

IX. CONSERVATION PLAN ELEMENT AND ENVIRONMENTAL RESOURCES INVENTORY

INTRODUCTION

The law governing municipal planning in New Jersey Municipal Land Use Law NJSA 40:55D et. seq. provides for a Conservation Plan element as part of a municipal master plan.

A conservation plan element providing for the preservation, conservation, and utilization of natural resources, including, to the extent appropriate, energy, open space, water supply, forests, soil, marshes, wetlands, harbors, rivers and other waters, fisheries, endangered or threatened species wildlife and other resources, and which systematically analyzes the impact of each other component and element of the master plan on the present and future preservation, conservation and utilization of those resources.

This chapter, Mendham Borough's Conservation Plan Element, is particularly important because this Master Plan places special emphasis on the protection of the high quality natural resources of the Borough, in particular the quality and quantity of water resources. Below are sections covering the major categories of natural resources found in the Borough: Air, Surface Water, Groundwater, Wetlands, Wildlife and Vegetation, and Open Space. These sections systematically analyze the impact of Borough policies on each category of resource and provide recommendations for their conservation and preservation. An inventory of our environmental resources follows this discussion.

MAJOR PLANNING ISSUES

The major issues which are significant to the protection of environmental resources in the Borough are as follows:

Development Pressures

Substantial residential development has occurred in the Borough over the last two (2) decades, with a trend toward much larger homes and site improvements with larger areas of impervious surface. Most suitable land has largely been developed, and the remaining vacant property is increasingly characterized by large amounts of environmentally sensitive characteristics such as woodlands, steep slopes, wetlands, and surface waters. The detrimental effects of the increase in development include soil erosion, increased stormwater runoff, decreased surface and groundwater quality, increased level and frequency of flooding, and increased traffic and air pollution.

Impact on Surface Water Resources

The headwaters of three (3) major river systems, which are regionally important sources of potable water, are located in Mendham Borough: the Whippany, Passaic, and Raritan. These headwater streams are under threat from increased development, especially the development of the remaining environmentally sensitive properties in the Borough.

Impact on Groundwater Resources

The Critical Water Resources Study commissioned by the Mendham Township Environmental Commission in 1994 documents evidence that continued development will have a significant impact on the quality and quantity of groundwater. Since Mendham Township surrounds Mendham Borough and shares its underground water resources with us, the conclusions of the Critical Water Resources Study are directly applicable to the Borough.

Stormwater Management

Stormwater runoff from existing roadways and other impervious surfaces into the Borough's high quality streams continues to have a harmful environmental impact on those streams. As part of the State's new stormwater management regulations at NJAC 7:8, Mendham Borough adopted a Stormwater Management Plan on April 11, 2005. The Borough also has a stormwater pollution prevention plan (SPPP) which describes the ongoing activities required to comply with its NJPDES stormwater permit. Both the Stormwater Management Plan and the SPPP are available at the Phoenix House.

State Development and Redevelopment Plan

Mendham Borough is designated as a Village Center in an environmentally sensitive planning area (PA-5) in the New Jersey State Development and Redevelopment Plan. The Plan's land use policies call for protecting environmentally sensitive areas from the adverse impacts of development by preserving low density land use patterns, promoting open space, and protecting natural resources.

Preservation of Environmental Character

There are significant elements of the Borough's environmental character being threatened by development. These elements include extensive woodlands, ponds, natural areas, pristine trout streams, and tree-lined roads.

Regional Responsibilities

The numerous streams in the Borough are the headwaters of three (3) river systems, which are important sources of potable water supply for the region. The Borough has a responsibility to adopt land use regulations that will protect the high quality of the streams in these watersheds. The Borough has a representative at each of the watershed management groups: the Whippany River Watershed Action Committee, the Ten Towns Great Swamp Watershed Management Committee, and the Raritan Basin Watershed Management Project.

GOALS AND OBJECTIVES

The primary goal of the Conservation Plan is to provide for the preservation and conservation of the Borough's natural resources. Conservation of these resources is critical to the quality of life and character of Mendham Borough. It is also important to communities downstream because of the Borough's location at the headwaters of three (3) major river basins. The following are the major natural resources in the Borough that should be protected and preserved:

- ◆ Air quality
- ◆ Stream corridors
- ◆ Large forested areas
- ◆ Wetlands
- ◆ Floodplains
- ◆ Surface water – quantity and quality
- ◆ Groundwater – quantity and quality

RECOMMENDATIONS

Included in the background planning studies for this Element is an inventory of the environmental resources of the Borough including geology, topography, surface water, soils, ground water hydrology and resources, floodplains, wetlands, vegetation, wildlife, and open space. The main background document, the Mendham Borough Environmental Resources Inventory (ERI), is included. This document and the other background studies provide a basis for decisions by the Planning Board, Board of Adjustment, Environmental Commission, and other interested groups involved with land development in the Borough. Based on these studies, the following recommendations are offered.

Topography

Mendham Borough consists of a land area of approximately 3850 acres located in the southern portion of the Highlands physiographic province of New Jersey. Much of the Borough is characterized by steep slopes, which in many cases adjoin streams, transition areas, wetlands, and/or flood prone areas. Inappropriate development of steep slope areas can result in soil instability, erosion, sedimentation, increased stormwater runoff, and flooding. Since many of the steep slope areas adjoin surface water and wetlands, protection of these slopes is important to protect the high quality of Mendham Borough's streams. Regrading and/or stripping of native or existing vegetation on steep slopes is limited by standards in the Borough's Land Use Ordinances. Erosion on steep slopes is especially prevalent where excessive tree removal has taken place. Ordinances restricting construction and tree removal on steep slopes should be considered to protect the Borough's sensitive environment.

