# NELSON SWAMP UNIQUE AREA

Stewardship Management Plan


Prepared by: NYSDEC Region 7 Management Team in cooperation with
The Nelson Swamp Citizens Advisory Committee

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## PREFACE

The Nelson Swamp Stewardship Management Plan provides the blueprint for an ecosystem approach to management which will be biologically sound, economically feasible and socially acceptable. The plan's goals and objectives are directed to ensure the protection and sustainability of the area's ecosystems while providing multiple use benefits that are compatible with the well being of the area's sensitive resources.

The plan addresses all management on the Area for the next twenty year period. There will be a review and update provided in the tenth year. It should be noted that factors such as forest health problems and budget and staffing constraints may necessitate deviations from the plan. All deviations will require the approval of the Regional Forester.

The 1986 Environmental Quality Bond Act included provisions for the acquisition of unique areas and other environmentally sensitive land projects. Authorization for the Department of Environmental Conservation (DEC) to acquire and manage lands within Nelson Swamp originates in the 1986 Bond Act and present and future acquisitions are guided by the New York State Open Space Plan.

**Introduction**

The Nelson Swamp Unique Area project is an outgrowth of early and continuing interest in this central New York resource. For many decades the area was the subject of biological study; known to some as a repository of rare and unusual plants, and to others as home to a variety of birds.

On November 4, 1986, 67% of New York's voters passed the Environmental Quality Bond Act (EQBA II). A significant portion of the debt bonding was to be directed towards the protection of environmentally sensitive lands and particularly the protection of lands which were considered vulnerable to development. Public meetings held in the Spring of 1987 gave organizations and individuals the opportunity to voice their advocacy for the State acquisition of Nelson Swamp.

On August 12, 1987, the New York State Department of Environmental Conservation (DEC) submitted an application package for the acquisition of Nelson Swamp under the EQBA II categories of unique area and exceptional forest character. At this time strong endorsement was received from The Nature Conservancy and by faculty members of SUNY College of Environmental Science and Forestry. Following department conceptual approval of the application, a steering committee composed of six volunteer members was formed to work with DEC staff. The members represented local government, the planning board, local business, agricultural interests and the scientific community. Two meetings were held during the Fall of 1987 in which many of the project's dimensions as well as impacts were explored. The perceived needs for acquisition included perpetual protection, study and management of the ecosystem. Several aspects of compatible public use were discussed. Staff pointed out that the model for management found at Labrador Hollow Unique Area was representative of the depth of stewardship that DEC would simulate.

Many concerns were viewed by steering committee members. Some expressed the fear that private property rights would be compromised. Further, some said the tax base would be eroded as private holdings were acquired. Some questioned the State's ability to protect the land in an era of reduced budget allocations. Additionally, the reality of public ownership would lead to increased public use--this seen as contradictory to the need to protect sensitive sites.

The DEC staff was encouraged to meet these concerns by holding a public information meeting on November 23, 1987, at Cazenovia High School. Approximately 200 people attended the meeting and were given the opportunity to express their views as well as raise relevant questions. Opposition to State acquisition clearly dominated the meeting.

It was apparent that the DEC needed to further clarify its position and rationale regarding many of the project's facets if it was to be successful. This took the form of an environmental impact statement study begun in the Fall of 1988. Prior to its completion, a public hearing was held to receive comments. The supplemental final EIS was adjusted in several areas to reflect DEC's willingness to reconsider and modify its original plans. Its acceptance by the lead agency came on October 18, 1989. This document is referenced and is available for review by contacting the DEC Sherburne Office.

One outgrowth of the EIS study was the conclusion that stewardship of Nelson Swamp would require the preparation of a management plan. It was to be based upon a vision of care and custody of the resources contained so as to assure their sustainability. Its goals, objectives and proposed actions, although drafted by DEC staff members, would be influenced and guided by an advisory committee. Throughout the planning process, the insights brought by committee members have

helped to shape the draft plan in many ways. The Sherburne DEC staff is indebted to the members and deeply appreciates their past and continuing efforts. The members and their affiliations are listed below:

Carl Anderson-Town of Nelson-Supervisor
Francis Costello-Town of Fenner-Supervisor
Patrick Costelly-Town of Cazenovia-Supervisor
Richard Ford-Nelson Planning Board
Elva Hawken-Environmental Supporter
Donald Leopold-S.U.N.Y.-E.S.F. Botanist
Russell Lura-Madison County Planning Board
Jerry Smith-The Nature Conservancy
Fay Lyon-Local Resident & Farmer
Norman Odell-Local Resident/Town of Nelson Planning board

Staff is saddened by the news of Mr. Odell's passing. We will miss him and his enthusiastic participating on the Advisory Committee.

**Early History of the Nelson Area**

The years following the American Revolutionary War witnessed the opening of lands west of the Unadilla River to colonial expansion. Treaties made with the Oneidas in 1784 and 1788 saw vast territories being acquired by the State. Some 500,000 acres were purchased for less than $.05 per acre. To facilitate settlement, the State directed the Surveyor-General Simeon DeWitt to survey and delineate the lands, to be called the Chenango Twenty Townships, into towns measuring 500 x 500 chains (1 chain = 66'), sections of which there were four equal parts and lots to contain 150 acres each.

In 1793 a large amount of land was purchased by Alexander Webster, this in turn being sold the same year to Col. John Lincklaen, a promoter of settlement. It contained the Town of Cazenovia, which became organized in 1795. In 1807, what is now the town of Nelson, was set off from Cazenovia and became number one of the Chenango Twenty Townships. Nelson held its first town meeting that year and elected its slate of officers.

The Nelson Swamp area actually includes portions of three townships, including Nelson, Cazenovia and Fenner. Nelson refers to the famed British Naval Officer Horatio Viscount Nelson. Cazenovia was named for Theophilus Cazenovia, an agent of the Holland Land Company, who had been an associate of John Lincklaen. Fenner was named for Governor Fenner of Rhode Island.

Interest in settling the area around Nelson came early. In 1793 Jebediah Jackson and Joseph Yaw purchased land on behalf of several Vermont families. Some twenty-six families arrived within two years. Among these families were Ebenezer and Chloe Lyon, who in 1794 settled on lots 78 and 79. Mr. Lyon was a justice and became Nelson's first Supervisor. Members of the Lyon family have continuously resided in Nelson for more than two centuries.

