fireplace, a picnic table, and an outhouse, but they will not have the amenities typically found in State parks such as paved access roads, plumbing or electricity.

Presently, other than parking areas, the only developed facility on any of the forests of the Broome State Forests Unit is a cross country ski trail located on Hawkin's Pond State Forest.

Hunting and Trapping. The most popular recreational activity on the forests of the Unit is big game hunting for white tail deer. Appendix V provides information on the number of game animals and furbearers taken during hunting and trapping seasons within the townships of Sanford, Windsor, Kirkwood, and Vestal. Hunting and trapping are allowed on all of the Broome State forests by persons who possess a valid New York State hunting or trapping license, and who abide by the regulations. Hunting and trapping do not require the development of any facilities on State forests, except for parking areas.

Camping. Primitive style camping is available on State forests. The regulations for camping on State forests are listed in Title 6, Chapter II, Part 190 of the NYS Environmental Conservation Law. Appendix VII lists these regulations. There is no fee for camping on State forests.

Skiing. As previously mentioned, there is a designated cross country ski trail on the Hawkin's Pond State Forest. This trail was created as an extension of the ski trails on the adjacent Broome County park land. The trail has received little maintenance since it was established in 1979. The ski trail is intended to be a primitive-style recreation facility, therefore it is not groomed. The trail is designed for skiers with a beginning or intermediate ability. Although this trail is the only designated ski trail on the Broome State Forests Unit, there are several abandoned and unplowed roads on the forests that offer good opportunities for skiing. These include the abandoned roads on Beaver Pond State Forest, Whittaker Swamp State Forest, Cat Hollow State Forest, and the Public Forest Access Road on Skyline Drive State Forest.

Snowmobiling. There are few opportunities for snowmobiling on the forests of the Broome Unit. Since the New York State snowmobile corridor trail system does not extend into the unit, there are no long distance trail systems available. The length of the unplowed roads on the forests of the Broome Unit are quite short in view of what most people would prefer for snowmobiling. For example, the unplowed Public Forest Access Road on Skyline Drive State Forest is occasionally used by snowmobilers, but this road is only about 2.3 miles in length. There are unplowed town roads, but none connect to a trail system, so activity is typically limited to local use.

ATV and Off-Road Vehicle riding. The public use of All-Terrain Vehicles and ORVs is restricted to designated roads and trails only. In May, 2005, the Department issued a Draft ATV policy. Consistent with the draft policy, the forests were assessed for ATV trails. Suitable opportunities for such use have not been identified anywhere on the Unit. The forests will be evaluated under any future ATV policy. Illegal use of ATVs on the Unit appears to be increasing.

Mountain Biking. There are currently no designated trails for mountain biking on the forests of the Unit, although this activity is allowed unless restricted by signs. Unauthorized trail clearing is prohibited. Mountain biking has greatly increased in popularity since 1990 and there is some activity on the forests. Most of the demand for mountain biking opportunities is being met by other recreation areas in the county. Chenango Valley State Park and Greenwood County Park have established trail systems.

Fishing. Marsh Pond is the most popular location for fishing on the Unit. Catfish and sunfish are commonly

found in the pond. Other popular fisheries within the landscape of the Unit include the Susquehanna River, Tioughnioga River, Chenango River, and the West Branch of the Delaware River. Public access to these rivers is available at several locations. The Water Resources Maps in this plan show the locations and classifications of the Unit's ponds and streams.

Horseback Riding. As with snowmobiling, there are no long distance trail systems connecting with any of the Broome State Forests, so the opportunities for horseback riding are limited. Many of the town roads in the areas surrounding the State forests are rural and infrequently traveled. These may be compatible for horseback riding, and in combination with abandoned roads or Public Forest Access Roads, may provide a satisfactory length for riding. An extensive horse trail system exists on State forest land in Madison County. The Brookfield Horse Trail System is located approximately 70 miles from Binghamton and offers 130 miles of trails. This trail system, which is located on 13,000 acres of State forest land, is close enough to the Broome County area to provide a popular day-trip destination for horseback riding. Two less extensive horse trail systems exist on State forests within 30 miles of the Binghamton area.

The Jenksville State Forest in Tioga County offers 12 miles of designated horse trails and the Tuller Hill State Forest in Cortland County offers 9 miles of trails.

Hiking, Snowshoeing, and Nature Observation. Though there are no designated hiking trails on the Unit, these activities can be enjoyed anywhere on the Broome State forests. The variety of topography, forest cover, and wildlife habitat, provides an attractive and ever-changing setting when exploring these lands.

Regulations Applicable to Recreational Activities on State Forests.

No fees are charged to the users of State forest lands for recreational activities, however, a permit may be required for group activities or events. A Temporary Revocable Permit is required for the following types of recreational activities on State forests: organized and advertized events, such as club-sponsored rides or scouting camporees; competitive events, such as mountain bike races or orienteering tournaments. Prospective user groups should contact the Sherburne DEC office for details.

J. Other Facilities

A. State Forest boundary lines.

Broome #3		4.41 miles
Broome #4		7.49 miles
Broome #5		7.31 miles
Broome #6		5.82 miles
Broome #7		10.96 miles
Broome #8		5.61 miles
Broome #9		5.51 miles
Br-Tioga #1	9.36 miles	
Total	56.47 miles	

B. Signs

One forest identification sign is located on each of the eight State forests.

C. Impoundments

.

There are none on the unit.

D. Shale pits.

One shale pit is located on Broome #5.

E. Parking Areas

Several pull-off areas are located on each of the State forests, however, there are no designated parking areas.

K. Property Use Agreements

A. Deeded Rights-of-Way.

None identified.

B. Property Reservations.

Broome #6

A spring & water right reservation exists on Proposal A. The spring is located approximately 587 feet east of the southwest corner of the 22.97-acre private parcel. The water is piped to buildings on the private land.

Broome #7

A spring & water right reservation exists on Proposal A. One spring is located near the northern boundary line of the northern parcel of Proposal A. The water is piped for a distance of approximately 330 feet onto private land. A second spring is located on the southern parcel of Proposal A, near the northwest corner of the 10.67-acre private parcel. The water is piped approximately 308 feet to the northwest corner of the private land. The deed for Proposal D, dated 12-26-40, describes a third spring & water right reservation.

C. Revocable Permits.

Broome #3

A Temporary Revocable Permit was issued to the Broome County Parks & Recreation Department for the purpose of constructing cross country ski trails in 1978 & 1979. Broome #3 was then known as the Aspen Grove State Forest.

D. Utility R.O.W., Easements, and Permits.

Broome-Tioga #1

A Temporary Revocable Permit was issued to NYSEG for the installation of an electric service line along Collins Road in 1974. The line provides service to 56 Collins Road. The line is on the highway R.O.W., but two anchors are on the State land. NYSEG relocated one pole and one anchor onto State land along power lines on each of Tracy Creek Road and Collins Road. This was done in 1976. NYSEG relocated four poles and four anchors onto State land along the electric service line on Crumm Road. This was done in 1978.

Broome #8

A Right-of Way was established on this property in 1925 by the New York State Gas & Electric Company for the purpose of maintaining electric transmission lines. The R.O.W. is 30 feet in width.

E.. Uses of State Lands Without Known Permits or Easements.

None identified

L. Forest Health

There are many species of insects and diseases, as well as pollutants, that are active in the northeastern forests. All play important roles in the ecology of the forest. The following list describes a few of these insects and diseases, in their role as forest pests, and their present or historical impacts on the ecosystem.

Insects.

Gypsy moth (Lymantria dispar) - This insect has received much notoriety since it was introduced into the United States in 1868. Populations of this insect can periodically build to "outbreak levels" resulting in widespread forest defoliation. Gypsy moths will defoliate many species of northeastern trees, but they favor oaks. The most recent, significant outbreaks of gypsy moth in Broome County occurred in 1981-83 and 1990-92. An estimated 15,000 acres of oak forest in the county were defoliated by the 1990 outbreak. Many oak trees on the Skyline Drive State Forest and the Hawkins Pond State Forest were killed by these infestations.

Timber sales were conducted on Broome #5 in 1983 and 1993 to salvage dead and dying oak resulting from the gypsy moth defoliation combined with drought. High populations of gypsy moths do not typically persist more than three years before they collapse. Until recently, a virus (NucleoPolyhedrosis Virus) has usually caused the rapid decline of Gypsy Moth populations. In recent years however, a fungus (Entomophaga maimaiga) has also proved to be effective in reducing moth populations. This fungus was introduced to the U.S. from Japan in 1910 and again in 1985. Its effectiveness had been dismissed until its presence was identified in seven States in 1989. Because of the presence of both the virus and the fungus, it is hoped that future Gypsy Moth outbreaks will be less severe and less frequent.