Air

Due to Mendham Borough's semi-rural character, air pollution is not yet a problem for the community. There are no industrial or commercial facilities contributing to poor air quality. However, the dimensions and locations of residential roads impact the amount and speed of traffic, community character, and air pollution. Several roads are used heavily by commuters, resulting in increased vehicle emissions, air pollution, and health hazards such as ground level ozone, which forms when carbon monoxide combines with oxygen. The New Jersey Department of Environmental Protection (NJDEP) maintains air quality monitoring stations to the east and west of the Borough in Morristown and Chester respectively. The data from these stations can be obtained at their web-site. The Borough should continue to join with other municipalities to address regional traffic issues.

Surface Water

Mendham Borough lies in the headwaters of three (3) major river systems: the Whippany River, North Branch of the Raritan River, and the Passaic River. All the rivers and streams in the Borough are classified by the NJDEP as Category One streams and suitable for Trout Production or Trout Maintenance. The NJDEP defines Category One waterways as follows:

Category One waters are designated for purposes of implementing the antidegradation policies set forth at N.J.A.C. 7:9B-1.5(d), for protection from measurable changes in water quality characteristics because of their clarity, color, scenic setting, other characteristics of aesthetic value, exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resource(s)

The presence of these high quality waterways necessitates additional diligence on the part of the Borough to protect the streams from erosion and runoff and the subsequent sedimentation which can be caused by improper development and deforestation, especially on steep slopes. Streams must also be protected from non-point source pollution such as runoff from paved parking lots, roadways, and construction sites. Increases in development also result in the potential for excessive siltation and increases in chemical lawn maintenance practices which can add to non-point source pollution through runoff during storms. There is a 300 foot buffer for major development associated with each of the mapped Category One waterways. These mapped streams and buffers are shown in the Mendham Borough Environmental Inventory which follows this section.

Conservation easements on all streams are required of new subdivisions to protect water quality. Protection should also be extended to existing unprotected stream corridors through voluntary conservation easements from property owners. The Borough should develop a program to encourage the maintenance and planting of native vegetative cover as well as bank stabilization to provide a natural filter for buffering streams. A riparian buffer zone protection strategy will produce important improvement in stream quality. Residents should be educated in environmentally friendly lawn maintenance practices.

The Borough should continue to limit point and non-point source pollutant loading into headwater streams. Recent wastewater treatment plant enhancements to address phosphorous and total dissolved solids should limit point loads to McVickers Brook. Stormwater improvements implemented under the Borough's stormwater pollution prevention plan will reduce non-point discharges. However, increasing land development will continue to increase both point and non-point pollution into our streams. The Borough should consider stricter limits of septic disposal field setbacks and on distances between septic disposal fields and wells. In addition, the Borough should consider increasing minimum setback distances between a septic fields and waterways.

Groundwater

Mendham Borough's predominant sources of potable water are public and private wells. Recharge areas, such as the permeable soils that overlay upland areas of the Borough, and sites where the water table is high must be protected to ensure that rain and surface water can infiltrate back into the ground to replenish drinking water supplies. Over-development of these sensitive areas reduces the amount of pervious surfaces and results in greater stormwater runoff.

Another threat to drinking water occurs when the amount of household pollutants discharged into septic systems exceeds the ability of septic system to treat these pollutants. Maintaining and caring for individual septic systems and minimizing the use of hazardous household chemicals will help prevent contamination of the aquifer. Because Mendham Borough's groundwater supply is limited due to underlying geologic formations, it is essential that the Borough protect groundwater from degradation and overuse. This can be achieved by requiring that all land developments meet the recharge requirements in the NJDEP Phase II stormwater rules. Best Management Practices for stormwater management should be employed, especially those practices that require infiltration of stormwater runoff to recharge the aquifers. The Borough should consider a well head protection ordinance to safeguard our public groundwater quality.

Wetlands

Wetlands serve many important functions. They provide flood storage and stream flow attenuation during wet periods and sustain stream flow by releasing stored water during dry periods. They filter out pollutants in stormwater runoff, thus protecting water quality, and they provide habitat for important species of plants and animals. New Jersey's major wetlands are found on the U.S. Fish and Wildlife's National Wetlands Inventory aerial maps, county soil surveys, and NJDEP's more detailed wetlands maps. A more accurate wetlands delineation can be obtained from specific site visits, when wetlands can be identified by vegetative, soil, and hydrologic features. Mendham Borough's Stormwater Management Plan 2005 contains maps of major wetland areas in the Borough.

NJDEP regulates the disturbance and protection of wetlands. The N. J. Freshwater Wetlands Act defines a wetland as an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation. The state classifies wetlands into three (3) categories: Exceptional wetlands include those which discharge into trout production waters or those which support habitat for threatened or endangered species. Ordinary wetlands include certain isolated wetlands, detention facilities, and drainage ditches. Intermediate wetlands are all wetlands that are not defined as exceptional or ordinary. Exceptional and intermediate wetlands must have a buffer, or transition area, within which any disturbance is regulated by the NJDEP. The transition areas for exceptional and intermediate wetlands are 150 feet and 50 feet respectively.

Mendham Borough should continue to obtain conservation easements on all wetlands and transition areas when land is subdivided. All conservation easement boundaries on newly approved sites should be recorded on the deed, delineated with permanent markers, and a system for monitoring conservation easements should be established.

Wildlife and Vegetation

Woodlands play an important part in the Borough's overall environmental quality, help to define the character of the community, and should be conserved through effective tree protection ordinances. Woodlands also mitigate stormwater runoff and contribute to the quality and quantity of water that recharges the aquifers. The preservation of open space and the protection of stream and forest corridors will assure the maintenance of strong, diverse wildlife communities within the Borough. Land Use Ordinances in Mendham Borough should provide for protection of trees against unnecessary destruction, removal, injury and disease, both in new subdivisions and on residential lots. The natural and wooded areas bordering roadways should be preserved through conservation easements. The Borough should provide standards for landscaping suitable to promote the scenic appeal of roads as well as an approved plant list. The Borough should consider using native species on Borough owned property and should consider an ordinance requiring the use of native species in new subdivisions. Wildlife management practices should continue to be employed to control the deer population which threatens the health of Borough residents and woodlands. Goose control measures should also be considered as their waste threatens water quality in Borough streams.