The first site proposed for a village was on a terrace midway up a hill called Mount Pisgah. Joseph Culter had seen this site as the nucleus of a growing settlement and gave it the name Argos. Because it was close to an existing roadway and sure to attract travelers, he built a large inn on the site. He erred in his speculation as the soon-to-be constructed Cherry Valley Turnpike was established some distance away from the Inn and would not provide direct access for his patrons. His dream vanished, but the name Argos could yet be found on the historic "Eddy Map" of 1818. The permanent settlement of Nelson was established alongside the Turnpike and for many years was called Nelson Flats.

Public road were indispensable to early settlement. One important road was the Skaneateles Turnpike which stretched from Brookfield to Skaneateles by way of Eaton, Erieville and New Woodstock. The other was the aforementioned Cherry Valley Turnpike; it was built in 1806 and became a busy stage and wagon thoroughfare. It was also known as the Great Western Turnpike. In crossing the flats, or swamp, a corduroy bed of wooden planks was required frequently. Because animals were driven along it, the road was fenced.

Early settlers found the territory to be almost entirely wooded. The task of clearing for

subsistence farming was immense. In 1844 Ledyard Lincklaen, in referring to those early days in a speech remarked:

> "As the eagle circled in our sky, his vision rested on an ocean of foliage... only in a few scattered placed that his eye could discern a chasm...where the axe of the backwoodsman had let in the sunlight around his humble cabin."

Within the Town of Nelson land clearing proceeded rapidly so that by 1824 there were 11,805 opened acres increasing to 20,822 acres by 1875. Sheep were by far the most numerous farm animal. In 1845 there were 28,884 sheep, followed by 3,243 cattle, 1,621 swine and 651 horses.

Farming was a struggle in that day as it is today. Wolf predation was such a great concern that local authorities offered a $20 bounty, in addition to a state bounty, for every one killed. The year 1816 is recalled for its special hardship for in that year there was no month in which it did not freeze and snow.

Agriculture and its related endeavors formed the basis for much of the early industry. Farmers cut timber and produced wool, meat, hides, grains, milk, fruit and hops. Spin-off industries included cheese factories, sawmills, grist mills, tanneries and more. Blacksmithing, cooperage, wagon and harness making were common related enterprises. Cedar posts were cut for fencing. Slender cedar poles were also cut to be used as support for hop vines. Many of the area farmers owned small parcels of cedar within the swamp, commonly called post lots.

In recent years farming has seen a decline, as is true throughout most of New York State. Despite the fact that the average size of farm has increased from 123 to 220 acres (Madison County figures from 1945 to 1969), the overall acreage in farming has declined nearly 30%.

During the 1800's, the population grew rapidly in the three towns. In 1870 Nelson held 1,730 people, Fenner contained 1,380 and Cazenovia 1,718. In 1867 Nelson had 13 schools with 462 pupils enrolled. The school budget in that year was $1,366.26. The 1990 census reports that Nelson had a population of 1,892, Fenner 1,694 and Cazenovia 6,514.

Chittenango Creek flowed through the Valley, generally from northeast to southwest. It was commonly called "Chittening" Creek by settlers, but was derived from the Oneida word "Chu-de-naany", meaning "where the sun shines out". One feeder to the Creek flows from Tuscarora (Erieville) Reservoir. The Hamlet of Erieville and later the Reservoir was named after Eri Richardson, an early store and hotel proprietor. The Reservoir was built in 1850 as a feeder to the Erie Canal.

The abandoned grade of the Syracuse and Chenango Valley branch of the West Shore Railroad can be seen running nearly parallel to Hardscrabble Road. Many communities along its fifty-mile route helped to finance its construction by issuing bonds. Once completed in 1872, it connected Earlville with Syracuse.

An early landmark on the Cherry Valley Turnpike was the Tog Hill Tavern built in 1813. Tog, the nominal word for Tug, probably referred to the observation that horses often broke their tugs (or harnesses) in pulling the long steep grade. Another landmark was the Sickle and Sheaf Drovers Tavern, built on a site near the present-day Nelson Inn. It ceased operation in 1874.

During the 1840's a large number of Welsh people emigrated to the area particularly in the northeast part of Nelson township. They formed the Welsh Congregation Church in 1850. The Church that was built in 1876 to accommodate the growing membership had the inscription "1876 JTJ" engraved on one of the foundation stones. Its builder, James T. Jones would be gratified that this church stands today and still hosts worship services.

## Information on the Unique Area

**Location:**
The Nelson Swamp Unique Area lies within Region 7 of the New York State Department of Environmental Conservation. It is located in the west central section of Madison County, one of Region 7's nine counties (Appendix 1). It is approximately 20 miles southeast of Syracuse, and 13 miles southwest of Oneida.

The Unique Area is contained within three townships (Appendix 2). The acreage for each town is:

| | |
|---|---|
| Fenner | 200+/- |
| Cazenovia | 200+/- |
| Nelson | 1100+/- |
| TOTAL | 1500 Acres |

Of the 1,500 acres lying within the project's boundaries, the DEC has acquired title to 574 acres (Appendix 3). Sixty-four acres are within the Town of Cazenovia while 510 acres lie within the Town of Nelson. The center of the Area is at the latitude of 42 degrees 53 minute N and longitude of 75 degrees 47 minute W. It is approximately 1,380 feet above sea level at the creek level.

U.S. Route 20 (Cherry Valley Turnpike) passes E-W through the Swamp. The Hamlet of Nelson lies along the highway and extends a short distance north and south of it on the Erieville and Fenner Roads.

**Climate:**
Nelson Swamp's climate is typical of northern temperate zone conditions. It is relatively humid and is influenced by continental and coastal weather patterns. Prevailing winds are from the west-northwest. Relative humidity ranges on average from 60 percent in mid-afternoon to 80 percent at dawn.

The weather data recorded in Morrisville, New York, from 1951-72 can be regarded as representative of Nelson. The temperatures range from a low monthly mean of 18.2 degree F in January to a high monthly mean of 63.2 degree F in July. The average number of annual growing degree days, a unit representing the amount of cumulative heat available for plant growth, is 4,608. Annual precipitation averages 37.84 inches. Average annual snowfall is 110.3 inches.

