

CONSERVATION ELEMENT

INTRODUCTION

The Municipal Land Use Law (MLUL) permits a municipality to prepare and adopt a Conservation Plan Element as part of its Master Plan. The MLUL describes a conservation plan element as follows:

A conservation plan element providing for preservation, conservation, and utilization of natural resources, including, to the extent appropriate, energy, open space, water supply, forests, soil, marches, wetlands, rivers and other waters, fisheries, endangered or threatened species, wildlife and other resources, and to systematically analyze the impact of each other component and element of the Master Plan on the present and future preservation, conservation and utilization of those resources. MLUL (N.J.S.A.40:55D-28.19 b(8).)

This Conservation Element reaffirms the longstanding commitment to safeguard Long Hill's natural resources. The Element builds upon previous conservation planning decisions and the strong, continuing public support of environmental preservation by the residents of Long Hill Township.

Long Hill has both an Environmental Commission(Ordinance 2-31)with responsibility for the protection and development or use of natural resources, including maintaining a Natural Resource Inventory and Shade Tree Commission (Ordinance 2-23) who has broad oversight of the health and wellbeing of shade and ornamental trees and shrubbery on public lands, and maintaining a list of "Big Trees". Both Commissions are required to conduct reviews for applications before Land Use Boards. Therefore, the involvement of the Commissions to provide input into the Conservation Element is of significant importance.

SUMMARY OF LOCAL CONSERVATION ACTIVITIES

Long Hill has faced, and continues to face, a variety of complex conservation and environmental challenges:

Jet Port¹: Long Hill Township's modern history of active conservation dates to official measures taken to oppose the Port of New York Authority's proposal to build a major jetport in the Township in 1959. The Passaic Township Planning Board "cited the poor location, the noise, a protest of any prospects involving the water-shed of the Passaic River" who also "suggested that the area would be better suited either for a Federal or State wild life preserve". The Passaic Township Zoning Advisory Committee stated, "that an airport of the proposed type would destroy the residential character and the planned orderly growth of the Township." Ultimately the Jet Port proposal was defeated wherein the land obtained was added to the National Natural Landmarks program in 1966 and in 1968 became the first formally designated wilderness refuge in the United States².

Passaic River Floodwall³: In 2011 the Army Corps of Engineers proposed building a 4,000 ft wall measuring between 4 and 5 ft in height stretching along the Passaic River roughly from Lounsbury Meadow to behind the Shop-Rite Plaza. Sluices and gates would be built on a number of tributaries. The majority of the estimated \$10 million cost would be borne by Federal and State budgets with Long Hill contributing around \$875,000. Although there could be benefit to about 150 homes and businesses about a dozen homeowners on the south side of the wall could see increased flooding. The proposal was not pursued with issues around cost as well as local resident and neighboring town objections.

¹Daily Record – December 16, 1959

²https://en.wikipedia.org/wiki/List_of_national_natural_landmarks_in_new_jersey

³Patch.com (October 19, 2011 and November 2, 2011)

CONSERVATION ELEMENT

Environmental Contamination: Like many towns in New Jersey, the Township has a number of properties (industrial, commercial or residential) that are subject to either State (NJDEP) or Federal (USEPA) environmental cleanup regulations. The State and Federal regulatory agencies take the lead on the investigation and cleanup of these sites to protect the interests of the community and its residents. These sites are identified at the State level on the NJDEP website as part of the Known Contaminated Site List or on the USEPA Region 2 Superfund List. The current status of the cleanups at these sites are maintained by the appropriate regulatory agency and updates are provided to the Township per regulatory requirements. The status of the cleanups at the sites is publicly accessible through the websites maintained by the NJDEP⁴ and USEPA⁵ Region 2.

Asbestos Dump Superfund Site⁶: An 11-acre property located south of the railroad tracks in Millington, New Jersey, and three separate satellite sites: 1) the 12-acre White Bridge Road site, 2) the 30-acre New Vernon Road site, and 3) the 7-acre Dietzman Tract site in the Great Swamp National Wildlife Refuge (GSNWR). Clean-up at the satellite site has been completed and long-term Operation and Management (O&M) at the Millington site is ongoing.