Forest Tent Caterpillar (Malacosoma disstria) - This insect can be a serious defoliator of sugar maple. Unlike other "tent caterpillars," the Forest Tent Caterpillar does not construct a tent on the tree branches. The most significant outbreak in recent years within Broome County occurred in 1994. Most healthy hardwoods can withstand a single defoliation from this insect. Unfortunately, the 1994 defoliation was accompanied by an Anthracnose infection which killed the year's second crop of leaves. As a result, extensive sugar maple mortality occurred after only one defoliation by the Forest Tent Caterpillar. In 1995, approximately 135 acres of dead sugar maple timber was salvaged on Broome 8 and Broome 9.

Eastern Tent Caterpillar (Malacosoma americanum) - This is the most common "tent maker" in New York State. The caterpillars build the nests in the crotches of tree branches. They prefer cherry trees and apples trees. The nests are formed in late April or early May each year and the caterpillars feed on the leaves. Most of the feeding is done from dusk, through the evening hours.

Pear Thrips (Taeniothrips inconsequens) - Introduced from Europe to the United States in 1904. It attacks a variety of orchard and forest trees. There were several population explosions of Pear thrips in the northeast during the late 1980's. The outbreak of 1988, damaged or defoliated more than 1.5 million acres of sugar maple trees. In addition to causing leaf damage, Pear thrips may also be capable of transmitting a fungal disease, maple anthracnose. This disease often coincides with Pear thrip infestations. Maple anthracnose decreases the photosynthetic ability of leaves, which can kill trees, if they are severely infected. Thrips damage to the forests of the Unit has so far been insignificant.

Elm Spanworm (Ennomos subsignarius) (and other species of loopers) - The common name of this insect is deceiving, as it is not only associated with elm trees, but will defoliate beech, oak, hickory, maple, and ash

as well. More than 20 major outbreaks have occurred in the past century. The forests in the southern tier of New York State and much of Pennsylvania were heavily defoliated by these insects in 1994. Typically, outbreaks of the Elm Spanworm succumb to mortality from a complex of natural agents, including egg parasites and larval diseases.

Peach Bark Beetle (Phloeotribus liminaris) - This insect has recently gained increased attention from foresters in the northeast, due to the amount of damage it has caused to black cherry trees. Infestations of this insect can result in large amounts of gum deposits on the trunks of black cherry. The damage can significantly reduce the value of the timber and it causes a general decline in tree health. Peach Bark Beetle populations build up in the tree tops following the harvest of cherry timber. Residual, healthy cherry trees are then attacked. Cultural practices (ie. reducing quantities of slash and seasonal cutting) are being investigated to minimize the negative impacts of peach bark beetles.

Pine Shoot Beetle (Tomicus piniperda) - This beetle, native to Europe and Asia, attacks the new shoots of pine trees, including scotch pine and red pine, stunting the growth of the tree. The USDA's Animal and Plant Health Inspection Service (APHIS) has issued regulations resulting in "quarantines" within the infested counties of New York State, and other States, to prevent the spread of this insect. These quarantines are of significance because they affect the transportation of pine logs. Broome County is designated as a quarantined area. In general, the regulation restricts the transportation of pine logs from a quarantined area to a non-quarantined area.

Diseases

Beech Bark Disease - This disease has caused a widespread decline in the health of American beech, and it limits the life span of these trees. Beech trees are infected when the beech scale (Cryptococcus fagi) punctures the bark, allowing the spores of the fungus (nectria coccinea) to enter the tree. American beech saplings are still abundant in the understory of northeastern forests, however mature beech trees are declining and becoming less common.

Dutch Elm Disease - This disease entered North America in 1930 and it has killed most of the American elm trees in the northeastern United States. The causal agent is a fungus (Certatocystis ulmi) which is spread by elm bark beetles. Although the disease has killed most elms, a few resistant individuals have survived. It is still possible to find mature elm trees within Broome County.

Chestnut Blight - This is one of the most famous plant diseases in North America. It has resulted in the near extinction of American chestnut trees throughout their natural range. The blight is caused by a fungus (Cryphonectria parasitica) that enters through wounds in the bark. American chestnut saplings can still be found in a few, isolated areas of the forests in Broome County, but it is rare for a tree to survive long enough to attain a stem diameter greater than six inches.

RESOURCE DEMANDS ON THE UNIT

A. Timber Resources

Hardwood, red pine and Norway spruce sawtimber, spruce pulpwood and hardwood firewood are the primary timber resources available from State Forests. Much of the information on demand for timber resources that follows is based on the Stumpage Price Report published by the Department semi-annually. Comparisons were made between Reports published in July, 1996 and January, 2002.

The price paid for hardwood sawtimber stumpage has increased over the five year period ending in January, 2002. Based on reports from buyers in the nine county region, there has been a 28% increase in the price paid

for six hardwood species common on State land. Because of its importance within the international market, demand for hardwood lumber is expected to increase. In 1988, sugar maple and black cherry represented 4% of the total hardwood lumber exports to the European Union; by 1998 these two species represented 15% of total exports. The following chart lists the most common price paid per thousand board feet (Doyle log scale).

Species	**1996 ($)**	**2002 ($)**	**% change**
White ash	370	230	-38
Sugar maple	490	720	+47
Black cherry	690	980	+42
Red Maple	150	210	+40

Unlike hardwood timber, the supply of red pine and Norway spruce stumpage in Broome County is concentrated on State lands, and subsequently DEC has an important role in the regional softwood timber and **pulpwood** market. Based on the stumpage report, the price for red pine sawtimber has increased 14% from $60 to $70 per thousand board feet while prices for utility pole stock have increased 33% from $60 to $90 per thousand. Utility poles, pressure treated lumber and stock for pre-fabricated log homes are the primary uses for red pine timber. Demand for pine pulpwood is virtually non existent. Future demand for red pine timber will be constrained by efforts to control the movement of the pine shoot beetle. The USDA Animal and Plant Health Inspection Service has established a federal quarantine on red pine throughout much of New York, including Broome County, resulting in restrictions on the shipment of pine logs outside of the quarantine area.

During the five year reporting period there has been a substantial increase in the supply of Norway spruce sawtimber stumpage from State land. Although stumpage is typically purchased by local firms, the majority of logs are transported to Canadian mills for processing. The stumpage report indicates that prices for spruce sawtimber have increased 25% from $60 to $80 per thousand board feet during the five year period. As stands of plantation spruce continue to mature and treatments are conducted to maintain optimal stocking levels, the supply of spruce sawtimber is expected to increase. Conversely, the supply of small diameter (<10" **DBH**) spruce that is currently utilized for pulpwood is expected to decline. Spruce planting on State forests has greatly diminished since stands are usually regenerated naturally. Open lands are kept in an open condition for their habitat value.

With increasing reliance on imported pulp and the volatility within New York's paper industry, future demand for spruce and hardwood pulp is uncertain. In January 2001, a spokesman for Lyons Fall Pulp and Paper Company, users of hardwood pulpwood, announced that "After many months of study and analysis of the prospects for returning the company to profitability we have come to the conclusion that the combination of a depressed market for our products and increased cost of operation make closure and liquidation the only reasonable economic decision". (Northern Logger, Vol.49, No.8). In March, 2001 Deferiet Pulp and Paper Company announced that it too would be closing its New York Mill, thus eliminating an important market for spruce pulpwood throughout central and northern New York.

There is limited demand for hardwood cordwood and most of this stumpage is sold within the local firewood market. Prices have remained stable during the five year reporting period. However, prices for home heating oil have increased dramatically since 1999, and this could have a direct impact on demand for firewood.

In January, 2000 all of New York's State Forests were certified by the National Wildlife Federation/SmartWood program using criteria established by the Forest Stewardship Council.

This independent certification indicated that State forests are managed for long term ecological, social and economic benefits. The primary goal of the certification program is to ensure that forest resources are being managed on a sustainable basis. Many organizations have adopted definitions of the term "sustainable forestry." The Society of American Foresters provides this definition: "Sustainability, as applied to forestry, is the enhancement of human well-being by using, developing, and protecting resources at a rate and in a manner that enables people to meet their current needs while also providing future generations with the means to meet their needs as well; it requires simultaneously meeting environmental, economic, and community aspirations."