**Geology and Soils:**
During the Silurian period of earth's ancient history, much of present-day New York State was covered by a vast salt water sea. Silts that accumulated at its bottom became the raw material to form shales. Crustaceans and the skeletal remains of fishes and other aquatic creatures also accumulated as they expired. These became compressed over time and ultimately formed limestone. Shale bedrock can often by seen along the sides of highway cuts. Evidence of the limestone is easily seen at various sites along the Helderberg Escarpment, a steep, north-facing rock formation eight to ten miles north of Nelson. The shales and limestones thus formed during the Silurian, and later the Devonian periods (300-340 million years ago) have become the mineral basis for many of the soils of Madison County.

The land forms which we witness today are largely the result of glaciation. During the glacial era which lasted from 300,000 years ago to about 10,000-15,000 year ago, there were a series of glacial advances and retreats that occurred due to alternating global cooling and warming. Ice sheets hundreds of feet thick laden with soil and rocks gouged out valleys and lake bottoms and later

deposited their burdens as they began their retreat.

The final retreat of the glacier first exposed the hill tops (the ice being thinnest there) and dropped off mixtures of fine and course particles, collectively referred to as glacial till. Valley bottoms were the last to see the glacier's retreat. There the melt water deposited pockets of soils, sands and rocks that collectively are known as outwash deposits. Kames, eskers and moraines are some of the varied outwash formations resulting from these deposits. Commercial sand and gravel pits near Chittenango Creek owe their existence to the glacier's work.

Swamp, bog and fen are words used interchangeably at various times to describe the conditions found in Nelson Swamp. A swamp, to be technically correct, can only occur on mineral soils. Bogs, on the other hand, have organic soils. Their water source comes almost entirely from precipitation; there is very little flow in or out of bogs. They have an acidic reaction as a result, which favors only those plants adapted to acidic conditions. The word fen is the most appropriate term to describe Nelson Swamp since it has organic soils and receives its water from the surrounding terrain. The water moves across the soil surface and through the subsurface as well. It is rich in mineral content, the minerals including calcium carbonate, magnesium and sulphur. The high nutrient levels which are fed continuously by the mineral-rich water produces a great variety and abundance of plant life.

The entire length of the Chittenango Creek corridor consists of the Wayland silt-loam soil type. This soil is flooded annually and thus receives regular deposits of fine soil particles. Rooting depth is severely limited though, due to the fact that these soils remain quite wet much of the year. The Wayland soil sites can be grazed but are not suitable for tillage farming.

Adjacent to the Wayland soils are the Carlisle-Palms muck soils; these soils occupying the majority of Nelson Swamp's sites. These soils are deep and consist of sixteen to fifty-one inches of organic material stop a mineral soil base. The sites are level or nearly level and remain saturated with water all year long. The organic layer consists of totally and partially decomposed plant materials, including much woody debris.

Typically the organic component of the Carlisle-Palms soils would be somewhat acidic. The underlying mineral soils have a moderate alkaline reaction. Waters feeding these sites tend to be somewhat alkaline as well, so that the combined effect amplifies the pH level. What is typically seen in the soil profile is a range of soil reactions, the surface profiles being somewhat acidic but deeper layers becoming progressively alkaline. Thus it is common to find acid-living plants occupying the upper layer of the soil profile and those adapted to higher pH levels more deeply rooted.

There are a number of other soils that occupy a relatively small amount of acreage within the swamp. Teel soils, like the Wayland soils, are derived from stream deposited silts and can support farming use. Edward soils are similar to the Carlisle-Palms soils that consist of mucks. The prolonged wetness greatly reduces the possibility of farming.

Halsey, Palmyra and Fredon soils are also present in small acreage. They are all derived from glacial melt water deposits. The potential for farming is reduced for the Fredon soils because of seasonal wetness. The Halsey and Palmyra soils have severely reduced farming success because of wetness and erosion potential.

Canandaigua soils occupy small acreage near the Carlisle-Palms sites. They are formed from the deposits of glacial lakes. Because of prolonged wetness, the farming chance is considered very poor. A final group of soils found in small acreage are Appleton, Lyons, Honeyoye and Lima. These soils are formed from glacial till and offer moderate to good farming opportunities, despite some seasonal wetness.

While soil descriptions do an adequate job in revealing the surface and subsurface characteristics, the structural features found above ground go further in providing the basis for the rich

variety of Nelson's plant life. A hiker is quickly exposed to the hummock and hollow micro topography, greatly slowing down one's progress. The hollows are created when trees are wind thrown, the upended roots forming a hummock. The central boles of the downed trees gradually become colonized by mosses and tree seedlings, acting as "nurse logs" for the re-establishment of plant life. Complex symbiotic relationships between fungi and mosses accomplish the transfer of nutrients and moisture, even acting as nitrogen fixers. Further structural diversity is provided by standing dead trees (snags) and cavity trees.

**Water Resources and Wetlands:**
The dominant water course within the Unique Area is Chittenango Creek. Its waters flow into Oneida Lake, thence through the Oswego River to exit into the St. Lawrence River. The main channel of the Chittenango Creek is formed by two branches which join in Nelson Swamp. The north branch flows south from the Town of Fenner while the south branch flows northwesterly from Erieville Reservoir. Its nature changes significantly during its 52 mile length. Curiously, it initially flows southerly and westerly, then rather abruptly swings to the north. Gradients are initially low but as the stream traverses the escarpment, it becomes very steep. Midway on its journey it flows through Chittenango Falls State Park, plummeting some 134 feet. Within the Park resides the ovate amber snail, this being its only known population site.

Chittenango Creek is a classified C(+) trout stream for a distance of 36 miles of its 52 mile reach. It is regarded as one of the most important trout fishing streams in central New York. With the exception of four small tributaries feeding the Creek, all of its waters which lie within the Unique Area boundaries are C(+) waters. The four exceptions have the next lower, or D, classification. A listing of the project's water courses, their classes and standards, as well as a map of their location is found in Appendix 4 & 5.