Open Space

Open space conservation planning should be utilized to preserve the character of Mendham Borough, preserve open space, and protect critical environmental areas. Open space should also promote the protection of biological diversity through the maintenance of large contiguous tracts and corridors of forest.

In November 1998 the citizens of the Borough overwhelmingly approved the Open Space Trust Fund Referendum. With this vote, citizens expressed the recognition that recent development had removed large amounts of private open space in the Borough as well as the fact that ever increasing development pressure threatens to take away what remains. Sprawling farms, rolling hills, woodlands, open green areas, and pristine stream corridors represent the many varieties of open space which exist in the Borough. These open space properties, balanced with existing land uses, combine to give the Borough a rich, rural character, not only reflecting the locale's history but also adding to the quality of life enjoyed by its residents.

ENVIRONMENTAL RESOURCES INVENTORY

The unique natural characteristics of Mendham, including headwaters, watersheds, slope areas, woodlands, and the remaining open spaces, are foundations of ecosystems. Preservation and protection of these habitats serve functional values, as the ecosystems are interrelated beyond our borough boundaries. The natural beauty of Mendham Borough provides residents with opportunities for passive and active recreation. To preserve the many benefits provided by Mendham's unique environmental features, it is necessary to identify those elements that require special consideration during the development process. The environmental resources inventory serves as a baseline of information, providing a general overview of key environmental characteristics.

(See Exhibit #7, *Borough of Mendham Environmental Features* at the end of the chapter).

Geology/Soils

Geology

The geology of a region is the supportive base for soils, vegetation, and water. There is a complex interrelationship between the geologic environment and an area's natural resources. Mendham Borough is almost entirely composed of the Precambrian and Paleozoic rocks of the New Jersey Highlands. These rocks consist primarily of gneisses and granites, which are the most common rock types in the region (A Natural Resource Inventory and Environmental Study, 1976).

(See Exhibit #8, *Borough of Mendham Bedrock Geology* at the end of this chapter).

Soils

Certain soil types are associated with periodic flooding and erosion. Alluvial soils are subject to periodic flooding. Mendham Borough has a few areas with alluvial soils. These include:

- ◆ The area that is contiguous to the Village Boundary and follows the North Branch of the Raritan River.
- ◆ A segment of alluvial soils extends southward between Roxiticus Road and West Main Street along the easterly side of Ironia Road.
- ◆ Three stream corridors in the southwestern corner of the Borough. These three (3) stream corridors are part of the headwaters system of the North Branch of the Raritan River.

Areas posing a hazard of soil erosion during development or land cultivation exist in a number of locations in the Borough. These areas are associated with the Edneyville Soils (EdB, EdC, EdD) and the Parker Soils (PaC, PbD, PeC, PeD, PfE).

A large area of EdD soils exists along the Borough's western boundary to the north and south of Thomas Road. A second significant area of these soils lies to the west of Hilltop road to the north and south of Cherry Lane.

Large areas of PeD soils lie in the southern portion of the Borough to the north and south of Bernardsville Road along Steven Road and to the rear of Mallinckrodt Convent Property. A third area of PeD soils lies to the west of Bliss Road and extends into Roxiticus Golf Course.

(See Exhibit #9, *Borough of Mendham Soils* at the end of this chapter).

Topography

Elevations in Mendham Borough range from about 400 feet to nearly 800 feet above sea level. The topography is generally rolling, although there are a number of areas with steep slopes (15%-25%) and very steep slopes (25% or greater), particularly south of Main Street.

(See Exhibit #10, *Borough of Mendham Slopes I* at the end of this chapter).

Steep Slopes/Erosion Hazard Areas

Steep slopes are described below and identified on the map by letter as follows:

(See Exhibit #11, *Borough of Mendham Slopes II* at the end of this chapter)

- A. The area in the northwest part of St. John the Baptist's driveway slopes steeply towards West Main Street.
- B. Steep banks are present on both sides of the main stream corridor moving south of West Main Street. The west bank is very steep and narrow in some places.
- C. Steep slopes surround a clearing at the end of Heather Hill Way to the north, west, and south. A 4.5 acre lot between Heather Hill and this clearing is Borough-owned and listed in the Master Plan as part of the recreation system.
- D. Steep crescent-shaped slope around a hill summit sloping down toward the east and south and steep slope facing generally west.
- E. Large clearing on top of hill surrounded by steep slopes on the east, south, and west
- F. There are steep banks along McVickers Brook north of Pleasant Valley Road.
- G. Elevated field north of Pleasant Valley Road is surrounded by steep slopes to the south, west, and northwest.
- H. Steep slopes in the Balbrook Development
- I. Large area of very steep slopes surrounding the main golf club area on top of the hill south of the Balbrook Development
- J. Steep slopes in the area east of Bliss Road and south of Bernardsville Road, including steep terraced slope just east of old estate mansion off of Bernardsville Road
- K. Portions of the steep slopes on western, northern, and eastern slopes of the hill south of Cherry Lane are greater than 25% and could pose severe erosion hazard if disturbed.
- L. There are steep slopes in a large area north of Bernardsville Road.
- M. Pond located south of Cherry Lane is surrounded by steep slopes.

- N. South of Cherry Lane, there is an area of steep slopes located above wetlands situated to the north.
- O. There are steep slopes around Malachuk house (Block 2401 Lot 31.01) and very steep slopes north of Malachuk house off of Hardscrabble Road.
- P. Large area of steep slopes and very steep slopes north of Cherry Lane, east of Hilltop Road, and west of Prentice Lane.
- Q. Large area of steep slopes and very steep slopes at the top of the hill in an area south of Talmage Road, north of Cherry Lane, and east of Prentice Lane.
- R. Very steep slopes along eastern bank of northern portion of India Brook are part of a geological fault and environmentally unstable.
- S. Area of steep slopes east of Ironia Road and north of West Main Street along the North Branch of the Raritan River south of India Brook. These slopes are surrounded by residential development are inaccessible to further development.