While still an evolving process, ultimately this "green certification" label will give consumers the option of purchasing wood products that have been certified and tracked through a chain of custody as originating from lands that are committed to practicing sustainable forestry.

Some of the management practices that promote sustainable forestry that are incorporated into this plan include: retaining coarse woody debris, harvest restrictions on steep slopes and along **riparian** corridors, protecting areas with significant cultural or historic resources and rare plants and following best management practices during timber harvesting. This management plan includes goals and objectives consistent with sustainable forestry criteria established by the Forest Stewardship Council.

B. Mineral Resources

Gravel and hard rock resources exist in the areas surrounding the Unit. There are no mining contracts, permits, or operations on any areas in this Unit Management Plan. 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, to protect surface resources, current department practice is to decline any commercial mining application(s) pertaining to any lands covered by this Unit Management Plan.

Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law and State Finance Law authorizes the Department of Environmental Conservation to make leases on behalf of the State for exploration, production and development of oil and gas on State lands. Proposals to lease parcels of Department of Environmental Conservation managed State lands for this purpose will be considered following a public meeting that will be advertised by public notice in the Environmental Notice Bulletin (ENB), and in local newspapers.

Oil and natural gas are valuable resources which can provide energy and revenue, as well as the opportunity for improvements to the existing infrastructure of the Broome State Forests Unit (such as improving safe and restricted access through upgrading existing roads, culverts and gates) and creation of open space to enhance habitat diversity. As with any other human activity on State lands, oil and natural gas exploration and development can impact the environment. Most impacts are short term and occur during the siting and drilling phases of a well. Well pad construction must comply with guidelines of the State Environmental Quality Review Act. 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.

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 a limited number of gas wells have

been drilled in the areas surrounding the Broome State Forests Unit. Subsurface information pertaining to the bedrock (that does not outcrop) has been acquired through three (3) specific wells (Quaker State Corporation - Pierce #1 well, Belden & Blake Corporation - Beagell #2 well and Belden & Blake Corporation - Merrill #1 well). These wells were drilled between 1992 and 2003 while exploring for oil and natural gas reserves. These wells are located between four (4) to eight (8) miles from State Lands contained in the Broome County Unit Management Plan, demonstrating the scarcity of past drilling activity in the area. These wells were drilled to depths ranging from 4,823 feet to 10,181 feet into the subsurface. Testing the Oriskany Sandstone Formation in the areas west of the unit and the deeper Trenton / Black River (limestone and dolomite) Formations in an area northwest of the unit near Binghamton. These formations were deposited during the Lower Devonian Period (Oriskany) approximately 400 million years ago and the Ordovician Period (Trenton/Black River), over 450 million years ago.

At a surface location approximately four (4) miles Northwest of Tracy Creek State Forest, the Quaker State Corporation - Pierce #1 well (American Petroleum Institute (API) # 31-107-21,451) encountered the top of the Devonian Tully Limestone at 2,688 feet, top of the Onondaga Limestone at 4,476 feet, top of the Oriskany Sandstone at 4,690' and the top of the Lower Devonian Helderberg Limestone at 4,697 feet. The well reached a total depth of 4,823 feet and bottomed in the Helderberg Limestone . This well was drilled, and plugged and abandoned as a dry hole in 1992.

In 2000, Cabot Oil & Gas Corporation drilled and subsequently plugged and abandoned a dry hole (Logs Unlimited #1 well, API # 31-007-22,856) in the Township of Colesville, approximately eight (8) miles north of Skyline Drive State Forest. The well reached a total depth of 4,952 feet and tested the Oriskany Sandstone Formation.

At a surface location approximately eight (8) miles to the northwest of Marsh Pond State Forest, the Belden & Blake Corporation - Merrill #1 well (API# 31-107-22,984) encountered the top of the Devonian Tully Limestone at 2,687 feet, top of Onondaga Limestone at 4,635 feet, top of Oriskany Sandstone at 4,900 feet, top of the Helderberg Limestone at 4956 feet, top of Silurian Salt at 5,642 feet, top of the Lockport Dolomite at 6,893 feet, top of the Ordovician Lorraine at 7,959 feet, top of the Trenton Limestone at 9,347 feet and the top of the Black River Limestone/Dolomite at 9,583 feet into the earth. The well reached a total depth of 9,874 feet. This well was drilled, and plugged and abandoned as a dry hole in 2003.

At a surface location approximately eight (8) miles northwest of *Skyline Drive State Forest* the Belden & Blake Corporation - Beagell #2 well (API# 31-007-22,995) encountered the top of the Devonian Tully Limestone at 2,772 feet, top of Onondaga Limestone at 4,677 feet, top of Oriskany Sandstone at 4,743 feet, top of Silurian Salt at 5,614 feet, top of Lockport Dolomite at 7,010 feet, top of Ordovician Loraine at 8,528 feet, top of Trenton Limestone at 9,690 feet and the top of Black River Limestone/Dolomite at 9,935 feet into the earth.The well reached a total depth of 10,181 feet. This well was drilled, and plugged and abandoned as a dry hole in 2002.

The closest commercial natural gas production to the Broome County Unit is located in neighboring Tioga County. This production was discovered during 1986 at Stage Coach Field, in the Township of Owego, approximately five (5) miles northwest of Tracy Creek State Forest. Gas totaling approximately 16 billion cubic feet has been produced from the Oriskany Sandstone Formation that was deposited during the Lower Devonian Period. Gas was produced from depths at approximately 5,000 feet into the earth.

Exploration for gas in the Trenton / Black River Formations continues to expand into Broome County. This activity increases the possibility that lands contained in this Unit Management Plan may be impacted in the future by gas exploration operations. The closest recent activities to the lands contained in this Unit Management Plan are operations by Belden & Blake Corporation of Pleasantville, Pennsylvania. The company drilled the Belden & Blake Corporation - Merrill #1 well (API# 31-107-22,984). The well reached

a total depth of 9,874 feet. This well was drilled, plugged and abandoned as a dry hole in 2003.

Initial title review indicates the State owns the mineral estate under all State Forests covered by this Unit Management Plan, with the qualification that mineral reservations may exist and no expressed or implied warranty of title is being offered in this document. As of 2004 there are no oil and gas lease agreements pertaining to the mineral estate under the State Forests contained in this Plan.

Due to recent drilling and production activity in western New York, the State has received requests to nominate the mineral estate under tracts contained in BroomeTioga RA #1 for inclusion in the proposed 2006 Oil and Gas Lease Sale. In the future, the State may receive additional requests to nominate other tracts contained in this unit for oil and gas leasing. Oil and gas leasing procedures are outlined in the Minerals Resources Procedure, Appendix IX.

For further information contact the NYSDEC Mineral Resource staff, Region 8, 6274 East Avon-Lima Road, Avon, New York 14414-9591

C. Biological Resources

Conservation of biological resources is increasingly a societal demand. There is heightened awareness about old growth forests and endangered plant and animal species. Legislation such as the Endangered Species Act and the National Environmental Policy Act (NEPA) have had a lasting effect on both resource management and public perception of land stewardship. Demand for biological resources and the potential conflict over how best to use them is expected to grow.

D. Recreational Resources

In the spring of 2001, the Department held public meetings in the Region regarding recreation on State forests. One of the meetings was held in Johnson City. Participants represented a broad range of recreational uses on State land including horseback riding, hiking, snowmobiling, hunting, camping, photography, cross country skiing, trapping, birdwatching, canoeing/kayaking, target shooting, wildlife observation, fishing and horse drawn carriage riding. In November of 2001, the DEC published the Draft Region 7 Recreation Master Plan for State Forests. A second public meeting was held in Johnson City to receive comments about the Draft Plan. The final Recreation Master Plan is expected to be published in 2005.

In New York State, the demand for hunting, as measured by license sales, has declined 14% since 1985. While license sales reveal declining participation, hunting on State lands may, in fact, be increasing in response to changes in regional land use. Parcelization and residential occupancy have restricted access to private lands and it is speculated that increased "posting" of private properties has shifted many activities, including hunting, to State land. While there may be no net increase in regional hunting pressure, the distribution of these activities appears to be changing. State lands provide hunting opportunities for those unable to purchase or access private land. Trapping license sales showed a slight increase from 8,626 in 1996 to 9,063 in 1997.

Regional angler surveys conducted in 1988 and in 1996 estimated a 24% decline in the number of anglers and a 19% decline in angler days between these two years.

The 2002 State Comprehensive Outdoor Recreation Plan (SCORP) indicates that demand for hiking, boating and camping is expected to increase slightly through 2010.