The Unique Area contains several freshwater protected wetland components. The largest is the Class I Wetland CA-5, historically associated with the name "Cedar Swamp". A listing of the other wetlands, and a map are provided in Appendix 6. Approximately 60% of the 1,500 acres within the Unique Area's perimeter are designated freshwater wetlands. Wetlands measuring 12.4 acres and larger are regulated under Article 24 of the Freshwater Wetlands Act. They are separated into four classes according to their characteristics and values, Class I being the highest. Only 9% of New York's remaining wetlands are Class I.

Nelson Swamp is an ecological community known as a northern white cedar swamp. The Natural Heritage Program of the DEC provides a detailed description of this community. It is basically a mixed conifer swamp occurring on organic soils fed by mineral rich (principally calcium carbonate) ground water. The high nutrient levels and structural complexity foster a high diversity of plant and animal life. Other terms that are used to describe this condition include rich fen and minerotrophic peatland.

**Vegetation:**
Nelson Swamp has been classified by the Natural Heritage Program as a northern white cedar swamp. White cedar constitutes at least 30% of the canopy cover; occurring in pure stands at times but more frequently as one component of a mixed forest. The community has a global ranking of G3G4 and a State ranking of S2S3. Appendix 7 presents ranks and definitions. Multiple global and State rankings suggest that field data on the community or element is not extensive enough to permit greater precision at this time.

A great variety of vascular plant life (those plants that contain conductive cells) is found in the Swamp. These include many herbaceous species as well as woody shrubs and trees. Over the years a number of botanists and students have searched the Swamp and catalogued the vascular plants they found. In 1997 a list was compiled which presented the combined species list with all contributors to date. The 400 species listed in Appendix 8 include a number of species which warrant special concern.

Many travelers passing through Nelson think of the basin as more of a forest than a swamp. Their eye

is naturally drawn to the dominant canopy layer of conifer and deciduous trees with the entire Swamp framed by the hills on the east, west and south sides of the valley. Native tamaracks, northern white cedar, balsam fir, hemlock, white pine, yellow birch and bur oak all contribute to a diversity of form and foliage textures.

Much of the Swamp exhibits the late stages of plant succession where a climax, self-perpetuating set of conditions seems to exist. There, it is possible to find monarch white pines exceeding 400 years in age, supported by buttressed trunks and vast root systems. Furthermore, natural and human caused disturbances have contributed to structural diversity at ground level providing conditions favorable for a variety of plant species. Uprooted trees, large volumes of decaying wood and an irregular microtopography add to the complexity of the Swamp ecosystem. Nelson Swamp has the distinction of containing the largest speckled alder on record in New York State. Its total point score is 58, having a height of 40 feet and a circumference of 15 inches.

The family of orchids is well represented in Nelson Swamp with eleven recorded species. The striped coral root illustrates the mystery within the orchid family. It lacks chlorophyll and depends upon a symbiotic relationship with certain fungi to exist. Nelson Swamp is currently the only site in New York known to contain this orchid. It is a rather obscure orchid having the habit of not appearing at the same spot in consecutive years. The global rank for the striped coral root is G6, the State rank is S1. Much more needs to be known about this orchid and its habitat requirements if its continued existence in the State is to be assured.

The spreading globeflower, a threatened species in New York State, is found in several locations within Nelson Swamp. This member of the buttercup family has a global rank of G4T3Q and a State rank of S3. This plant requires the high lime saturated soils common to the Swamp. It is likely that the globeflower owes its continued existence to past disturbances, of both human and natural causes. Timber and post cutting as well as windthrow have created canopy gaps, making needed light more available to the plants. Ecological studies have suggested a carefully designed management program could create the conditions (both spatially and temporally) which would enhance the globeflower's population at Nelson Swamp.

A forest inventory conducted by DEC in 1994 classified state owned lands within the Unique Area by cover type. Ten separate types were identified including open swamp, grassland, cedar swamp, alder swamp, mixed alder/cedar swamp, shrubland, natural hardwoods, natural conifers, mixed natural hardwoods/natural conifers and graveled area. Forty five percent of the acreage inventoried was classified as mixed natural hardwoods/natural confiers, representing the largest cover type within the state owned section of the Unique Area. An inventory summary appears in Appendix 21.

In 1997 researchers from S.U.N.Y. E.S.F. discovered an eastern white pine growing within the Nelson Swamp that is estimated to be 450 years old. Records indicate that it is the oldest living tree of its species and perhaps the oldest tree in central New York. Increment cores extracted from select trees revealed that many within a 12 acre stand are at least 300 years old.

**Wildlife:**

The Nelson Swamp Unique Area lies within the Central Appalachian ecological subzone. This subzone is described by Dickinson as encompassing large part of Central New York south of the Ontario Lake Plain and extending to the south through parts of Pennsylvania and other states. This subzone is characterized as a raised, glaciated dissected plateau with numerous valleys. Elevations range from 1000 to 2000 feet above sea level.

Within the subzone, Chambers list 49 species of mammals, 126 species of birds and 32 species of reptiles and amphibians that are potential inhabitants of the subzone. Appendix 10 presents the list of species along with their protective status.

Probably the most diverse population of wildlife to utilize Nelson Swamp are the many bird species.

When one examines the habitat conditions that birds require for nesting sites, forage and cover, Nelson Swamp appears to provide many of them. The Atlas of Breeding Birds, published in 1988, lists 105 species of birds for the two field census blocks covering Nelson Swamp. Appendix 12 provides a list of birds recorded in Blocks 4374A and 4374C. Statewide, the average number of birds recorded for single blocks was 68. Their legal status, the Natural Heritage Program State ranks, key to breeding bird evidence and list of breeding species are found in Appendix 11. The list includes three threatened species; the osprey, northern harrier and red-shouldered hawk. Six other species are listed as protected-special concern. They are: Cooper's hawk, common nighthawk, eastern bluebird, vesper sparrow, grasshopper sparrow and Henslow's sparrow. Recommendations to change the status of the red shouldered hawk from threatened to special concern and to change the Henslow's sparrow from special concern to threatened have been proposed and are currently under review by DEC.

A separate 1990 survey by Mrs. Elva Hawken, conducted strictly within the Unique Area boundaries, lists 96 species of birds. These were recorded during the active breeding season. In addition, she lists 15 other species recorded during the winter months or during migration. This list is presented in Appendix 13.

The Region 7 Wildlife Unit has mapped 11 potential beaver colony sites along the Chittenango Creek. Nelson Swamp has historically seen beaver activity in several sections of the stream. See Appendix 14.