Development in slope areas will have an impact on the watersheds in Mendham Borough due to erosion, vegetation disturbance, sedimentation, and associated storm water issues. Specific recommendations related to particular slope areas and environmentally safe development may be found in the *Mendham Borough Environmental Commission Open Space Report 1984*. Further suggestions and regulatory guides are provided in the *Natural Resource Management Guide for the County of Morris 2000* (pages 2-5).

Surface Water

Streams and wetlands are the only natural water features in Mendham Borough and the surrounding towns. All “lakes” and ponds are artificial impoundments across natural drainage channels. All water bodies are considered environmentally critical areas in the Borough.

Ponds, Streams, and Watersheds

Although only six (6) square miles in size, Mendham Borough contains portions of the headwaters of three (3) of New Jersey’s four major watersheds: the Whippany, Raritan, and the Passaic, as well as many small lakes and ponds.

(See Exhibit #12, *Borough of Mendham Wet Map I* at the end of this chapter and reference *Mendham Borough Morris County, NJ Lake Monitoring Program*).

There are parts of five (5) sub-watersheds found in the Borough, three (3) within the Raritan and two (2) within the Passaic watershed. Each of these sub-watersheds is outlined with bold dashed lines and identified by letter.

(See Exhibit #13, *Borough of Mendham, Wet Map II* at the end of this chapter).

- A. Part of the North Branch of the Raritan River, which begins behind the Mendham Village Shopping Center and flows generally westward along Patriot's Path. There is a small pond behind the Mendham Commons property that feeds into the upper section of the North Branch of the Raritan River.

The North Branch passes through the Mountain Valley Park Pond (also known as the "mud hole") before crossing Mountain Avenue. About one mile from here it joins India Brook and flows past the Mendham Borough Waste Treatment Plant before crossing into Mendham Township at Ironia Road. The Raritan River system is one of the most productive trout streams in New Jersey.

- B. India Brook, which flows into the North Branch of the Raritan near the northwestern corner of the Borough, upstream of the Borough Waste Treatment Plant. It forms approximately three (3) miles upstream in Randolph Township and flows through Mendham Township before crossing into the Borough at Mountainside Avenue.
- C. McVickers Brook along with its tributaries drains the majority of the southwestern part of the Borough. The boundaries of this system are roughly West Main Street to the north, Pleasant Valley Road to the south, Hilltop Road to the east, and the Mendham Township border to the West. After combining with two (2) tributaries in Cromwell Lake, McVickers Brook is joined by tributaries from both north and south before passing into Mendham Township toward Lake Therese and the North Branch of the Raritan. There are wetlands and two (2) small ponds in this corridor. There is also a small pond just east of Bliss Road, close to the Bernardsville Borough line.
- D. The main stem of the Upper Passaic River begins near East Main and Orchard Streets and follows southeasterly along the western and southern borders of the high school property and then behind Franklin Road into Mendham Township. The tributaries of this river form in the southeastern corner of the Borough, one flowing into Mendham Township and the other into Bernardsville Borough.
- E. The Whippany River, a major tributary of the Passaic River, begins in Randolph Township and flows into Mendham Township, then eastward through Morris Township. A very small area of the Whippany River watershed is located at the northeastern corner of the Borough.

Water Quality

Being near the headwaters of these large watersheds means that Mendham enjoys generally unpolluted streams. At the same time, the citizens of Mendham have a responsibility to maintain the quality of these streams since they affect the quality of life for Mendham and downstream communities.

The water quality in a stream is influenced primarily by land use practices, but it is also very important that individual citizens avoid the discharge of contaminants from their property since the contaminants can migrate into streams and groundwater. Potential contaminants include lawn fertilizer runoff, sewerage from poorly maintained septic systems, and any type of hydrocarbon.

Soil erosion can also be of concern since the fine sediments can migrate into these streams. These sediments can affect the ecology of the streambeds. Swimming pool discharges to surface water or stormwater systems can also increase loads in the streams. It is recommended that homeowners be advised of Best Management Practices for the proper discharge of pool water.

People who maintain our public and private recreation facilities, as well as individual home owners, must keep in mind the pollution caused by fertilizer runoff. The Borough should continue to educate residents and businesses on the proper use of fertilizers.

Flood Prone Areas

Flood prone areas are a resource, providing flood storage and wildlife habitat. Protection from development insures minimal property loss and lessens the increase of downstream flooding. Vegetation in these areas lessens erosion, particularly during storms.

(Reference Exhibit #12, *Borough of Mendham Wet Map I* at the end of this chapter)

Vegetation

The variety of plants and wildlife found in an area is a good measure of the quality of the area's environment. A generally mild climate, adequate precipitation, and a variety of soil types and habitats (forest, marsh, streams, fields, and hills) provide a wide range of natural vegetation and wildlife in our area. The diversity of habitats along with open space produces an area with a variety of wildlife. The following list is not specific to Mendham Borough, but is taken from the *Natural Resource Management Guide for the County of Morris*. This list has been modified to include only those habitats which are dominant in the Borough, mixed hardwood and successional field. For the complete Floral Species in Morris County and for Morris County Rare Species and Natural Communities Presently Recorded in New Jersey Natural Heritage Database see Chapter 6 in *A Natural Resource Mangement Guide for the County of Morris, 2000*.

Inland Mixed Hardwood Forest

This plant community occurs in the Highlands and the Piedmont ranges of Morris County, which includes Mendham Borough. The mixed oak forest provides an example of the devastating change in character wrought by a single source, in this case the Chestnut blight. At one time the largest deciduous tree of the northeast, the American Chestnut no longer dominates this plant community but rather exists for an abbreviated time as a young sapling.