The US Forest Service report, Outdoor Recreation in the United States, indicates a 155% growth in

birdwatching from 1982 to 1995.

Illegal ATV use on the unit appears to be increasing along with Statewide sales figures.

MANAGEMENT CONSIDERATIONS ON THE UNIT

A. Physical Considerations

Steep slopes
Geological properties
Soil Characteristics
Density and placement of recreational trails
Potential insect and disease infestations
Limited access
Presence of cultural resources
Electrical transmission and telephone lines
Deeded rights-of-way
Buried telecommunication lines
Natural gas collection and distribution lines
Concurrent use agreements
Lack of contiguous arrangement of State land

B. Administrative Considerations

Budget challenges
Staffing needs
Availability of Operations work crews
Fluctuations in wood markets
Lack of demand for some wood products

C. Societal Influences

There are differing public opinions on the management practices and uses of State forests. All opinions are considered, but the degree to which they can be satisfied will vary.

D. Departmental Rules, Regulations and Laws

Appendix VII lists the Department's Rules, regulations and laws governing management activities on the Unit.

VISION STATEMENT

We inherit a legacy of change from the original virgin forests to agricultural land clearing, to farm abandonment, forest re-establishment and management. We direct our future management to achieve or sustain the desirable forest conditions that follow.

By the middle of the 21st century, The Broome State Forests Unit will exhibit the following:

- A full range of forest succession, from open land to climax forest.
- A full range of forest age classes, from seedling-sapling to very large trees.
- Soil and water resources protected from degradation.
- Pleasant settings where people can enjoy a variety of outdoor recreational activities.
- A landscape of public and private land ownerships implementing compatible ecosystem-based management.

- A sustainable supply of raw material for the local forest product industry.
- Forests which serve as outdoor classrooms for environmental education.
- Forests which showcase good ecosystem management, and which are a source of pride for Broome County residents and all New Yorkers.

Privately owned forested areas may become fragmented as a result of parcelization and development. State forests function as "islands of stability", and will always provide forest habitat in the changing landscape. These lands are also a steady source of forest products which provide jobs to help support local economies.

GOALS AND OBJECTIVES

I. LAND MANAGEMENT GOAL

It is the goal of the Department to manage State lands for multiple uses to serve the needs of the People of New York. This management will be considered on a landscape level, not only to ensure the biological diversity and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide. Interaction and shared learning between citizens and managers will be a key factor for achieving the goal.

Ecosystem Management Principles Applied:

a). A landscape perspective will be considered when setting objectives.

b). Maintain a variety of forested, open and aquatic habitats for diverse plant and animal species.

c). Water quality and sensitive sites will be protected from degradation.

d). At least 30% of the forest acreage will be maintained with a cover type which includes a significant component of softwood species.

e). Like management direction schemes will be grouped to enhance the value of respective habitats.

f). Corridors of unbroken forest canopy will be maintained along streams.

g). Approximately 5% of the Unit will be maintained in low vegetation, exclusive of wetlands, such as brush openings, grass or seedling/sapling forest.
h). Site specific actions will be used to enhance wildlife habitat. These actions will include even-aged cuttings of aspen to enhance grouse habitat, apple tree release and cavity tree retention to protect the habitats of cavity-nesting birds and mammals.

i). Natural regeneration will be favored over planting. Reforestation of a site by planting will be considered if natural regeneration is unsuccessful, or if desired species are absent.

j). The use of pesticides including herbicides, insecticides, or growth retardants, will be avoided or minimized.

k). Invasive exotic plant species will be eliminated or controlled.

OBJECTIVES:

A. Open Land Ecotypes:

Open land ecotypes are composed primarily of grasses, herbaceous plants, shrubs and other low, woody vegetation. Open lands provide primary habitat for many birds, small animals and insects. Here species such as deer and rabbits, can find forage, seeds or berries. Many species, especially birds, seasonally use open lands for nesting, brood cover, courtship and food. Open lands provide edges where ecotypes meet and overlap. These edges form a transition zone called ecotones. Some wildlife species such as bluebirds and song sparrows require the special habitat the transition zones provide.

Grassland and brush land habitats are diminishing within the landscape as succession is occurring, replacing the low vegetation with young forests. Existing grass and brush lands on the Unit will be maintained.

1. Monitor the landscape for the presence of open grasslands, and maintain 1 acre of existing grassland.

Since the forests of the Broome Unit contain very little grasslands, the landscape will be considered when evaluating the need for this type of habitat. At present, significant grass, hay or pasture lands are found near all of the Units forests. If grass cover in the landscape is greatly diminished in the future, action will be considered to either create grassland on the unit or acquire additional acreage that could be kept in grassland. Grasslands will be maintained by mowing on a three-year schedule as needed. Mowing will take place after August 15th, and before April 1st, so as not to interfere with breeding birds.

2. Maintain 46 acres of brush land.

Brush land maintenance will include inspecting sites on a ten-year cycle and removing trees when necessary to prevent plant succession.

3. Create larger landings, ½ acre to 1 acre, during applicable commercial forest product sales in even-aged stands.

Forest product landings or decks are areas where forest products are cut to market length and/or sorted, stockpiled and loaded on trucks for hauling to market. Increasing the size of these openings will provide more open land habitat. This practice of increasing landing size will only be done in areas of the Unit under even aged management and in applicable locations. Seeding and mulching of landings will be required after grading where heavy soil disturbance has occurred. Grasses and legumes provide herbaceous food and cover and reduce erosion.

4. Maintain 1 acre of existing shale pit.

There is one shale pit within the Unit that provides surface material neessary for roads, trails, parking areas and camp sites. Shale extracted from this pit will be utilized exclusively for State land construction projects and will not be made available for commercial use. If annual extractions are determined to be greater than 1,000 tons or 750 cubic yards of material, then a mined land reclamation and recovery plan will be required. Regional mined land staff will be consulted at that time.

B. Riparian and Wetland Ecotypes:

The riparian and wetland ecotypes on the Unit are diverse and productive. They provide food, breeding areas and cover for many species of wildlife. They are an integral part of the hydrologic cycle (the route water takes from evaporation to rainfall) providing sediment filters, regulating runoff and recharging aquifers. The

riparian zones along streams and other bodies of water are protected so that mechanical disturbance does not cause excessive soil movement, erosion and degradation of water quality. The number of stream crossings necessary for timber harvesting purposes will be kept to a minimum. All stream crossings and road maintenance will comply with the DEC Protection Of Waters Program and the New York State Forestry Best Management Practices for Water Quality.

1. Protect the water quality of class C, class C(t), and class D streams.

Stream habitat improvement will be permitted within the State forests of the Unit, pending Bureau of Fisheries approval. Such practices include bank stabilization with willow planting and installing habitat improvement structures.

2. Protect 71 acres of ponds.

Fish and Wildlife staff will be notified, well in advance, of any plans to draw down the water levels of any ponds on the Unit. Early coordination results in the least impact to organisms utilizing the pond. No fish surveys have been conducted for the ponds in the Unit, however, angler reports indicate there is a fishable population of largemouth bass in Marsh Pond.

3. Protect 23 acres of open wetlands and 30 acres of forested wetlands.

4. Protect 34 acres of forested riparian areas.

Protection will include establishing a 50-foot-wide buffer of protection forest along streams and 100 feet along wetlands where timber harvesting is prohibited or restricted. Streams supporting wild brook and brown trout require shade to keep water temperatures cool in summer. Heavy cutting within 100 feet of streams will be avoided to keep ambient air temperatures low. Necessary crossing of streams will require the use of Best Management Practices to protect the stream bank and prevent sedimentation from entering the stream channel. Wetlands will be off limits to silvicultural treatments and recreational trail development.

C. Forest Ecotypes:

Each forest in the Unit is divided into stands of trees and other non-forested areas. A stand has species and age characteristics which distinguish it from adjoining stands. Every stand on the Unit was evaluated and given a management direction and objective cover type. Some stands are managed as natural areas where no timber will be cut, or protected areas where cutting will be prohibited or restricted. Plantations to be protected for aesthetics or visual character may require thinning to increase stand longevity. Other stands are to be managed for multiple uses including timber. The following objectives summarize the acreage devoted to each type of management.

Protected Forested Areas

1. Manage 166 acres as Natural Areas

Natural areas are uncommon in the landscape of the Unit. Most of the land is used for working forests, agriculture, or development. Natural Areas will be protected from timber harvesting to remain or become climax forests. These stands already contain large diameter trees, often hemlock-hardwood types, with a high percentage of hemlock.