The Wildlife Unit identified a winter deer concentration area catalogued as DC27-119. Staff note that the mapped area has not seen a heavy density of wintering deer for over a decade. A map of the area is shown in Appendix 14.

Chamber's list of reptiles reports the spotted turtle and the wood turtle as species of special concern. Chambers also reports in the amphibian list the Jefferson and the spotted salamanders, both species of special concern.

Most of Nelson Swamp lies within DEC Wildlife Management Unit 25. The 1990 estimated small game harvests for 15 species based upon hunter surveys are presented in Appendix 15. For the same time period, Appendix 16 represents the estimated trapper take of fur bearers. The calculated deer take of males and females for a 20 year period in the Town of Nelson is reported in Appendix 17.

**Fisheries:**

A regional fishery management survey conducted on Chittenango Creek in 1990 found good numbers of both wild and stocked brown trout remaining after the popular spring and summer fishing period. This indicated a proper balance between stocked trout, wild trout and fishing pressure. As part of the 1990 survey, a section of Chittenango Creek just above Stone Quarry Road was sampled. Appendix 9 lists the number of each species collected at Stone Quarry Road. Both wild and stocked brown trout were present, but their numbers were low in comparison to species that thrive in the slow moving, relatively warm water typical of the Nelson Swamp section of Chittenango Creek. Although slow moving water diminishes wild trout habitat, the Stone Quarry collection and similar collections made at Lyons Road and Route 20 revealed appreciable numbers of wild brown trout.

The results of the 1990 survey indicate that the Nelson Swamp area of Chittenango Creek supports only a modest wild brown trout population and subsequently there is limited interest among anglers. During the 1990 survey, there was no evidence of fishing pressure such as stream side paths; thus the slight increase in fishing pressure expected from the addition of an angler parking area at Stone Quarry Road would probably not be noticeable.

The fishing potential of tributaries to Chittenango Creek in the Nelson Swamp acquisition area is limited. According to the Region 7 fish management files, there are two tributaries that support significant populations of wild trout. Erieville Reservoir Outlet and Stone Arch Creek in Nelson carry enough brown and brook trout to

provide fishing opportunities.

The Constine Bridge at Stone Quarry Road is stocked twice each spring with 900 brown trout. Downstream, in those accessible locations which are unposted, 14,400 brown trout are stocked annually. A survey in 1990 conducted at the Bridge showed both wild and brown trout to be present in relatively low numbers. Most of the fish observed were of species that abound in warm, slow moving water. The sample data are provided in Appendix 9. Other sections of the Creek support both wild brown and native brook trout, among them the Erieville Reservoir Outlet and Stone Arch Creek in Nelson.

**Trails:**
There is a snowmobile trail located north of Route 20 which has been used by individuals traveling between Morrisville and Cazenovia. There is evidence that past wooden bridges placed across the north feeder of Chittenango Creek have washed out during high water flow periods.

The gas line R.O.W. is another pathway used by snowmobilers. No permanent bridge crossing of the Creek has been found and apparently travelers cross over on the ice.

The railroad grade currently is gated to prevent unauthorized vehicle passage. Prior to the gating this grade would have been accessible by snowmobilers as well as motorized vehicles. Two former bridge sites on the grade would have allowed continuous passage, but this is not possible now.

**Assets:**
There are 12.6 miles of boundary lines on properties acquired for which there is survey monumentation. On acquired but unsurveyed properties there are approximately .9 miles of boundary lines.

There is one steel gate located at the west end of the abandoned railroad. At strategically placed locations along the railroad grade there are two signs which warn travelers of the barricade and the bridge out.

Two undesignated parking areas exist: one along Stone Quarry Road adjacent to the railroad grade, the other approximately 420' west of the Nelson-Fenner Road at the end of a deeded ROW.

A timber and plank snowmobile bridge is located on the north feeder of Chittenango Creek. It is situated west, southwest of the above mentioned parking area.

A culvert and fill crossing of Stone Arch Creek just south of Route 20 permits vehicle passage to acquired property.

There are a limited number of area identification signs placed on the property boundaries, with emphasis on the roadside locations.

There is purportedly a septic system south of the creek on former Riedel property that serves the commercial properties along Route 20. The grade in this area is raised approximately three to four feet.

**Property Use Agreements:**
A power line easement extends across an acquired property in a N-S direction beginning at Lyon Road and proceeding south approximately 2131 feet. It is owned by Oneida-Madison Electric Co-op.

An easement exists along a driveway (road) off the Nelson-Fenner Road. It is 25' in width and 333 feet long and is held by a neighbor. DEC, in turn, holds a 25' wide easement over the neighboring property along the same drive.

The Tennessee Gas Transmission Company is granted an easement oriented East-West of 150' wide and approximately 1300' long on an acquired property north of the Lyon Road.

## RESOURCE DEMANDS ON THE UNIQUE AREA

### A. Timber and Wood Products

There is an on-going demand in this region of the state for a variety of wood products. While timber production is not a management objective for forest stands in Nelson Swamp, harvesting forest products such as sawtimber, pulpwood, fuelwood and posts may be pursued for the purpose of achieving non-timber management objectives. The following list of products with their past ten year trends is as follows:

| Product | Trend |
|---|---|
| Fuelwood | Decreased |
| Sawtimber | Increased |
| Pulpwood | Stable |
| Posts | Decreased |

Demands for these products are expected to continue for the foreseeable future.

### B. Agricultural Land

There is a constant demand for the limited acreage of active agricultural land for the purpose of cutting hay. Demand also exists for the privilege of grazing horses on a section of former agricultural land.

### C. Public Use

Demand for passive forms of outdoor recreation has been expressed in the form of both an interpretive trail and a through-trail (Link Trail) for more long distance trekking. There is also the expressed demand for a snowmobiling within the Unique Area. Hunting and fishing opportunities continue to draw fairly significant levels of participation. Citizens continue to seek out areas in which they can participate as volunteers to improve public lands.

### D. Ecosystem Protection

The protection and management of biological diversity, plant and animal habitats and water quality are general societal demands that are also directed to the Nelson Swamp Unique Area.

The following are specific demands:

Protect water quality to enhance habitat for all aquatic organisms.

Protect all native plants and animals as well as their habitats.