Dominant Trees:

Black oak, White oak, Red oak, Pin oak

Tuliptree

Red maple

Common Trees:

White Ash	Cherry	Sugar Maple
American basswood	Linden	Sour gum (Tupelo)
Beech	American dogwood	Black birch
Red maple	Shagbark hickory	Mockernut hickory
Bitternut hickory	Pignut hickory	Chestnut oak
Hophornbeam	Sassafras	

Common Shrubs/Vines:

High bush blueberry	American Spicebush	Mountain Laurel
Maple-leaved viburnum	Greenbrier	Virginia creeper
Poison ivy	Wild grape	Winged euonymus (invasive)

Common Herbs:

Marginal wood fern	Christmas fern	Lady fern
New York fern	Violets	False Solomon's Seal
Mayapple	Jack-in-the Pulpit	

Successional Field (Terrestrial—Open Canopy)

The rolling fields which blanket much of the county and contribute to its aesthetic charm, consist of pastures, farmlands, or vacant lands. If not maintained, a field will progress through the multi-phased process of succession; a field will change from annuals to perennials, to shrubs, and finally to trees. Within 50-60 years' time, a former field will be converted into woodland. In this region succession can be expected to result in the following plant communities.

Stage 1: Annual or Biennial Herbs

Bentgrass Foxtail	Queen Anne's Lace	White sweetclover
Crabgrass	Large Horseweed	Ragweed
Common Wintercress	Foxtail	Common mullein

Stage 2: Perennial Herbs

Butter-and-Eggs	Goldenrod	Virginia creeper
Ox-eye Daisy	Canada thistle	Common sweet vernal grass
Rough-stemmed milkweed	Goldenrod	Common St. Johnswort
Hairyvetch	Poison Ivy	Timothy grass
Goldenrod	Kentucky bluegrass	Orchard Grass
Wild bergamot	Grass-leaved King Devil Hawkweed	

Stage 3: Shrubs

Autumn olive	Multiflora rose (invasive)	Staghorn sumac
Raspberry	Smooth sumac	

Stage 4: Tree:

Big-toothed aspen	Quaking aspen	Yellow birch
Red cedar	Grey birch	Black cherry
Choke cherry		

Invasive Species

Invasive exotic species are those which are not native to the area and have been introduced into the environment. Having little or no natural predation, these plant species will often choke out native species, which are critical to the survival of native wildlife. Non-native species in the Borough are spreading aggressively and rapidly, and often compete with the native vegetation, which has formed a specialized niche over many generations. It is not uncommon for the foreign vines to completely choke and kill the native vegetation and form a monoculture stand of the exotic species by suffocating both the native species and the entire ground. Promoting native plant growth is a positive attempt to try and set the natural environment back in balance. One way to promote native plant growth is to eliminate the non-native species.

Invasive Exotic Species in the Morris County Parklands

Trees:

Norway maple (*Acer platanoides*)
Tree of heaven, ailanthus, stink tree (*Ailanthus altissima*)
Princess tree, Paulownia (*Paulownia tomentosa*)
Sweet cherry, Bird cherry (*Prunus avium*)
Black locust (*Robinia pseudoacacia*)

Shrubs:

Japanese barberry (*Berberis thunbergii*)
Autumn olive (*Eleagnus umbellata*)
Burning bush, winged euonymus (*Euonymus alatus*)
Border privet (*Ligustrum obtusifolium*)
Tartarian honeysuckle (*Lonicera tatarica*)
Multi flora rose (*Rosa multiflora*)
Wineberry (*Rubus phoenicolasius*)
Siebold's viburnum (*Viburnum sieboldii*)

Vines:

Porcelainberry (*Ampelopsis brevipedunculata*)
Oriental bittersweet, Asiatic bittersweet (*Celastrus orbiculatus*)
English ivy (*Hedera helix*)
Japanese honeysuckle (*Lonicera japonica*)
Grapevine* (*Vitis* spp.)
Wisteria (*Wisteria floribunda*)

*Some grapevine species in our region are native, some are exotic, and still others are hybrid species. Decisions regarding control need to be done on a site by site basis.

Annuals, Biennials, and Perennials:

Garlic Mustard (*Alliaria petiolata*)

Mugwort (*Artemisia vulgaris*)

Crown vetch (*Coronilla varia*)

Purple loosestrife (*Lythrum salicaria*)

Japanese knotweed, Mexican bamboo (*Fallopia japonica*)

Periwinkle, myrtle, vinca (*Vinca minor*)

Grasses:

Japanese stiltgrass, basket or wire grass (*Microstegium vimineum*)

Woodlands in Mendham

A large part of the Borough is densely wooded. Wooded areas provide natural habitat for wildlife. The vegetative cover in wooded areas helps to prevent erosion, which in turn protects the quality of surrounding water. The persistent deer population is causing not only health and safety issues for the residents of the Borough, but is also impacting the replenishment of our woodlands. Deer browsing is destroying new growth in the wooded areas giving new saplings no opportunity to grow and replenish the aging trees.

Referencing Exhibit #14, *Borough of Mendham Land Use Overview* at the end of this chapter, the woodland areas include:

- ◆ A majority of the open space and undeveloped areas south of West Main Street and east of Mendham Township and west of Hilltop Road are wooded.
- ◆ Large area of very steep slopes surrounding the main golf club area south of Pleasant Valley Road is currently mostly wooded.
- ◆ A large area north of Bernardsville Road and east of Hilltop Road and Mallinkrodt Convent is wooded area. Because this area also contains steep slopes, severe erosion would result if this area were disturbed.
- ◆ In the area west of Hardscrabble Road, there is mature hardwood forest south and west of a pond.
- ◆ Patriot's Path is a wooded walking trail.
- ◆ The Arboretum is a 46.8 acre wooded recreation area.
- ◆ India Brook Park is a 27 acre wooded recreation area.
- ◆ The area between Patriot's Path, Maple Avenue, and North Linden Lane is wooded and wet.