2. Manage 194 acres for protection due to exceptional visual character, poor access, or steep slopes

Protection forests are restricted from silvicultural and mechanical activities for environmental or aesthetic reasons. The exception being softwood plantations which may need thinning to maintain stand vigor. Also, blowdown and timber killed or weakened by insects or disease will be salvaged where economically feasible. Many of these stands occupy sensitive sites such as wetlands, steep slopes or stream banks. Other stands are protected for their visual importance. A few are protected because they are inaccessible to vehicles due to boundary line location. The status of inaccessible stands may change if access is acquired (from willing sellers only).

Protection forests, like natural areas, have the potential to become climax forests. Such forests usually contain large numbers of snags and cavity trees, and large amounts of downed material referred to as coarse, woody debris. These structures support many species of plants, animals and microorganisms.

Silviculture

The remaining stands on the Unit are to be managed for multiple uses including timber. Silviculture is the science and art of cultivating forest crops. Foresters employ one of two categories of silvicultural systems when managing a stand of trees. They are **even-aged** or **uneven-aged** management. Stocking guides developed by the US Forest Service are used to determine the target stand densities following treatments. A stocking guide is only one tool used by a forester when marking a stand for treatment. Ecosystem management requires all forest values be considered. Aesthetics, recreational values and bio-diversity concerns are part of every stand prescription.

An even-aged stand is one whose individual trees originated at approximately the same time, either naturally or by planting. As it grows, it may undergo various intermediate thinnings during its development, and is ultimately removed in one or more major harvest cuts after which a new stand is released or established. Such a stand, consequently, has a beginning and an ending time. The **rotation** is the number of years from establishment to maturity.

Even-aged management is important because young, dense stands of trees and other plants are established when stands are regenerated. Early forest developmental stages are beneficial to many species of wildlife. Even-aged management favors the establishment of shade intolerant tree species such as cherry, oak and ash. These species have some of the highest timber values. Even-aged management also favors the establishment of many of the hard mast species such as hickory and oak. The even-aged conifer plantations on the Unit are mostly red pine, Norway spruce, or mixtures of these two species.

A disadvantage of even-aged management can be the perception of adverse aesthetic impacts. At the end of the rotation, the mature overstory is harvested to release the young trees already established. This presents foresters with a challenge, especially for large-acreage stands; how to regenerate shade-intolerant species, while avoiding complete overstory removal? Part of the solution is to use group selection described below under uneven-aged management. In addition, conservation of bio-diversity requires a full range of habitats, from patchy, open lands and young forests associated with even-aged management, to large, contiguous, mature forests associated with the uneven-aged system.

The uneven-aged management system establishes or maintains at least three age classes ranging from seedling-sapling to large sawtimber within one stand. This system maintains a mature or nearly mature forest canopy, indefinitely. Many wildlife species require mature, interior forest habitat. They include fisher, red-shouldered hawk and many neotropical migrant birds such as warblers, vireos and flycatchers. During timber harvests, if single-tree selection is used, shade tolerant species regenerate, such as hemlock, beech and sugar maple. To regenerate shade intolerant species such as oak, ash or cherry, group selection is used. During harvests, groups of overstory trees are cut to create openings from one-quarter acre to one acre in size. Undesirable striped maple, ironwood and beech saplings are cut to allow establishment of desired species.

Where beech is scarce, it may be favored for its mast (beechnuts). In addition, during harvests in uneven-aged stands, all age classes are “tended” or thinned as needed. Such thinnings typically favor oak, maple, ash and cherry trees which are already established, raising their relative density in the stand. As their presence in the stand increases, so does their quantity of seed produced. This increases their long-term chances for successful regeneration.

Group selection will also be used to manage roadside Norway spruce plantations. For aesthetic reasons, future, even-aged management cutting of the entire overstory in these stands would be unacceptable. Experience has shown that adequate spruce regeneration can be established by cutting small, quarter-acre patches or strips.

Nearly all of the stands on the unit are presently even-aged as a result of agricultural abandonment and clearcutting in the early 1900's. Most stands on the Unit are approaching maturity. Smaller, more remote stands, which contain a significant oak or cherry component will be maintained as even-aged. The same direction will be set for the red pine plantations. This species does not naturally regenerate as well as the other tree species, since it is not well-adapted to the shallow, poorly drained soils of the Unit. It is also susceptible to windthrow when it becomes overmature for the site. For these reasons, red pine plantations will eventually be converted to even-aged hardwood seedling-sapling stands.

There are a few large even-aged Northern hardwood-oak stands on the unit which will present a challenge to foresters in the future. The largest is a 154-acre stand on Broome #8. The next treatment will be an even-age crown thinning to favor the best crop trees. However, if these stands continue to be managed as even-aged, subsequent treatments would include a seed cut to start advanced regeneration, followed by a release cut, harvesting the mature timber. To eventually remove the entire overstory over such a large area would be aesthetically unacceptable. One option is to divide these large stands into smaller stands, and stagger the treatment schedule. However, these areas would then lose their interior forest habitat value. Instead, these stands have been given an uneven-aged management direction for the long-term. Treatments in the distant future will use group selection to regenerate oak. Conversion of these stands occurs over many treatments, and so, it may be many decades before stands acquire an uneven-aged structure. As stated in the Preface, future updates of this plan may adjust the management direction for these and other stands as public needs and landscape conditions evolve.

Hemlock is a native evergreen conifer which is shade tolerant and regenerates easily using single-tree selection. It is desirable for its winter color and thermal cover for wildlife. In order to maintain large trees for aesthetics and mature interior habitat, the Northern hardwood-hemlock stands will be managed as uneven-aged. Because of the factors stated above, the Unit’s overall uneven-aged management acreage is greater than the even-aged acreage.

Forest product sales are the primary means of achieving the desired stand structures. The cutting cycle is the time span between treatments (e.g. timber harvests) in an uneven-aged stand. The thinning cycle is the interval between treatments in an even-aged stand. Intervals of approximately 25 years will be used for all stands. The age of trees at maturity for timber purposes varies, and depends on species, site and growing space. Red pine may be mature at seventy years, whereas Norway Spruce and hardwoods may mature at one hundred years of age or more.

Tree diameter classes are defined as follows:

	***DBH**
Seedling/Sapling-------	Less than 6"
Small Poletimber-------	6- 8"
Large Poletimber------	9-11"

Small Sawtimber ----- 12-14"
Medium to LargeSawtimber- 15" +
(*) Diameter at Breast Height

The following three objectives pertain to stands which will be managed as **Uneven-aged.**

1. Manage 1,911 acres for Northern Hardwood, Oak or Mixed Northern Hardwood-Oak

2. Manage 1,485 acres for Hardwood-Hemlock or Hardwood-White Pine

3. Manage 361 acres for Norway Spruce- Hardwood

The next three objectives pertain to stands which will be managed as **Even-aged**.

1. Manage 926 acres for Northern Hardwood, Oak or Mixed Northern Hardwood-Oak

2. Manage 32 acres for Norway Spruce-Hardwood

3. Manage 93 acres for Pioneer Hardwood

Pioneer stands tend to be old fields reverting to aspen-red maple on poor sites. Patch cuts (grouse cuts) of one to five acres result in dense sapling regrowth which provides nesting habitat for grouse, woodcock and other ground-nesting wildlife.

D. Habitat, Inventory, Cultural and Mineral Objectives:

Many other considerations are necessary for the management and protection of the State forests within the Unit. They are described in the following objectives.

1. Protect the natural resources from insects, disease, trespass and wildfire.

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

The protection of resources from injurious insects, diseases and invasive species will be accomplished through a program of integrated pest management. This program includes elements of reconnaissance, analysis and determination of thresholds and controls when necessary, emphasizing natural methods.

The integrity of boundary lines is important for resource protection. Periodic maintenance of 56.5 miles of boundary lines, and surveying when necessary, will maintain the integrity of the property lines. At present, the Unit's boundary lines are generally well maintained.

2. Archaeological Site Protection

The archaeological sites located within this land unit as well as additional unrecorded sites that may exist on the property are protected by the provisions of the New York State Historic Preservation Act (SHPA-Article 14 PRHPL), Article 9 of Environmental Conservation Law and Section 233 of Education Law. No action that would impact these resources are proposed in this Unit Management Plan. Should any such actions be proposed in the future, they will be reviewed in accordance with SHPA. Unauthorized excavation and

removal of materials from any of these sites is prohibited by Article 9 of Environmental Conservation Law.