Protect the visual attributes of the Unique Area.

Promote public awareness and appreciation for the Unique Area's biological attributes.

Provide support for biological research.

**E. Consolidation of Ownership**

The need to extend State ownership beyond the limited patchwork has been expressed. Insofar as this could be accomplished, the State's ability to provide for compatible public use and ecosystem protection would be advanced. New acquisition will be pursued in a manner consistent with policies defined in Conserving Open Space In New York.

The following factors pose limitations on the management of the Unique Area:

**Physical Constraints:**

Fragile soils and wetland sites.
Presence of rare plants.
Limited road access.
Fragmented pattern of State ownership.
Presence of utility right-of-ways and easements.
Lack of bridge across Chittenango Creek at abandoned railroad grade.
Intrusion of alien plant species.

**Administrative Constraints:**

Inadequate budget.
Lack of funding under EQBA II.
Restraints upon funding through EPF.
Staff shortage.

**Societal Constraints:**

Negative public attitudes regarding project.
Conflicting demands upon resources.

**Departmental Rules, Regulations and Laws:**

See Appendix 18 for all which govern the management on the Unique Area.

**MANAGEMENT CONSTRAINTS**

## GOALS AND OBJECTIVES

**Vision Statement:**

**We recognize Nelson Swamp to be an exhibit of unique and uncommon environmental values within the rapidly changing landscape of Central New York.**

**During the twenty first century we envision a stewardship program of increased protection and management so that the health of the area's rare species and exemplary plant communities will be assured. To support this endeavor, the pursuit of knowledge and further understanding of the many complex relationships within the rich fen will continue to be explored.**

**And finally, Nelson Swamp will be an area where people can interact with nature's wonders and beauty, providing perpetual enrichment of the human spirit.**

**Land and Water Goal:**

The overriding goal of the Nelson Swamp project is to provide a program of perpetual preservation of the Area's varied ecosystems, including many sensitive and native plant and animal organisms.

To support this goal, a variety of objectives are proposed. Included are proposals to monitor and study sites, the plant and animals organisms therein contained and the relationships between organisms and sites, to manage land and water habitats to sustain native plant, fish, and wildlife species and provide protective measures to preserve and enhance the aesthetic quality of the Unique Area.

**Land and Water Objective:**

**(1) Manage 12 acres of active agricultural land in an open grassland condition by leasing for annual hay cutting (see Appendix 19).**
Maintaining these acres as grasslands will promote an early stage habitat condition beneficial to many organisms. The edge (or transition zone) provided between the open field condition and the more advanced vegetative stage is also thought to be

beneficial to many species of wildlife. The locations of the open land areas are near the perimeter of the Unique Area and will not conflict with interior habitat species.

**(2) Manage 46 acres of former agricultural land through the transition to mature forest (see Appendix 20).**
The value of interior wildlife habitat will be enhanced if these areas are permitted to be colonized by woody tree species and gradually evolve into a forest condition. These areas are adjacent to interior areas where their maximum value will be to act as a buffer to the fen.

**(3) Pursue funding for the acquisition of private holdings within the project boundary(See Appendix 2).**
Approximately 714 acres of privately held lands lie within the project boundary. Effective management and protection of Nelson Swamp is predicated upon the necessity of consolidating the present patchiness of State-owned lands. In addition to the reduction of administrative costs of this action, compatible public use opportunities would be enhanced. To continue past policies, the DEC will pursue the purchase of lands as they become available from willing sellers on a negotiated basis. The acquisition of conservation easements may also be feasible in some circumstances. It is important to note that Nelson Swamp is rated as a very high priority acquisition project in the New York State Open Space Plan.

**(4) Protect the aesthetic and visual quality of the Unique Area.**
Natural and cultural features are important components of the Nelson landscape. Views of Nelson Swamp from many perspectives provides an aesthetic experience for residents, travelers and visitors. Any proposed facility developments will be influenced by the need to protect the visual and aesthetic qualities inherent in the Nelson landscape. Furthermore, routine maintenance will ensure that litter is removed from roadsides and other high use areas within the Unique Area.

**(5) Protect the riparian and wetland ecosystems from pollution and preventable disturbances so as to maximize their benefits.**
These ecosystems are both diverse and productive. They provide a broad mix of habitat conditions for innumerable plant and animal species. Wetlands act as filtering mechanisms, helping to regulate runoff. Sites within the Unique Area that are vulnerable to erosion and sedimentation will be stabilized using vegetation or temporary structures.

**(6) Maintain a climate to support for ecological research.**
Nelson Swamp has been the focus of a number of surveys and university research studies. These have included studies of rare plants , old growth forest structure and wetland ecology. Other studies have considered the role of citizen groups in public land management. Through applied research managers stand the best chance of sustaining the unique resources of Nelson Swamp. An ongoing evaluation of research needs should involve consultation with agency biologists, interested publics and educational institutions.

**(7) Conduct an intensive forest inventory on acquired lands upon acquisition and on a 20 year cycle.**
This program of inventory is conducted on all State Forest properties using prescribed standards of data collection. The program is useful in not only tracking the development of vegetation over time, but also in affording an inspection of forest health conditions and public use impacts.

**(8) Track the location and status of the spreading globeflower and striped coralroot populations in the Unique Area every five years.**
A data bank of population occurrence and location using Global Positioning Systems (GPS) technology should be established and maintained to enable managers to assess plant health and plan strategies.

**(9) Control invasive alien plant species as they occur.**

Two very aggressive plant species, purple loosestrife (*Lythrum salicaria*) and common reed (*Phragmites communis*), have proven to be very troublesome in many aquatic environments. One site within the Unique Area has an established population of common reed that is currently being evaluated for treatment. Sites vulnerable to invasion will be monitored to develope control strategies.

**(10) Evaluate beaver population/sites for impacts on rare species and unique plant communities.**

Recent beaver activity at two locations within the Unique Area has resulted in flooding on both state and private land. Efforts are currently underway to control populations at these two sites to prevent further inundation of forest wetlands.

**(11)Evaluate white-tailed deer impacts on rare species and unique plant communities.**

Hunting pressure and the population of white tailed deer within the Unique Area need to be monitored to determine their impact on rare plants.