The retaining wall and cap completed by the Army Corp of Engineers on approximately 4.5 acres of the Millington site stabilized a mound of discarded product and other waste from the manufacture of asbestos roofing shingles. This retaining wall and the cap at the Millington site continues to prevent asbestos from entering the adjacent Passaic River as it had been prior to this remedy.

The Millington site has groundwater monitoring wells at various points throughout the 11-acre property. The Millington site, along with the satellites, are subject to a 5-year reviews by the EPA which can be found on the EPA website and at the Long Hill Library. All of the sites were deleted from the National Priorities List by July of 2010.

Stormwater Management is of critical importance to Long Hill Township. Due to the Township's environmental setting bordered to the west and south by the Passaic River, existing and future development must utilize Best Management Practices to minimize stormwater runoff volume and to protect stormwater quality. Attached to this Element is a Stormwater Management Sub-Element.

NATURAL RESOURCE OVERVIEW + EXISTING CONDITIONS

The abiding public interest in the protection of Long Hill Township's environment can be traced to the rich and diverse natural resources that make up the Township. There exists large expanses of contiguous Municipal, County, State and Federal government owned or controlled open space comprising approximately 50 percent of the Township's area. These include:

- The northern area of the Township features the Great Swamp National Wildlife Refuge and Wilderness Area ("Great Swamp"). Most of the southern border has a large buffer of County- and State-owned parklands along the flood prone Passaic River.
- The Third Range of the Watchung Mountains forms a ridge of steep slopes through the entire

⁴<https://www.state.nj.us/dep/srp/kcsnj/>

⁵[https://www.epa.gov/superfund/search superfund sites where you live](https://www.epa.gov/superfund/search%20superfund%20sites%20where%20you%20live)

⁶[https://www.epa.gov/superfund redevelopment initiative/superfund sites reuse new jersey](https://www.epa.gov/superfund/redevelopment%20initiative/superfund%20sites%20reuse%20new%20jersey)

CONSERVATION ELEMENT

central portion of the Township, with dramatic vistas to both the north and south. This ridge is the long hill that is the Township's namesake.

- The Black Brook that flows through the Great Swamp and the Passaic River that forms the westerly and southern borders of Long Hill Township are both historic waterways. The Passaic River is a major regional water supply and has a long history of recreational use for canoeing and fishing.
- The combination of steep, wooded terrain of the Watchung Mountains, the wetlands of the Great Swamp and Passaic River, and being a part of the Atlantic flyway provide rich habitat for many species of birds, mammals and reptiles, including state threatened and endangered species.

Geology

Situated within the physiographic province of the Piedmont Plain, the Township has been shaped by a confluence of geologic events. During the Triassic Period (-250 to 200 million years ago), volcanic activity resulted in basalt flows and intrusions into the existing Passaic Formation, a slightly older formation composed of red siltstone, sandstone and shales. The more erosion resistant basalt flows formed Long Hill, one of the three principal ridges of the Watchung Mountains. The less erosion resistant Passaic Foundation formed the sediment deposits in lowland areas.

Glacial Lake Passaic, the 200 to 250 foot deep temporary surface water impoundment created by the Wisconsin Stage of the last glacial epoch to impact this area (-19,000 to 14,000 years ago), left behind the Great Swamp as a minor remnant of its extensive coverage. The lake was formed during the melting and retreat of the Wisconsin ice sheet and the damming of southern flowing

drainage channels against the north side of Long Hill. As time passed, glacial meltwaters slowly eroded geologic materials forming the Passaic River and the lake slowly drained and transitioned into today's Great Swamp.

Topography

The Township is characterized by rolling terrain, expansive lowlands and higher elevations along the Third Watchung ridge or Long Hill, which is one of three parallel ridgelines of the Watchung Mountains. Long Hill divides the lowlands of the Great Swamp to the north from the Passaic River along the southern boundary of the Township. Significant topographic relief is observed across the Township, with elevations ranging from El 449 feet above mean sea level near the intersection of Long Hill Road and Gillette Road to lower elevations along the Passaic River floodplain.