3. Archaeological Research

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

4. Conduct periodic inventory.

Stands will be inventoried every ten years and re-inventoried after each silvicultural treatment.

5. Provide a variety of habitat structures.

Biological diversity can be conserved or increased by providing a variety of habitat structures. These structures, alive or dead, serve as biological legacies, providing ecological continuity for forest organisms. The following practices will be done where feasible.

a. Retain snags and cavity trees.

Snags and cavity trees provide a number of habitat functions for animal species. They are used by many organisms, providing food and shelter. Snags provide perching sites and eventually become downed woody debris. By retaining cavity trees in a range of tree diameters, a variety of large and small cavity users will be accommodated. Emphasis will be given to maintain these structures near water, fields and edges where possible. This will be applied in both even and uneven-aged systems where it does not create hazardous conditions.

b. Provide coarse woody debris.

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

- Tops of felled trees will not be sold for firewood following sawtimber harvests, except where they will negatively impact aesthetics.
- Non-commercial logs will be left in the woods during harvesting.
- Minimum utilization limits will generally not be required.
- Whole tree harvesting will not be permitted.

6. Enhance Wildlife Habitat

The following actions will enhance the diversity of habitats:

a. Release and prune apple trees to perpetuate them and to stimulate bud and fruit production.

Apple is a valuable food for many species of wildlife such as deer and turkey. Without release efforts, plant succession will shade the apple trees, lower their fruit productivity and eventually kill the trees. Pruning will

further enhance fruiting and availability of browse.

b. Reseed disturbed sites of roads and log landings with native, warm-season grasses.

Seeded with bluestem and switchgrass, such sites serve as wildlife food plots.

c. Favor mast producing trees during thinning.

d. Thin poletimber stands to enhance stand structure and promote timber growth

Poletimber stands often have the least downed wood, and little ground vegetation. Thinning of these stands will add downed woody debris and stimulate vegetation regeneration on the forest floor. (See Stand Management Tables for firewood thinning, pulpwood thinning, and non-commercial timber stand improvement thinning).

e. Prohibit spring logging when practical.

Harvesting during frozen conditions in winter and dry conditions in summer and fall causes less disturbance of the site and soils. Also, winter cutting provides some browse for deer and rabbits. Prohibiting logging in the spring avoids interference with active nesting sites. In addition, debarking damage to residual trees is greatest in spring when bark loosens as the new growth begins.

f. Erect nest boxes for waterfowl species around ponds and open wetlands.

7. Permit exploration and extraction of oil and natural gas reserves on the Unit. Permit surface evaluation of mineral resources. Do not permit hard rock procurement.

Article 23, Title 11, Section 23-1101 of the Environmental Conservation Law authorizes the DEC to make leases on behalf of the State for exploration, production and development of oil and gas on State lands.

In the event lands in this Unit are leased, the Department has rules and regulations concerning oil and gas production operations that will be applied to these lands as well as any lands within the State. The State, as in the case of any lessor, may incorporate agreed upon terms and conditions with the lessee to its benefit. It should be noted, where approved by the Department, leases on State land may permit surface disturbance in certain areas for well drilling and pipeline construction, while other areas are off limits due to Department regulations and surface management reasons. During the drilling phase of a well, approximately one to two acres of open or cleared land may be required to accommodate drilling equipment for a period up to two months. Additional clearing may be needed for buried pipelines and access roads. Once drilling operations are concluded, producing well sites will often be reclaimed to an area of less than 1/4 acre. Equipment will be removed and lands will be reclaimed to reasonably match surrounding contours of the land and revegetated to match the surrounding habitats and prevent erosion. Any siting of wells and associated access roads will be integrated into the land managers' surface management plans wherever reasonably possible, in an effort to lessen impacts on lands and improve infrastructure of the forest. Lessee and other users will maintain and repair access roads as pertains to their uses during the period of lease operation. The routing of necessary pipelines for a well will normally be alongside these existing roads or other Department approved routes to limit additional surface impacts. Pipelines will be buried to a minimum depth of four feet below the surface. At the conclusion of well production, the well will be plugged and final reclamation will occur. Well siting on the Broome State Forests Unit will not be permitted within designated natural areas, protection areas, aesthetic roadside buffers and all wetland, riparian or other aquatic habitats.

As part of this UMP process the DEC has completed individual tract proposal reviews for each forest within

this Unit, and has determined which areas would be excluded from or limit surface disturbance for access should leasing be initiated. Maps depicting these areas are included in the Maps and Schedules, Appendix XI. Included in Appendix XI are maps depicting the heirarchy of areas available for oil and gas operations in these areas. Any parcel determined by the Department to be available on a **non-surface entry** basis will no longer be subject to the process detailed above due to the prohibition of surface disturbance. 1) The Broome-Tioga-1 State Forest was nominated in the 2006 gas lease. 2) On June 2, 2006, the Department released a statement indicating that the Tracy Creek State Forest will be available for gas leasing on a non-surface entry basis only. 3) The other seven State forests addressed by this UMP have not been nominated for gas leasing as of the date of this Plan. 4) Specific details pertaining to gas leasing on these seven forests will be discussed at the time of any proposed lease. General oil and gas leasing procedures are outlined in Appendix IX.

Well Siting Objective: The Broome State Forests Unit Management Plan allows for the potential siting of oil and gas wells on seven of the eight State forests in the Unit. Oil and gas reserves located beneath areas which are considered incompatible with well siting may still be extracted using nearby well's surface locations or through the use of directional drilling. To reduce erosion, well sites will not be located on slopes exceeding 15%. Where surface entry for gas exploration is allowed, drilling will first be considered at sites where land clearing is most consistent with objectives. These sites include open and brush and declining red pine plantations. One of this plan's objectives is to manage for bio-diversity and aesthetics by retaining long-lived conifers such as hemlock, white pine and Norway spruce beyond economic (timber) maturity. The occurrence of this older conifer component on the landscape is relatively small, and the Department will limit impacts in these areas**.** Department review of site specific factors may result in a maximum of one well per forest in stands containing a long-lived conifer component. Exceptions to a one well limitation in these stands must be approved by the Department in writing. The tract assessment maps in this plan entitled "Tract Assessments for Oil & Gas Surface Disturbance" depict the areas on each forest that are considered to be compatible or incompatible with oil and gas surface disturbance. These tract assessments show that 68% of the acreage on the Unit is considered to be incompatible with siting oil and gas wells. Acreage that is compatible with such disturbance covers 32% of the area. The acreage compatible with well siting is separated into two categories; preferred and alternate (long-lived conifer). The preferred category (22% of the Unit) will be examined for well siting before considering the alternate (10% of the Unit). Exceptions to these tract assessment limitations are possible if additional analysis, protective measures, new technology, or other issues warrant a change in the "compatibility" status of an area.

Well Spacing Objective: According to Article 15 of the Environmental Conservation Law, a drilling pad development plan must be submitted by the lessee to the Department for approval if the proposed drilling of a fourth or subsequent well on each forest in the Unit will result in the clearing of a new well site location and access road such that the drilling pad density on the forest exceeds on drilling pad per three hundred and twenty acres (320). The lessee shall, prior to any further drilling pad and access road construction on the property, abide by the approved drilling pad development plan in order to minimize the surface disturbance of the property. The plan shall identify, on a well by well basis, specific techniques to be employed to keep surface impacts to a minimum and reduce fragmentation of the forest while remaining consistent with the well spacing requirements of Article 23 of the Environmental Conservation Law and its attendant regulations. Techniques to achieve the above stated objective shall primarily rely on, but, subject to Department approval, shall not be limited to:

- use of existing roads
- expanding existing well pads to accommodate additional wells
- directional drilling one or more wells from an existing or new pad.

Any variation from the final approved plan must be approved by the lessor in writing.
Subsequent to drilling operations, sites will often be reduced to less than 1/4 acre to accommodate a

producing well**.** Additionally, well sites will be reclaimed when wells are plugged and so that no more than three sites are active with drilling and/or completion operations per forest at any one time, unless otherwise approved by the Department.