**(12) Monitor the condition and use impacts on fragile sites.**

Due to wet soil conditions and sensative vegetation, many sites within the Unique Area are vulnerable to disturbance. Signage will inform visitors of rules and regulations pertaining to plant conservation and may be used to establish temporary restrictions on access to select sites within the swamp. Fragile sites will be monitored throughout the year and if conditions necessitate, seasonal access to these sites will be restricted .

**(13) Protect the integrity of the area's resources through boundary line identification, surveillance/law enforcement and fire protection.**

It is important that these functions are carried out to ensure resource protection within the Unique Area. It is largely through the combined efforts of these activities, along with the objectives enumerated above, that the sustainability of Nelson Swamp's resources can be assured.

**Public Use Goal:**

One goal of management will be to provide the opportunities and facilities for those public uses in Nelson Swamp which are compatible with sustaining the area's unique resources.

Many opinions have been expressed on implementing and managing public use, both during the EIS comment period, and more recently during the Advisory Committee deliberations. Clearly, it is recognized that there is a public desire to access Nelson Swamp for a variety of purposes, but underlying most of them is the desire to appreciate the natural beauty and unique environmental values the Swamp offers. The challenge is to satisfy public demands while at the same time protecting those natural resources that society values, which historically has been DEC's primary purpose for acquisition and stewardship.

**Public Use Objectives:**

**(1) Designate, construct and maintain an interpretive trail designed for public education.**

Sustaining the unique resources of Nelson Swamp is contingent on providing the resources necessary for environmental education. An interpretive trail will sensatize visitors to the history and ecology of Nelson Swamp and help cultivate an understanding and appreciation of the natural and cultural resources within the Unique Area. The proposed trail would be accessible to those with disabilities and be approximately .6 mile in length. Begining east of Stone Quarry Road, the trail would pass over a portion of the abandonded railroad embankment and access some of the varied cover types that parrell the Chitenango Creek. The trail would largely avoid wetland areas, but where it does traverse wetlands, permit approval would precede construction. The route has outstanding educational potential, particularly for those unable to access interior portions of the swamp. A map, guide and approriate signange will be designed to provide information for those visiting Nelson

Swamp.

**(2) Designate, construct and maintain the Nelson Swamp segment of the Madison County Link Trail.**
The thirty mile Madison County Link Trail is a proposal to connect the Old Erie Canal Towpath Park in Canastota with the Finger Lakes Trail system in Chenango County. The north-south link would provide recreationalists with the opportunity to access a long distance trail network and to visit important natural and cultural sites within the County.

Nelson Swamp's contribution to the Link Trail would be a 1.2 mile portion of the abandonded railroad embankment east of Stone Quarry Road. The embankment is suitable for trail development because the elevated grade has an existing trail that allows visitors to experience interior sections of the Swamp without impacting sensative sites. A control system and accompanying signage would guide visitors along the trail and channel public use to non-sensitive areas. At present, a foot bridge over the Chittenango Creek is under construction and work is scheduled to bridge a smaller channel that passes through the embankment. Completion of the Link Trail through Nelson Swamp is contingent on permission to cross 2000' of private property.

**(3) Designate, construct and maintain an off-highway parking facility to support the above objectives**.
The parking area would be constructed off Stone Quarry Road at the west end of the abandonded railroad embankment This parking area is intended to support the needs of recreationalists, interpretive trail users and other visitors to the Unique Area. The facility would be built to accommodate one school bus and approximately six cars and would have appropriate signage for the visiting public. The disturbed area adjacent to the proposed parking facility would be planted to trees and shrubs to help prevent the penetration of wind blown debris and to serve as a visual screen.

**(4) Sanction two sections of an existing snowmobile trail that pass through Nelson Swamp.**
The Swill Valley Riders maintain a network of snowmobile trails within the Townships of Nelson, Fenner and Cazenovia. Trail sections that pass through the Unique Area are located north of Rt.20 where the trail crosses Chittenango Creek and in the extreme southeast where the trail enters the Unique Area from Hardscrabble Road. Both sites have been heavily impacted by populations of beaver and the existing routes of these trails are currently being reevaluated.

**(5) Encourage volunteerism by enlisting Adopt-A- Natural Resource Program participants**.
Through this program, DEC may enter into a stewardship agreement with individuals or groups to assist in maintaining public lands. Activities would include litter cleanup, maintaining trails and monitoring populations of rare plants and animals. This would relieve the agency of the burdensome costs of management while extending a source of pride and accomplishment in participants.

**(6) Organize annual citizen participation forums to discuss Unique Area management with interested publics.**
Citizen participation has been a key component of the Nelson Swamp project since its inception in 1987. Public input has provided critical information for shaping the direction of the planning process. During the 1998 public meeting a number of participants expressed an interest in a continuing dialouge with DEC to discuss management of the Unique Area. These forums could be seasonal meetings, walking tours or a more permanent type of collaborative stewardship (ie. Friends of Nelson Swamp).

**(7) Adopt, implement and enforce the following special area regulations:**
(a) Camping is prohibited.
(b) Motor vehicle use is restricted to the parking areas except for official vehicles during necessary administrative functions, permitted agricultural

vehicles and snowmobiles on the designated snowmobile trail. Motor vehicles include all-terrain vehicles, motorcycles and all enclosed motor vehicles used for human transport.
(c) Horses are prohibited in the swamp.

These regulations are primarily intended to reduce potentially damaging impacts upon the Area's fragile soils, but it is expected to reduce potential conflicts between user groups. If other uses are proposed following the adoption of this Plan, they will be subject to review before being permitted. It is important that visitors to the Unique Area are aware of the regulations, and for this reason they will be conspicuously posted at the trail heads and parking areas. They will also be included in the information brochure to be produced. Regular patrol by the Forest Ranger Staff will be needed to assure compliance.

**(8) Annually stock the State-owned section of Chittenango Creek with 1000 brown trout.**
Presently only the Constine Bridge location is stocked. Other locations which have road access or reasonable foot access will be stocked.

**(9) Restrict parking on Lyon Road to a roadside pad east of Chittenango Creek.**
Concern has been raised about the potential conflict between pedestrains accessing the Unique Area and vehicular traffic on Lyon Road. To improve safety, parking along those sections of Lyon Road adjacent to the Unique Area will be restricted to a roadside shoulder designed to accomodate three cars. The proposed parking pad will be located adjacent to a former dump site outside the classified wetland boundary. Parking along other sections of Lyon Road within the Unique Area will prohibited.