Steep slopes in the Township are most prominent above the Passaic River and along Long Hill (both north and south facing) posing particular challenges to protect suitable drainage patterns, native vegetation, slope stability, pollution and sediment from stormwater runoff. Published sources (U.S. Natural Resources Conservation Service and the NJDEP) indicate that slopes 10-25 percent should be left in their natural condition, maintained in grass or tree cover, and slopes greater than 25 percent should be left undisturbed.

Water Resources

Understanding and protecting our geologic and hydrologic resources are critical to maintaining good quality groundwater and surface water resources. Protection of groundwater resources requires the definition and characterization of sensitive recharge areas, where surface water can infiltrate more permeable soil and flow into deep subsurface aquifers. Protection of surface water

CONSERVATION ELEMENT

resources requires the preservation of wetlands for flood storage capacity and contaminant filtering, along with vegetative buffers between impervious development and surface water bodies. It also requires maintaining tree canopy cover and a healthy understory of native trees, plants and shrubs.

The Passaic River is a 90-mile waterway, traversing 45 municipalities and provides drinking water for more than 2 million people. The river flows south from the Great Swamp and then turns east following the valley between the Third and Second Watchung Ridges. Tributaries of the Passaic crisscross the Township. All of these unnamed tributaries, as well as the portions of the Black Brook and Passaic River which border or run through the Township are classified as fresh water non trout producing (FW2-NT). While they do not currently provide proper conditions for wild trout, the Passaic River in Long Hill is regularly stocked with rainbow trout by the State of New Jersey.

The health of the riparian buffer is very important to the well-being of the Passaic River ecosystem and its floodplain. Substantial areas of riparian buffer are publicly owned by the State, County, or Municipality⁷. State and County owned properties are largely protected and preserved by regulation. The publicly owned riparian buffers are generally healthier than areas under private ownership⁸. The quality of the riparian buffer, especially in many privately owned areas, has been compromised by landscaping practices such as the replacing native vegetation with turf grass to create views of the river. Protecting and restoring riparian buffers while providing access to the natural beauty of our waterways creates recreational resources that add to the appeal of our community.

The protection of its flood plain provides important flood storage capacity and buffers to protect water quality. This river is prone to flooding because of its very shallow gradient and meandering path. The Township has purchased flood prone properties utilizing Blue Acres fund as part of the Township's proactive work to address flood hazards.

Wetlands

Wetlands form a critical landscape type in the Township with the largest contiguous area of wetlands found within the Great Swamp. Wetlands are also found along the floodplains of Black Brook and the Passaic River, along with many unnamed tributaries leading to these surface water features. Wetlands within the Township play a critical role in filtering non-point surface water runoff contaminants, as well as providing storage capacity for direct precipitation and surface water flooding events. Long Hill also hosts a number of vernal pools which provide critical habitat for many amphibian species.

Woodlands

In addition to the Great Swamp N.W.R., Long Hill Township contains over 800 acres of municipal, county or state-protected forested bottomlands that includes floodplains and riparian habitats. These act as an important buffer zone for the Great Swamp and are of particular importance to migrating songbirds and raptors.

The Township also protects over 100 acres of upland forest, lying on either side of Long Hill Road. Upland forest areas can host priority bird species such as wood thrush, several migrating wood warbler species and various neotropical migrants which utilize the resources of this important habitat. These forests are also important for fall migrating raptors. The greatest threat is that of invasive plant

⁷The Upper Passaic River Riparian Conservation Project. Conservation Master Plan. Township of Long Hill. Pages 40 and 41. Dated: 2/25/2000.

⁸The Upper Passaic River Riparian Conservation Project. Conservation Master Plan. Township of Long Hill. Page 42. Dated: 2/25/2000.

CONSERVATION ELEMENT

species such as Japanese barberry, garlic mustard, multiflora rose, bamboo and Japanese honeysuckle. These species thrive along forest edges and spread from surrounding residential encroachment.