Specimen Trees

A few specimen trees have been identified in the *1984 Open Space Report of Mendham Borough* with the hope of guaranteeing their preservation. These include:

- ◆ Scenic oak tree north of Pleasant Valley Road between McVickers Brook and its junctions with two (2) tributaries just to the east of Mendham Township
- ◆ Very large old oak tree approximately 4-5 feet in diameter located north of Cherry Lane and west of Prentice Lane

Wildlife

Whether it is flora or fauna, species diversity is a reliable accountable indicator of a healthy ecosystem. The density and diversity of animals inhabiting an area directly corresponds to the overall condition of the environment. Wildlife is a natural resource that is interdependent on all other resources and is a vital part of any site inventory.

The Borough offers many habitats with water sources and safe feeding grounds to host a great variety of birds, mammals, reptiles, and amphibians. The importance of wildlife to the residents of Mendham Borough includes pollination of the vegetation, insect and rodent control, soil aeration, and recreational uses. The diversity of wildlife is also an indicator of a healthy ecosystem.

Wildlife management is tied to land management. Many species are vulnerable to disturbances and could be lost to habitat destruction. Habitat niches for specific species are often specialized and loss of these habitats often means loss of the species to the area. Wetland habitats are especially important to species diversification as these particular places are disappearing rapidly. Open space is vital to many songbirds for food but also because additional access with new roads or driveways makes their nests vulnerable to predators, such as raccoons who would not normally venture into deep forests.

The diversity of habitats in Mendham Borough is reflected in the number of different animals who live here. The farmland, fields, streams, ponds, wetlands, and even suburban vegetation provide an excellent environment for the fauna.

The distribution of animals in an area depends on space availability, food, water, and protective vegetation including shrubs, thickets, trees, and tall grass fields. Generally, animals will tend to steer clear of humans because their natural instinct is fear of that which can harm. Wildlife can become a nuisance when adverse conditions affect their natural habitats with such occurrences as lack of food, water, and shelter caused by habitat destruction, fire, drought, flooding, or natural succession. Another nuisance factor is overpopulation which has occurred with the deer population caused by the elimination of natural predators and creation of favorable habitat in which these animals thrive.

See *A Natural Resource Management Guide for the County of Morris (2000)* for a common and endangered species list for Morris County. Use the on-line reference, *The New Jersey Natural Heritage Data Base*, for a current listing of rare species and natural communities in Morris County. This listing is revised several times each year.

Wildlife in Morris County

Below is a listing, by common name, of wildlife in Morris County:

Listing of Wildlife in Morris County			
american bittern	Common yellow throat	little brown myotis	redbellied woodpecker
american black duck	cooper's hawk	long eared owl	redbreast sunfish
american crow	creek chub	long tailed salamander	redfin pickerel
american eel	creek chubsucker	long tailed weasels	redheaded woodpecker
american goldfinch	dark eyed junco	longnose dace	regal fritillary
american kestrel	downy woodpecker	magnolia warbler	ringed neck pheasant
american redstart	earth snake	Mallard	river otter
american robin	eastern bluebird	marbled salamander	rock bass
american toad	eastern box turtle	Mink	rock dove
american tree sparrow	eastern chipmunk	mole salamander	rose breasted grosbeak
american woodcock	eastern cottontails	mourning dove	ruby crowned kinglet
banded sunfish	eastern garter snake	mud sunfish	ruby throat hummingbird
barnswallow	eastern gray squirrel	Muskrat	ruffed grouse
barred owl	eastern hognosed snake	myrtle warbler	rufous sided towhee
Bay breasted warbler	eastern kingbird	nashville warbler	satinfish shiner
belter kingfisher	eastern meadowlark	new jersey chorus frog	savannah sparrow
black and white warbler	eastern milk snake	northern oriole	scarlet tanager
black bear	eastern mud turtle	northern black racer	screech owl
black billed cuckoo	eastern mudminnow	northern brown snake	sedge wren
black capped chickadee	eastern phoebe	northern cardinal	sharp shinned hawk
black crappie	eastern pipstrelle	Northern dusky salamander	silver bordered fritillary
black rat	eastern ribbon snake	northern flicker	slimy salamander
black rat snake	eastern small footed myot	northern goshawk	smallmouth bass
black throated blue warbler	eastern smooth green snake	northern harrier	snapping turtle
blackburnian warbler	eastern wood pewee	northern leopard frog	solitary vireo
blacknose dace	eastern woodrat	northern mockingbird	song sparrow
blackpoll warbler	eastern worm snake	northern parula	Southern flying squirrel
blackthroated green warbler	euopean starling	northern shrike	spotfin shiner
Blue gray gnatcatcher	evening grosbeak	northern water snake	spottail shiner
Blue jay	Fallfish	northern copperhead	spotted salamander
Blue spotted salamander	field sparrow	northern cricket frog	spotted turtle
Blue spotted sunfish	five lined skink	northern ringneck snake	stinkpot (musk turtle)
Blue winged warbler	four toed salamander	northern spring peeper	striped skunk
Bobcat	fowler's toad	northern two lined salamander	swainson's thrush
Bobolink	fox sparrow	norway rat	swamp sparrow
Bog turtle	golden crowned kinglet	Opossum	tennessee warbler
broad winged hawk	golden shiner	Osprey	tessellated darter
brook trout	Grasshopper sparrow	Ovenbird	timber rattlesnake

