



**Draft**  
**Unit Management Plan for**  
**Southern Staten Island:**  
**Mount Loretto Unique Area,**  
**Lemon Creek, Arden Heights Woods,**  
**Bloesser's Pond**

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**Prepared for:**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
Division of Lands and Forests

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# List of Abbreviations and Acronyms

ABA	Architectural Barriers Act
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ATV	All-terrain vehicles
BBA	Breeding Bird Atlas
BBS	Breeding Bird Survey
BCA	Bird Conservation Area
BMP	Best Management Practice
CBC	Christmas Bird Counts
CCC	Civilian Conservation Corps
DEP	New York City Department of Environmental Protection
DO	Dissolved Oxygen
DOS	Department of State
ECL	Environmental Conservation Law
EFH	Essential Fish Habitat
HUC	Hydrologic Unit Code
IBA	Important Birding Areas
MLLW	Mean Lower Low Water
NOAA Fisheries	National Oceanic and Atmospheric Administration Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NYC	New York City
NYCRR	New York Codes Rules & Regulations

## **Glossary (cont.)**

NYS	New York State
NYS OPRHP	New York State Office of Parks, Recreation, and Historic Preservation
NYSDEC	New York State Department of Environmental Conservation
PWL	Priority Waterbody List
SEQRA	State Environmental Quality Review Act
SRD	South Richmond Development
STP	Sewage Treatment Plant
TMDL	Total Maximum Daily Load
UMP	Unit Management Plan
USGS	United States Geological Survey
UTAP	Universal Trail Assessment Process

# Preface

It is the policy of the New York State Department of Environmental Conservation (NYSDEC) to manage State lands for multiple benefits to serve the People of New York State. This Unit Management Plan (UMP) is the first step in carrying out that policy. The plan has been developed to address management activities for the four units for the next 10 years, with a review due in five years. Some management recommendations may extend beyond the 10-year period. Factors such as budget constraints and forest health problems may necessitate deviations from the scheduled management activities.

# Executive Summary

The mission of the New York State Department of Environmental Conservation (NYSDEC) is “to protect the quality of New York State’s land, water, and air, the character of its scenery and the health and diversity of its fish and wildlife populations and habitats.” Consistent with this mission, the NYSDEC Region 2 undertook the development of a unit management plan (UMP) in Southern Staten Island. Four sub-units were identified to be part of this UMP: Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond. Literature reviews and field studies were conducted in the fall and spring of 2004-05 to evaluate the critical natural and cultural resources at each of the sub-units. The results of those findings are presented in this report as well as management policies and long-term management recommendations. Under guidance by NYSDEC Region 2, management recommendations emphasize preserving the natural environment in a manner that does not negatively impact the current resources present at the four sub-units while providing passive recreational opportunities to the public.

The four sub-units vary in size and character. Mount Loretto is the largest sub-unit and consequently is the only area actively managed to accommodate public use. The majority of the 241-acre Mount Loretto sub-unit is grassland habitat, ideal for wildlife and unique in urbanized Staten Island. Lemon Creek is the second largest sub-unit with nearly 42 acres of forest and intertidal wetland; Arden Heights and Bloesser’s Pond are 8-acre and 3.6-acre forested/freshwater wetland, respectively. The bulk of the management recommendations included in this UMP pertain to management at Mount Loretto; however, each sub-unit within the UMP is unique due to its proximity to adjacent urban development.

Broad management recommendations emphasize the importance of preserving the Unit in a natural state for the passive enjoyment of the public. Educational opportunities are encouraged at Mount Loretto and additional emphasis needs to be placed on developing educational programs and facilities. The other three sub-units will not be actively managed for public use; therefore, management at these sub-units pertains strictly to sustainable management of their resources. Major resource management concerns at each of the four sub-units include the presence of invasive species (wildlife and plant life), stormwater runoff, illegal activity, and



encroachment from adjacent properties. A detailed discussion of management principles and concerns can be found in Sections 3, 4 and 5 of this Unit Management Plan.

The long-term management of the four sub-units is dependent upon joint cooperation between the public and NYSDEC Region 2 managers. This UMP will be reviewed in five years and again after 10 years according to NYSDEC policy. Until these reviews, management recommendations contained in this report will be implemented in the best interests of each unit.

# 1

## Introduction

### 1.1 Information about Unit Management Plans

#### A. What is a Unit Management Plan?

A Unit Management Plan (UMP) is an assessment of the natural and physical resources on land managed by the Department of Environmental Conservation. The UMP guides the Department's activities for a ten-year period. Each plan addresses specific objectives for public use and ecosystem management which are consistent with the land classification guidelines and the wild character of these lands.