## MANAGEMENT ACTION SCHEDULES

| Activity | Year |
|---|---|
| Grassland mowing on 12 acres | Annual |
| Stock 1000 brown trout | Annual |
| Inventory of striped coralroot and spreading globeflower | 1997 |
| Conduct State Forest inventory of forest stands | As acquired |
| Conduct inventory of reptiles and amphibians | 2000 |
| Conduct search for alien invading plant species | 1998 |
| Conduct cooperative scientific (ecological) research | Annual |
| Apply for State Nature and Historic Trust Status | 1998 |
| Sign and post State land boundaries | As acquired |
| Maintain boundary lines | 7 year cycle |
| Acquire available land until project is completed | Annual |
| Perform roadside litter pick up | Annual |
| Prepare informational brochure | 1998 |
| Construct snowmobile trail | 1998 |
| Construct Link Trail | 1998 |
| Construct Interpretive Trail | 1998 |
| Construct parking lot off Stone Quarry Road | 1998 |
| Plant hardwoods in Stand C-20 | 1998 |
| Erect signs for parking area and trails | 1998 |
| Maintain all trails and parking areas | Annual |
| Provide surveillance and law enforcement presence | Annual |

## BUDGET SUMMARY

**ANNUAL**

| Maintenance | Unit | Cost | Work Days | Year |
|---|---|---|---|---|
| -Litter pick up, repairs, general maintenance at recreational facilities | | 2,500 | | Annual |
| -Law enforcement, fire detection/suppression | | | 25 | Annual |
| -Supervision, reporting | | | 2 | Annual |
| -Sign/post newly acquired land | | | 3 | Annual |
| Acquisition | | | | |
| -Acquire land (average) | 100 ac. | 50,000 | 5 | Annual |
| -Acquire land | 250 ac. | 150,000 | 12 | 1998 |
| Habitat Management | | | | |
| -Mowing | 12 ac. | | | |
| -Fish Stocking | 1,000 fish | 500 | 1 | Annual |
| Public Education | | | | |
| -Field trips | | | 3 | Annual |
| -Presentations | | | 1 | Annual |
| Inventory | | | | |
| -Forest inventory | 100 ac. | | 2 | Annual |
| Research | | | | |
| -Coop. ecological research | 1 project | | 1 | Annual |

**PERIODIC**

| | | | | |
|---|---|---|---|---|
| Maintenance | | | | |
| -Boundary lines | 5 miles | | 10 | 1999 |
| Development/Construction | | | | |
| -Public area brochure | 1 | 1,000 | 5 | 1998 |
| -Construct snowmobile trail | .30 mile | 1,000 | 3 | 1998 |
| -Construct Link Trail | 1.28 mile | 10,000 | 23 | 1998 |
| -Construct Interpretive Trail | .76 mile | 2,000 | 6 | 1998 |
| -Construct Parking Area 1998 | 1 | 1,000 | 3 | |
| -Erect trail and parking area signs | | 500 | 2 | 1998 |
| Land Management | | | | |
| -Plant inventory 1998 | 1 | 1,000 | 10 | |

| | | | | | |
|---|---|---|---|---|---|
| -Reptile/amphibian survey | 1 | | 500 | 5 | 2000 |
| -Alien plant survey | 1 | | 200 | 2 | 1997 |
| -Trust status application | | 1 | | 2 | 1997 |
| -Plant hardwoods | 2 ac. | | | 2 | 1998 |

**GRAND TOTALS**

| | | |
|---|---|---|
| Annual | $ 53,500 | 43 |
| Periodic | $167,200 | 85 |

## GLOSSARY

**bog** A poorly drained, usually acidic area rich in plant residues, frequently surrounding a body of open water, and having a characteristic flora (as of sedges, heaths and sphagnum).

**cavity trees** Trees containing an excavation sufficiently large for nesting, denning or shelter; tree may be alive or dead. ( Chambers)

**climax forest** The culminating stage in forest succession, where the vegetation has reached a highly stable condition. It is self-perpetuating and in equilibrium with the environment. A climax forest will persist until a disturbance upsets the equilibrium.

**ecosystem** All the interacting populations of plants, animals and micro-organisms occupying an area, plus their physical environment. The living organisms in an ecosystem are collectively called a community, sometimes natural community or biotic community. (Hunter)

**esker** A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

**fen** An open peat land, sometimes with scattered trees, occurring on minerotrophic sites that receive groundwater which has been in contact with soil or bedrock, and is richer in mineral-nutrient elements than rainwater. A rich fen has high species diversity.

**interior species** Species, vegetative and animal, whose habitat dependence requires significant tracts of unbroken forest types, often sensitive to fragmentation and to varying degrees of disturbance, i.e., northern red-shouldered hawk, black beer.

**kame** An irregular, short ridge or hill of stratified glacial drift.

**minerotrophic** Groundwater-fed; the ground-water being higher in mineral-nutrient content than rainwater.

**moraine** An accumulation of earth, stones and other debris deposited by a

| | |
|---|---|
| | glacier. Types are terminal, lateral, medial and ground. |
| **nitro-fixation** | The metabolic assimilation of atmospheric nitrogen by soil micro-organisms. |
| **peat land** | A wet area in which peat has accumulated. Peat is the partially-decayed remains of plant material. |
| **pH** | Symbol for units in the measurement of acidity or alkalinity of soil. The range of pH is 0-14 with 7 representing neutrality. Values less than 7 have increasing acidity; values over 7 have increasing alkalinity. |
| **snags** | Dead trees with or without cavities; function as perches, foraging sites and/or a source of cavities for denning, roosting and/or nesting. (Chambers) |
| **stand** | Any area of forest vegetation with site conditions, past history and current species composition and age sufficiently uniform to distinguish it from adjacent areas. (Chambers) |
| **successional** | A description of plant communities as they change from newly-established species on disturbed sites to the more shade-tolerant species. |
| **swamp** | A wooded wetland, occurring on mineral soils, which is intermittently or permanently covered with water, that has shrubs and/or trees. |
| **symbiosis** | The intimate living together of two dissimilar organisms in a mutually beneficial relationship. |

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**APPENDIX**