Elsewhere across the Township, there are some old growth trees reminiscent of woodlands which once covered the area. The locations of most of these have already been recorded by the Shade Tree Commission and details are on offer to the public as a tour package. Apart from their aesthetic and historic significance, such old growth trees offer a greater diversity of microhabitats and act as reservoirs for species of insects, lichen, and fungi not commonly found elsewhere.

Wildlife

The woodlands of Long Hill offer critical habitat for a variety of high priority bird species such as red-headed woodpeckers, a species regarded as “imperiled in New Jersey because of rarity” (Office of Natural Lands Management 1998). Several other State-listed species such as barred owl and red-shouldered hawk also occur. The bottomland forests may also host the State-listed blue-spotted salamander, or federally listed bat species such as Indiana bat.

The Great Swamp is the best studied area in the Township, and is home to 240 bird, 39 mammal, 42 reptile and amphibians, and 29 fish species. Twenty-six species in total are listed by the State of New Jersey as threatened or endangered. Approximately 109 bird species have been recorded nesting within the refuge, including important State populations of barred owls, American woodcock, wood ducks, and eastern bluebirds. Many of these species occur on Township properties. Studies focusing on specific federal and State Threatened and Endangered species are regularly conducted at the refuge. The habitat utilization and demography of Indiana bat, bog turtle, wood turtle, and blue-

spotted salamander have all been studied there. Information from these studies is incorporated into management strategies on the refuge.

Ten bat species, including the federally listed endangered Indiana bat, have been identified at the refuge. Other species of concern include eastern red bat, Eastern small-footed bat, and Hoary bat. The Indiana bat, a State and federally listed endangered species and the northern long-eared bat utilize riparian corridors at Great Swamp for foraging and warm season roosting. It is quite probably that most of these bat species breed in or forage over areas of forests along the Passaic River and the slopes above.

Approximately 300 species of Lepidoptera (butterflies and moths) have been recorded in the Great Swamp, as well as many other insect species. The refuge also plays host to hundreds of species of trees, shrubs, flowers and other vascular plants, as well as an impressive list of mosses, liverworts, fungi and other flora. Many of these species will be present outside of the refuge in the relatively undisturbed habitats mentioned earlier.

CONSERVATION + ENVIRONMENTAL ISSUES

Long Hill faces a number of conservation challenges. Some are local, while others are the result of influences outside of Long Hill Township’s control.

Air Quality: While there are few uses within the Township that would release harmful pollutants into the air, its location in the densely populated northern New Jersey region, which includes many long-standing industrial uses, still results in potentially harmful conditions for residents. The Township should continue to recognize the importance of Air Quality which is addressed within the Sustainability Element.

Climate Change: Extreme weather events are happening more frequently than expected, for

CONSERVATION ELEMENT

example the Hurricane Irene and Superstorm Sandy storm events in back to back years of August 2011 and October 2012. More recently, 2018 set a record for the most precipitation in one year for our area. The Millington Flood Gauge uncommonly was within inches of the action stage several times over the winter of 2018-19. More frequent thunderstorms have a greater rainfall intensity leading to more significant erosion, especially on unprotected steep slopes. On the other extreme are more frequent droughts that stress or kill critical vegetation that is needed to mitigate erosion which, in turn, poses a threat to water supplies.

Flooding: Significant portions of the Township lie within the 100-year floodplain and are susceptible to flooding. The prevalence of water bodies throughout the Township as well as a high water table creates unique land use challenges and poses threats to both private properties and critical Township facilities. The maps contained herein show the extent of these flood-prone areas.

Invasive Species: Diseases and harmful insects are an increasing threat to our trees. Ash trees throughout the Township are susceptible to the fatal ash yellows disease and the invasive emerald ash borer. Streetscape and forest trees are threatened by the Asian longhorn beetle, gypsy moth and the spotted lanternfly, which was found in NJ for the first time in 2018. The spread of invasive plant species pose a threat to the ecosystem as well, aided by the consumption of native plant species by herbivores such as deer, whose populations thrive in the wooded suburbs of New Jersey where they are largely unimpeded by their natural predators.