Listing of Wildlife in Morris County Continued			
brown bullhead	gray catbird	painted turtle	tree swallow
brown creeper	gray fox	palm warbler	tufted titmouse
brown headed cowbird	Great blue heron	pickerel frog	turkey vulture
brown trout	Great crested flycatcher	pileated woodpecker	upland chorus frog
Bullfrog	Great horned owl	pine grosbeak	veery
canada goose	Green backed heron	Porcupine	white breasted nuthatch
canada warbler	Green frog	prairie warbler	white eyed vireo
cape may warbler	Green sunfish	pumpkinseed bluegill	white sucker
carolina wren	grey tree frog	purple finch	white throated sparrow
Carp	Hairy woodpecker	purpose martin	white winged crossbill
cattle egret	Harris' checkerspot	Raccoon	whitetail deer
cedar waxwing	henslow's sparrow	rainbow trout	winter wren
chain pickerel	hermit thrush	red backed salamander	wood duck
chestnut sided warbler	house mouse	red bellied woodpecker	wood frog
chimney swift	house sparrow	red breasted nuthatch	wood thrush
chipping sparrow	house wren	red crossbill	wood turtle
Cliff swallow	Housefinch	red eyed vireo	woodchuck
common grackle	indiana bat	red fox	yellow bellied sapsucker
common nighthawk	indigo bunting	red shoulder hawk	yellow billed cuckoo
common redpoll	jefferson salamander	red spotted newt	yellow bullhead
common shiner	kentucky warbler	red squirrel	yellow throated vireo
common snipe	Killdeer	red tailed hawk	yellow warbler
	largemouth bass	red winged blackbird	

This listing, in Latin and English, may be found in *A Natural Resource Management Guide for the County of Morris (2000)*.

Birds that Breed in Mendham Borough

The Cape May Bird Observatory has provided the following list of birds that breed in Mendham Borough. It is important to note the status.

Listing of Birds that Breed in Mendham Borough			
Status	Name	Status	Name
N	American Redstart	R	Eastern Screech-Owl
N	Barn Swallow	R	European Starling
N	Black-and-white Warbler	R	Great Horned Owl
N	Black-billed Cuckoo	R	Hairy Woodpecker
N	Blue-gray Gnatcatcher	R	House Sparrow
N	Blue-winged Warbler	R	Mourning Dove
N	Bobolink	R	Northern Cardinal
N	Broad-winged Hawk	R	Northern Mockingbird
N	Cerulean Warbler	R	Pileated Woodpecker
N	Chestnut-sided Warbler	R	Red-bellied Woodpecker
N	Chimney Swift	R	Rock Dove
N	Eastern Kingbird	R	Ruffed Grouse
N	Eastern Wood-PeWee	R	Tufted Titmouse
N	Great Crested Flycatcher	R	White-breasted Nuthatch

Listing of Birds that Breed in Mendham Borough Continued			
N	Green Heron	R	Wild Turkey
N	Hooded Warbler	S	American Goldfinch
N	House Wren	S	American Robin
N	Indigo Bunting	S	Belted Kingfisher
N	Kentucky Warbler	S	Blue Jay
N	Louisiana Waterthrush	S	Brown Thrasher
N	Northern Oriole	S	Brown-headed Cowbird
N	Northern Rough-winged Swallow	S	Canada Goose
N	Orchard Oriole	S	Cedar Waxwing
N	Ovenbird	S	Chipping Sparrow
N	Prairie Warbler	S	Common Grackle
N	Red-eyed Vireo	S	Common Yellowthroat
N	Rose-breasted Grosbeak	S	Eastern Bluebird
N	Ruby Throated Hummingbird	S	Eastern Phoebe
N	Scarlet Tanager	S	Field Sparrow
N	Very	S	Fish Crow
N	White-eyed Vireo	S	Gray Catbird
N	Willow Flycatcher	S	House Finch
N	Wood Thrush	S	Kildeer
N	Worm-eating Warbler	S	Mallard
N	Yellow Warbler	S	Northern Flicker
N	Yellow-billed Cuckoo	S	Red-tailed Hawk
N	Yellow-throated Vireo	S	Red-winged Blackbird
N	Acadian Flycatcher	S	Rufous-sided Towhee
R	American Crow	S	Song Sparrow
R	Black-capped Chickadee	S	Swamp Sparrow
R	Carolina Wren	S	Tree Swallow
R	Cooper's Hawk	S	Turkey Vulture
R	Downy Woodpecker	S	Wood Duck
<p>(N) - <i>Neotropical Migrants</i> are those species that, for the most part, spend the winter in the tropics. These species are subject to habitat loss in three ways: loss of breeding habitat, loss of migratory stop-over habitat, and loss of wintering habitat. (S) - <i>Short-Distance Migrants</i> are migratory species that winter within the United States, often in the southern part of the breeding range. (R) - <i>Resident Species</i> are those that are present year-round.</p>			

Threatened and Endangered Species

Information on threatened and endangered animal species and their habitats was obtained from the Landscape Project. According to the New Jersey Department of Environmental Protection:

The Landscape Project is a pro-active, ecosystem-level approach for the long-term protection of imperiled species and their important habitats in New Jersey. The project began in 1994 by the N.J. Division of Fish Wildlife's Endangered and Nongame Species Program (ENSP). Its goal: to protect New Jersey's biological diversity by maintaining and enhancing imperiled wildlife populations within healthy, functioning ecosystems.

The Landscape Project focuses on large land areas called "landscape regions" that are ecologically similar with regard to their plant and animal communities. Using an extensive database that combines imperiled and priority species location information with land-use/land-cover data, the Endangered and Nongame Species Program has identified and mapped areas of critical importance for imperiled species within each landscape region.

Landscape Project critical habitat maps were developed to provide users with peer-reviewed, scientifically-sound information that is easily accessible via the internet and hard copy (paper maps). Critical habitat maps were designed for use by anyone, but especially those individuals and agencies who have the responsibility for making land-use decisions, i.e., municipal and county planners and local planning boards, state agencies, natural resource and lands managers, the general public, etc.

Critical area maps can be integrated with planning and protection programs at every level of government - state, county and municipal, can provide the basis for proactive planning, zoning and land acquisition projects.