Buffer Guidelines: This plan has identified specific objectives for these forests pertaining to recreation and bio-diversity. One of these objectives is to protect the appearance of the woodlands along roads and trails. The relatively small size of the forests, their proximity to urban areas along with favored activities expressed by the public, warrants the use of forested buffers for aesthetic preservation. Maintaining the appearance of the forests along the road corridors also provides a positive influence for local tourism and the associated economy. Maintained public roads will be visually protected on each side by a 150-ft. forested buffer. Recreational trails will be protected on each side by a 250-ft. forested buffer. Within these buffers, conservative timber management may be practiced, however, oil and gas wells, large log decks, and even-aged canopy removal will not be allowed. Well pads will be set back at least 250 feet from streams, ponds and wetlands to protect water quality. If necessary, to access drilling sites, new roads may be constructed through road and trail buffers, across streams, and on less than 25% slopes if done according to Best Management Practices under the guidance of the Department. Construction of roads, pipelines and utility lines will be allowed only when needed to serve a well on State Forest land**,** and will be located along Department approved routes, Public Forest Access Roads or the existing disturbed areas created to construct the well site. Pipelines will be buried at least 4 feet below the surface.

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 Department lands prior to leasing they must first obtain a Temporary Revocable Permit (TRP) for the access and use of State lands. If the area is subject to a lease agreement, only the lessee, or parties authorized by the lessee, can be issued a TRP for these purposes.

Procedures for Mineral and Rock Procurement

In the event a party desires to explore and procure minerals and/or rock (including salt) from State lands, the party must be issued a permit, consent or lease of such duration as the commissioner may deem advisable, from the General Services Office, under Article 7 of the New York Consolidated Laws / Public Lands. 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 or the Division of Fish, Wildlife and Marine Resources. Mining operations are regulated by the Division of Mineral Resources.

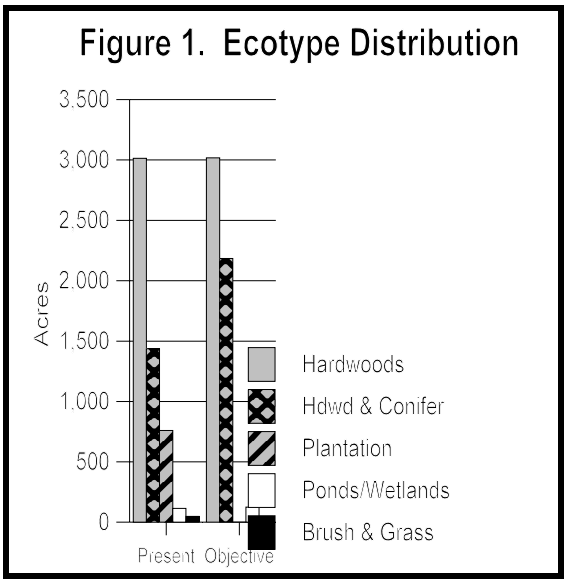
There are no mining contracts, or permits, on any areas in this Unit Management Plan. Under Article 7 of the New York State Consolidated Laws, any citizen of the United States may apply for permission to explore and/or extract any mineral on State lands. However, to protect surface resources, current Department practice is to prohibit any commercial surface mining on any lands covered by this Unit Management Plan, as these activities with the purposes for which Reforestation areas were purchased.

Summary of Ecotypes in the Unit

Ecotype distribution and objectives are presented in Figure I and Table III.

TABLE III. PRESENT AND FUTURE ECOTYPES

Natural Hardwoods	33,014	56	3,018	56
Mixed Nat. Hardwood & Conifers	1,437	27	2,184	41
Plantations	760	14	0	0
Ponds	71	1.3	71	1.3
Wetlands	44	<1	53	1
Brush-Apple	46	<1	46	<1
Grass Land	1	<1	1	<1
Shale Pits	1	<1	1	<1
Total	5,374	100	5,374	10



II. Public Use and Recreation

State forests within the Unit are part of the Draft Region 7 Recreation Master Plan. The Draft Recreation Master Plan conveys guidelines for recreational development on State forests throughout the region. For purposes of this UMP, these guidelines will be applied to the Broome State Forests as well when the draft is finalized. Activities allowed will be compatible with maintaining and protecting the natural character and features of State land. They will be consistent with multiple use management objectives. Visitors to State forests do not pay admission fees.

There are three components to the public use and recreation section of this plan:
- Maintaining and enhancing public access
- Maintaining and enhancing recreational opportunities and facilities
- Provide educational opportunities

The above guidelines and principles will be used to determine the extent of development and type of facilities. Numerous other factors influence the placement or expansion of facilities on this Unit. These influences include public safety issues, accessibility, aesthetics, fiscal constraints and recreational opportunities beyond the boundaries of the Unit.

The Americans with Disabilities Act (ADA) and Its Influence on Management Actions for Recreation and Related Facilities

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 the Department 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 the Department. Since recreation is an acknowledged public accommodation program of the Department, and there are services and activities associated with that program, the Department 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 a formal 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. Each Unit Management Plan prepared by the Department will outline a proposed assessment process and a schedule for completing the assessment. This activity is dependent on obtaining an inventory of all the recreational facilities or assets supporting the programs and services available on the unit. The assessment will also establish the need for new or upgraded facilities or assets necessary to meet ADA mandates. The Department is not required to make each of its existing facilities and assets accessible. The facilities or assets proposed in this UMP are identified in the "Management Actions" section.

The Americans with Disabilities Act Accessibility Guidelines

The Americans with Disabilities Act (ADA) requires public agencies to employ specific guidelines which ensure that buildings, facilities, programs and vehicles as addressed by the ADA are accessible in terms of architecture and design, transportation and communication to individuals with disabilities. A federal agency known as the Access Board has issued the ADAAG for this purpose. The Department of Justice Rule provides authority to these guidelines.

Currently adopted ADAAG address the built environment: buildings, ramps, sidewalks, rooms within buildings, etc. The Access Board has proposed guidelines to expand ADAAG to cover outdoor developed facilities: trails, camp grounds, picnic areas and beaches. The proposed ADAAG is contained in the September, 1999 Final Report of the Regulatory Negotiation Committee for Outdoor Developed Areas.

ADAAG apply to newly constructed structures and facilities and alterations to existing structures and facilities. Further, it applies to fixed structures or facilities, i.e., those that are attached to the earth or another structure that is attached to the earth. Therefore, when the Department is planning the construction of new recreational facilities, assets that support recreational facilities, or is considering an alteration of existing

recreational facilities or the assets supporting them, it must also consider providing access to the facilities or elements for people with disabilities. The standards which exist in ADAAG or are contained in the proposed ADAAG also provide guidance to achieve modifications to trails, picnic areas, campgrounds (or sites) and beaches in order to obtain programmatic compliance with the ADA.

ADAAG Application

Current and proposed ADAAG will be used in assessing existing facilities or assets to determine compliance to accessibility standards. ADAAG is not intended or designed for this purpose, but using it to establish accessibility levels lends credibility to the assessment result. Management recommendations in each UMP will be proposed in accordance with the ADAAG for the built environment, the proposed ADAAG for outdoor developed areas, the New York State Uniform Fire Prevention and Building Codes, and other appropriate guiding documents. Until such time as the proposed ADAAG becomes an adopted rule of the Department of Justice, the Department is required to use the best information available to comply with the ADA; this information includes, among other things, the proposed guidelines.

Public Use and Recreation Objectives

1. Maintain 2.7 miles of existing public forest access roads.

2. Maintain 1 shale pit on Broome #5.

Shale pits are used primarily for constructing or resurfacing roads and parking areas.

3. Maintain 28 existing pulloffs for parking throughout the Unit.

4. Maintain 2.2 miles of trail open to motor vehicle use by people with mobility impairment disabilities on Broome #8.

Application for the required permit for this use is made through the Sherburne DEC office.

5. Install rock barriers to control vehicular access to both ends of the ATV (permit) trail on Broome #8, and maintain the gate at the entrance to the public forest access road on Broome #3.

Rocks spaced 48 inches apart allow entrance by ATV's (with permit), but not cars or trucks.

6. Acquire appropriate parcels of private land from willing sellers.

Desired acquisitions must contribute to or enhance program objectives, and be guided by the provisions in the State's current Open Space Plan. Purchases may include inholdings, unique features, water resources adjacent to the forests of the Unit, parcels which link nearby State forests and parcels which consolidate boundary lines or provide needed access.

7. Produce an informational brochure for the Unit.

8. Maintain eight forest identification signs; one per forest, and install eight informational kiosks; one per forest.

9. Designate two open camping sites at Marsh Pond.

10. Maintain 2.2 miles of cross-country ski trail on Broome #3.

11. Install rock barriers to block vehicular access to the trail on Broome #4, Stand 10, from Bryce Road.

12. Encourage use of the Adopt a Natural Resource Program.

Projects may include trail maintenance and wildlife habitat improvement. Applications are made through the Sherburne DEC office.