CONSERVATION RECOMMENDATIONS

Conserving, protecting and enhancing Long Hill

Township's natural resources is central to land use and planning decisions. The specific recommendations for the Conservation Plan Element of this Master Plan are:

1. Development and redevelopment should minimize the disruption of critical natural, agricultural, scenic recreation and historic resources.
2. Update the Township wide Natural Resources Inventory (NRI) dated 2000 to include and expand policies for conservation development, the Passaic River riparian buffer and habitat restoration. The NRI was performed with the Great Swamp and other organizations forming a factual database of all environmental assets, threatened and endangered species (for example Indiana bats), and valuable environmental attributes, such as recording the location of specific microhabitats (for example vernal pools). The NRI should also include GIS data-layers of natural resource information and be utilized in the creation of/modification to land use ordinances for the protection of riparian buffers and other natural resources.
3. Review and revise, where necessary, ordinances regarding the protection of environmentally critical areas (steep slopes, wetlands and areas of special flood hazard), important environmental habitats and the riparian buffer.
4. Encourage the ongoing strategic acquisition of open space, as recommended in the Open Space Element, to include land for conservation, flood protection and critical habitats that support Threatened and Endangered Species as listed under the Endangered Species Act (ESA) and the Township's NRI. Long Hill Township should utilize County programs, such as the Morris County Preservation Trust Fund and

CONSERVATION ELEMENT

State programs such as the New Jersey Green Acres Program, The New Jersey Blue Acres Program or the Easement Purchase Program available through the Morris County Farmland Preservation Program.

5. Encourage greater tree preservation and planning efforts in the Township through the implementation of the Township's Community Forestry Plan and explore creating supporting ordinances that include the Big Trees list as identified by the Township's Shade Tree Commission.

6. Co-operate with local municipalities, county governments, government agencies, and environmental organizations who, like Long Hill Township, seek to protect, restore and improve the:

- a. Ecosystems of the Great Swamp and Passaic River corridor
- b. Tree cover canopy and riparian buffer
- c. Quality of our water

7. Encourage diversity of native plant species, where possible, to avoid same species clustering that may help the spread of diseases, invasive insects and expansion of aggressive non-native plant species.

8. Evaluate Environmental Commission Planning Application Review process as it pertains to NJDEP "Known Contaminated Sites" database.

9. Explore opportunities for grants to fund Township wide assessment of streams, identifying problem areas and opportunities for stream restoration projects.

10. The Township should allocate funds to:

- a. The Environmental Commission to address the recommendations outlined in

this Element.

- b. The Shade Tree Commission for the preservation and enhancement of Long Hill's tree canopy cover.

STORMWATER MANAGEMENT SUB-ELEMENT

Introduction

The proper management of stormwater is critical to a Township with significant wetlands and surface water resources. Historically most towns handled stormwater by moving it downstream as fast as possible, using storm and sanitary drains to feed unfiltered stormwater directly to streams and rivers. This often contributed to catastrophic flooding and destruction of natural and man-made resources.

Our understanding of flood processes and stormwater management has come a long way since then. In 2000, the Long Hill Environmental Commission and the Passaic River Coalition prepared a document entitled "The Upper Passaic River Riparian Conservation Project Master Plan" with a detailed analysis of the interaction of land use, development patterns, riparian forest health and their impacts on the overall health of the Passaic River.

More recent publications such as the NJDEP Stormwater Best Management Practices (BMP)⁹ recommend separating storm from sanitary drain systems, and slowing down stormwater closer to the source where possible. A subset of these BMPs is called Green Infrastructure¹⁰ (GI) which are management practices that address stormwater runoff through soil infiltration, or reuse. These practices filter stormwater into the groundwater, streams, and rivers, even encouraging its re-use by homeowners for landscaping and gray-water

CONSERVATION ELEMENT

use. GI practices include, but are not limited to, pervious paving, bioretention basins, vegetated swales, and cisterns. The use of green infrastructure encourages the idea that stormwater is a resource that can be reused, instead of being treated as a nuisance that needs to be removed as quickly as possible.