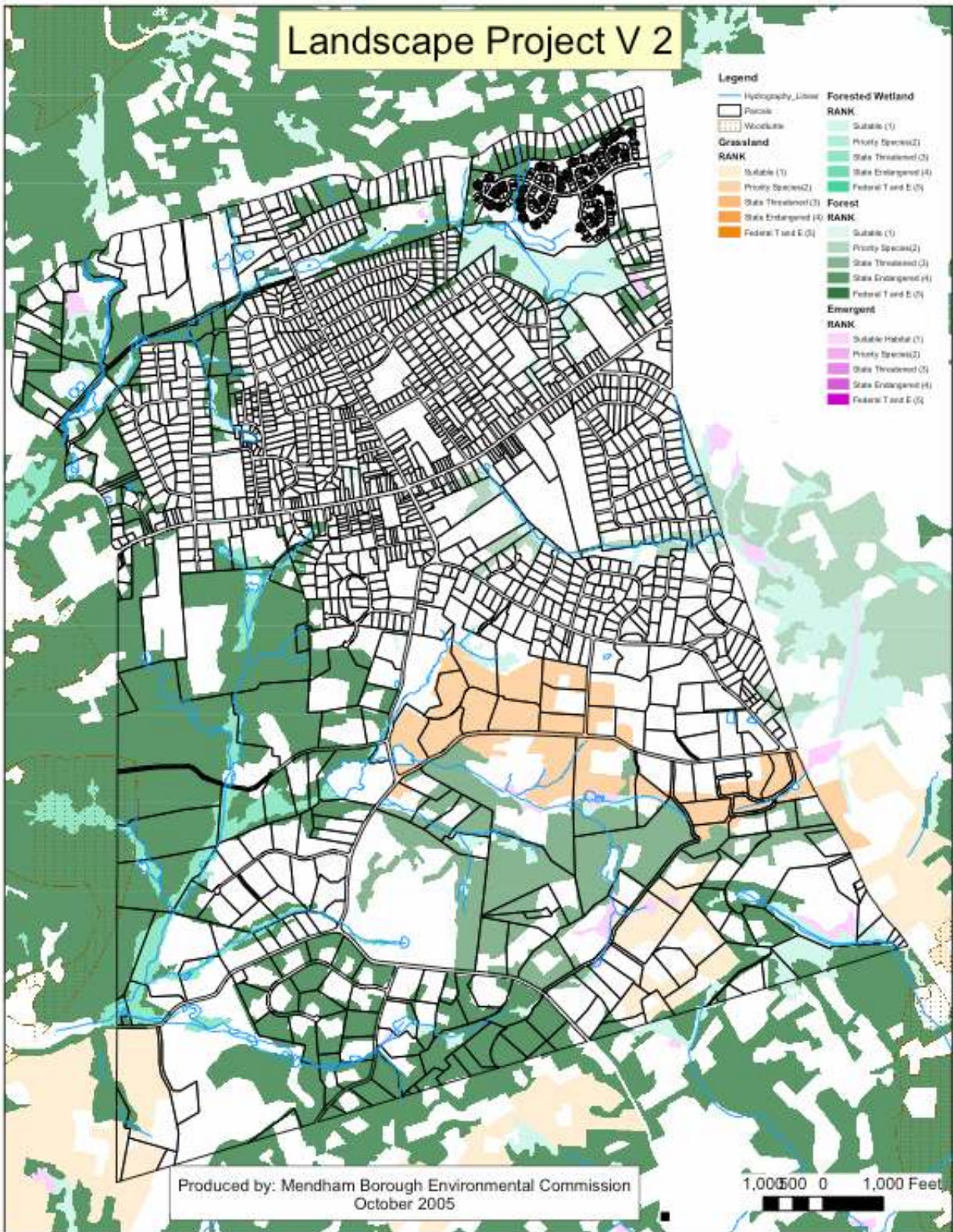
Most importantly, the critical information Landscape Project products provide can be used for planning purposes before any actions, such as proposed development, resource extraction (such as timber harvests) or conservation measures, occur. Proper planning with accurate, legally and scientifically sound information will result in less conflict. Less time will be wasted, and less money spent, attempting to resolve endangered and threatened species issues. (NJDEP).

The Landscape Project Map (version 2) for Mendham Borough is shown on the following page. The map illustrates that the following species have documented habitat within the Borough:

- ◆ Bobcat
- ◆ Red Shouldered Hawk
- ◆ Wood Turtle
- ◆ Cooper's Hawk
- ◆ Great Blue Heron

The bobcat and red-shouldered hawk are listed as State Endangered species. Wood turtle and cooper's hawk are both listed as State Threatened species. The great blue heron is listed as a State Special Concern species. The critical environmental areas associated with these species are primarily located in the largely undeveloped forested areas in the southern and western portions of the Borough.

Landscape Project V 2



Sources

The Open Space Report of Mendham Borough (1984) contains more detailed descriptions of surface waters, the surrounding terrain and environmental issues.

The Chesters-The Mendhams, A Natural Resource and Environmental Study (1976) is a comprehensive natural resource inventory and environmental study of Mendham Borough, Mendham Township, Chester Borough, and Chester Township. This report contains a wide range of technical information related to environmental assessments.

Letter dated April 2002 from Ralph Blakeslee, Borough Administrator, to J Peter Braun, Great Swamp Watershed Executive Director, containing inventory of lakes and ponds in Mendham Borough.

Borough of Mendham Master Plan (1994)

Master Plan Reexamination 2000.

A Natural Resource Management Guide for the County of Morris (2000) also contains a more detailed description of mixed hardwood and successional fields. See Appendix A for the complete Floral Species in Morris County, and Appendix C for the common and endangered species list for Morris County.

Open Space and Recreation Plan, Mendham Borough Open Space Advisory Committee 2002

Letter from Vince Elia, CMBO Research Assistant Cape May Bird Observatory, no date, 2002

On-line, enter *The New Jersey Natural Heritage Data Base*, for a current listing of rare species and natural communities in Morris County. This listing is revised several times each year.

Connolly Environmental, Inc., *Critical Water Resources Study, Township of Mendham, New Jersey*, Denville, NJ, 1994

Unless otherwise noted, all Maps were created by Ferriero Engineering Inc., 180 Main Street, and P.O Box 571, Chester, New Jersey, 07930.

Insert Exhibits #7-14