13. Conduct an annual State Forest tour.

Each year, one of the Broome State Forests will be selected for a public tour led by a State forester. The tours will serve as a forum to exchange information between the Department and the public, as well as to showcase the natural resources of the Unit.

A. STAND MANAGEMENT TABLES and FOREST TYPE MAPS

The following tables describe the forest type, objective type, management direction, and year of treatment for each stand in the unit. Objective types and management directions may be in place at present, or will be achieved within 50 years. The schedule on page 61 groups stand treatments by timber sale, and lists these sales by year. Forest cover types and abbreviations must first be defined as follows:

Forest Cover Types

The cover type of a forest stand will be described using at least one, and not more than three, group cover types (Northern Hardwood*) or tree species (White Pine) that are considered to compose a significant portion of the forest stand. In order for a species or group to be considered significant, it must comprise at least 15% of the forest stand. Typically, one primary group cover type or species comprises at least 30% of a stand. Therefore, the following list of stand cover types uses the 30% level to define the primary component of the stand. The following is a list of some of the common forest stand cover types on the Broome State Forests Unit.

1.	NH	≥ 30% Northern Hardwood with no other significant species or group.
2.	NH-Oak	≥ 30% Northern Hardwood and ≥ 15% oak.
3.	NH-Hem	≥ 30% Northern Hardwood and ≥ 15% hemlock.
4.	NH-WP	≥ 30% Northern Hardwood and ≥ 15% white pine.
5.	NH-NS	≥ 30% Northern Hardwood and ≥ 15% Norway spruce.
6.	NH-WP-Oak	≥ 30% Northern Hardwood and ≥ 15% white pine and ≥ 15% oak.
7.	Oak	≥ 30% oak species with no other significant species or group.
8.	Oak-Hem	≥ 30% oak and ≥ 15% hemlock.
9.	Oak-Hem-NH	≥ 30% oak and ≥ 15% hemlock and ≥ 30% N. Hardwood.
10.	Oak-WP	≥ 30% oak and ≥ 15% white pine.
11.	Oak-Hickory	≥ 30% oak and ≥ 15% hickory.
12.	Hem	≥ 30% hemlock with no other significant species or group.
13.	Hem-Oak	≥ 30% hemlock and ≥ 15% oak.
14.	Hem-WP	≥ 30% hemlock and ≥ 15% white pine.
15.	NS	≥ 30% Norway spruce with no other significant species or group.
16.	NS-NH	≥ 30% Norway spruce and ≥ 15% Northern Hardwood.
17.	NS-WP	≥ 30% Norway spruce and ≥ 15% white pine.
18.	RP	≥ 30% red pine with no other significant species or group.

19.	RP-NH	≥ 30% red pine and ≥ 15% Northern Hardwood.
20.	WP-Hem	≥ 30% white pine and ≥ 15% hemlock.
21.	PH	≥ 30% pioneer hardwood* (“PH” is pignut hickory under species codes)
22.	WS	≥ 30% white spruce
23.	JL	≥ 30% Japanese larch

*Northern Hardwood is generally a mix of maple-beech-birch, but may also contain white ash, basswood and black cherry.

Pioneer hardwood is generally a mix of aspen and red maple, but may also contain black birch.

SPECIES/FOREST TYPE CODES

ASP - aspen
BAS - basswood
BB - black birch
BC - black cherry
BE - beech
BO - black oak
BR - brush
BR-APP - brush-apple
CO - chestnut oak
JL - Japanese larch
HEM - hemlock
HIC - hickory
HM - hard maple (sugar maple)
NH - Northern hardwood
NS - Norway spruce
PH - pignut hickory (under species) (“PH” is pioneer hardwood under forest type)
RP - red pine
RM - red maple (soft maple)
RO - red oak
SH - shagbark hickory
SP - Scotch pine
WA - white ash
WB - white birch
WO - white oak
WP - white pine
WS - white spruce
YB - yellow birch

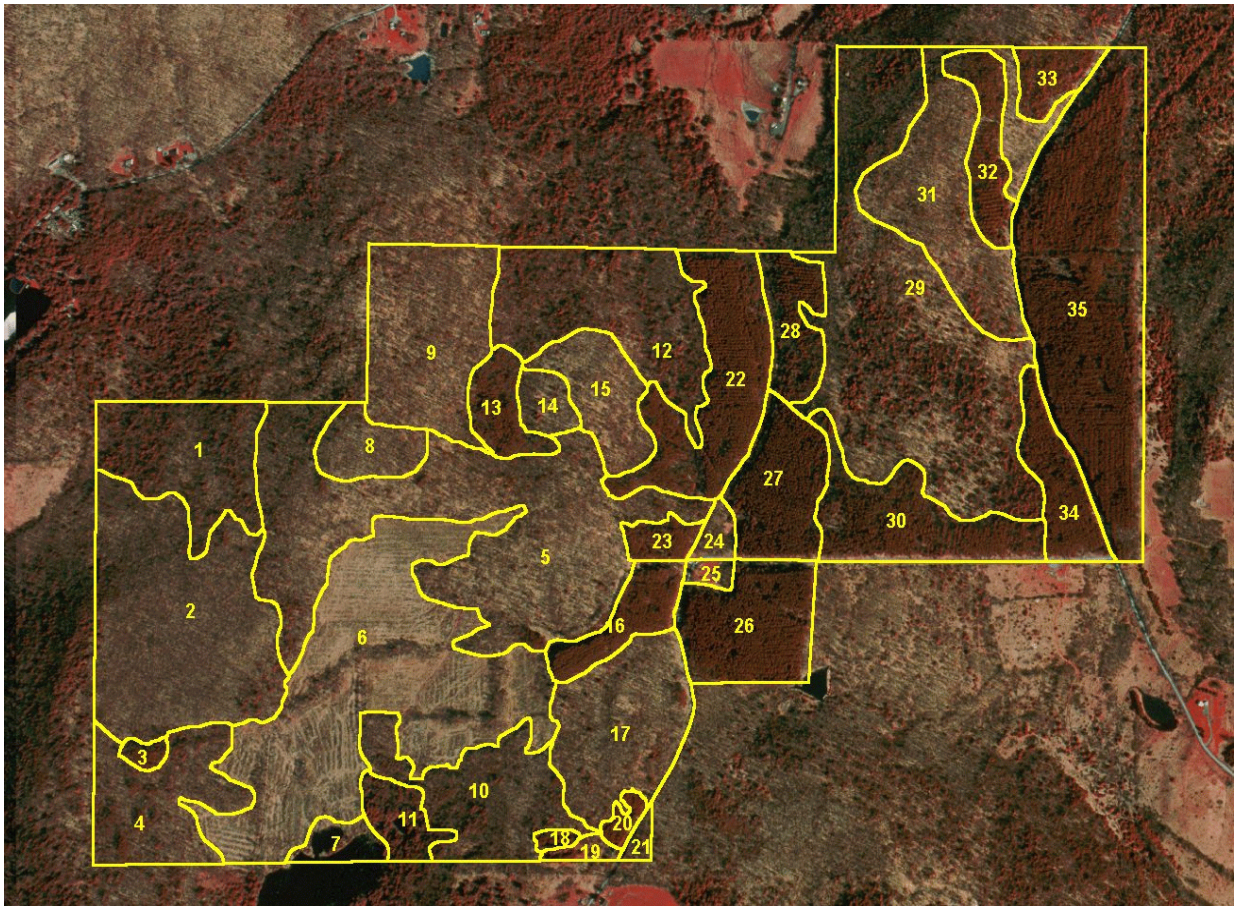
DBH

SS - seedling-sapling, 0 to 5"
PT - poletimber, 6" to 11"
ST - sawtimber, 12" and larger

MANAGEMENT DIRECTION CODES

E - even-aged management
ES -even-aged management, short rotation in pioneer hardwood for grouse habitat
U - uneven-aged management
BR - brush
BR-A brush-apple
NA - protection, natural area
ZA - protection, inaccessible
ZR - protection, riparian
ZV - protection, visual (aesthetics)
ZW - protection, wetland

TREATMENT CODES

FW - commercial firewood thinning
GC - grouse clearcut for habitat
PU - pulpwood and sawlog commercial thinning in Norway spruce stands
RC - red pine conversion to hardwood seedling-sapling
RE - release apple, blueberry or maintain brush by cutting overtopping trees
RT - commercial red pine thinning
ST - commercial hardwood sawtimber sale, with firewood marked for thinning purposes
TSI - timber stand improvement, non-commercial

BROOME - 3 Hawkins Pond
Scale: 1 inch = 1256 feet
⇑ North
1995 photo