STORMWATER MANAGEMENT GOALS

Incorporating BMPs into all land use development and redevelopment, and absorbing GI methods into wider Township stormwater management practices will help the Township derive the following benefits:

1. Reduce flood damage. Most of Long Hill Township's commercial district, several municipal buildings, a number of residential homes, and the Township's wastewater treatment plant are situated within the floodplain of the Passaic River. The Township has suffered significant losses as a result of several serious floods such as the Northeaster of 1996 and Tropical Storms Floyd in 1999 and Irene in 2011, which inundated much of the above-mentioned areas.

2. Reduce sedimentation in stormwater runoff. Though sedimentation is a natural process which enriches river valley soils, excessive sedimentation can block drainage channels, make areas more flood prone, lead to variability in stream and river flow and impact the riparian buffer.

3. Improved Groundwater Recharge. Groundwater is an important water resource; it is an important source of potable water, and it is crucial for regulating water body base flow, particularly during dry conditions when it may be the sole source of water feeding streams or ponds. When soil is compacted or covered by impervious surfaces, or when stormwater runs off the land too quickly,

less precipitation is able to infiltrate, resulting in less groundwater recharge. Long Hill Township and many other communities in the region rely upon the Passaic River Basin as a source of drinking water. Increased infiltration of stormwater will help to increase groundwater reserves while facilitating the restoration of more normal flow patterns in the Passaic River.

4. Reduced wastewater treatment costs. Excessive flooding affects wastewater treatment plants in many ways. Loss of power, asset damage, and dangerous conditions for personnel have large economic and public health impacts on these facilities. Stormwater runoff can also carry a variety of pollutants and sediments, and places an additional burden on the wastewater treatment plant and processes. The use of BMP serves to reduce the volume of stormwater reaching the treatment plant and lessens the impacts of storm events.

RECOMMENDATIONS

To meet the Goals as indicated in this sub-element and to recognize the important role the Long Hill community has in the preservation and restoration of valuable natural resources, the recommendations are as follows:

1. Use BMP practices as a key component of all land development projects, with a goal for each project site of having no net increase in rate, volume, or pollution levels of stormwater following development.
2. Consider the formal adoption of practices as suggested within the NJ Stormwater Best Management Practices (BMP) such as Green Infrastructure¹¹.
3. Outside of major development projects, focus efforts on the reduction and improvement of stormwater runoff such as rehabilitating existing

⁹BMP applies to Major Development as defined by N.J.A.C. 7:8-1. 1 et seq., which governs any land disturbance of one acre or more or one quarter acre or more of development. https://www.njstormwater.org/bmp_manual2.htm

¹⁰<https://www.nj.gov/dep/gi/index.html>

CONSERVATION ELEMENT

impervious cover to interrupt and infiltrate stormwater.

4. Educate landowners and businesses about GI landscaping practices such as wildflower meadows and rain gardens that will enhance the environment, reduce local flooding and sedimentation, and slow stormwater runoff. To this end, Long Hill should actively engage the community through:

a. Promoting water conservation, water re-use, and stormwater management.

b. Promoting the use of; indigenous plants that provide natural habitat; chemical free lawn maintenance; the reduction of impervious cover; rain gardens and other BMPs.

c. Expanding its efforts to raise awareness and protection of our natural resources by hosting more events centered on the Passaic River.

d. Facilitating volunteer groups to participate in river cleanups and volunteer water quality monitoring activities.

e. Conduct annual BMP and land use educational programs for Township volunteers, employees and officials.

f. Partner with a local environmental conservation group, such as the Great Swamp Watershed Association to install a Green Infrastructure demonstration project in a high-profile part of the Township that can serve as an educational tool for how to better manage stormwater runoff.

5. Consider undertaking an assessment of Stirling Lake and its watershed in order to identify opportunities to mitigate the impacts of stormwater runoff.

6. Evaluate the application and development of a local or regional stormwater utility and fee

collection structure with the goal to offset costs for existing stormwater drainage system operation, maintenance and permitting costs.