#### B. Who Writes the Unit Management Plan?

State Forest UMP's are written by the Division of Lands and Forests with input from the Division of Fish, Wildlife, and Marine Resources, the Division of Operations, the Division of Mineral Resources, and the Division of Forest Protection and Fire Management. A description of each Division's responsibilities is listed below. Additional information can be found on the Department's website, <http://www.dec.state.ny.us>.

**Division of Lands and Forests.** The Division of Lands and Forests is responsible for the stewardship, management, protection, and recreational use of State Forest lands, the care of the people who use these lands and the acquisition of additional lands to conserve unique and significant resources. The Department also provides forestry leadership by providing technical assistance to private forest landowners and the forest products industry.

**Division of Fish, Wildlife, and Marine Resources.** The Division of Fish, Wildlife, and Marine Resources serves the public by using their collective skills to describe, understand, manage, and perpetuate a healthy and diverse assemblage of fish, wildlife, and ecosystems.

**Division of Operations.** The Division of Operations provides technical services, facilities management, and maintenance of physical assets to ensure effective and efficient operation of the Department and safe public use of Department lands and facilities.

**Division of Mineral Resources.** The Division of Mineral Resources is responsible for ensuring the environmentally sound, economic development of New York's non-renewable energy and mineral resources for the benefit of current and future generations.

**Division of Forest Protection and Fire Management.** The Division of Forest Protection and Fire Management is responsible for the preservation, protection, enhancement of the state's forest resources, and the safety and well-being of the public using these resources

**C. How is the Unit Management Plan Developed?**

There are a series of steps involved in developing a unit management plan:

- Step 1: Conduct a resource inventory of the unit.
- Step 2: Solicit written and verbal input from the public through press releases and mass mailings.
- Step 3: Develop a draft UMP
- Step 4: Internal review and approval of draft UMP.
- Step 5: Release draft UMP and conduct public meetings to gather comments on the draft plan.
- Step 6: Address issues and develop a final UMP.
- Step 7: Comply with State Environmental Quality Review (SEQR).
- Step 8: DEC Commissioner approves final UMP and implementation begins.

**D. Public Input.** Initially, public input is gathered to help begin the process of developing a UMP. People are encouraged to help identify issues that need to be addressed in the plan. Mass mailings, press releases and public meetings are conducted to obtain input from adjoining landowners, recreation clubs, natural resource organizations, and the general public. Initial public input is received in the form of verbal comments, e-mails, and letters.

**E. Unit Management Plan Development.** Information gathered from the public is incorporated into the draft UMP. After public input is received, Department staff also do additional fieldwork and conduct in-depth research on topics related to the Plan. All of this information is necessary to comply with the State Environmental Quality Review Act (SEQRA). The draft UMP includes local history, information on the Unit, project and treatment schedules, and a budget.

**F. Draft Unit Management Plan.** Once the draft UMP is formally released, timeliness and deadlines become more formal and important. This is due to the noticing and comment requirements related to the State Environmental Quality Review Act and also due to the need to issue a final UMP and begin implementation. Meetings are held to gather public input on the draft UMP. If you are not able to attend a public meeting, comments can also be made in

writing, by telephone, fax, or e-mail up to 30 days after the public meeting. Regardless of the format of your input, all forms of communication with the Department are considered equal.

### **Southern Staten Island UMP**

The New York State Department of Environmental Conservation's (NYSDEC) mission is "to protect the quality of New York State's land, water, and air, the character of its scenery and the health and diversity of its fish and wildlife populations and habitats." This Unit Management Plan (UMP) is designed to serve as a mechanism for the New York State Department of Environmental Conservation (NYSDEC) to plan and manage four sub-units in Southern Staten Island over the next 10 years, consistent with the Agency's mission. NYSDEC does not plan to develop the four sub-units. NYSDEC has agreed to maintain the four sub-units as natural areas and will follow the purchase agreement parameters given by the Archdiocese.

The UMP provides guidance to managers to direct the resources of the sub-units in a manner that sustainably supports the environment while at the same time provides the most enjoyable recreational opportunities for the public. Moreover, the UMP helps NYSDEC staff improve public use and enjoyment of the area, avoid user conflicts, prevent overuse of the resource (e.g., through trail designations, types of use), and allow for public input into decision-making. The UMP also identifies opportunities to provide access for persons with disabilities as well as serves as an administrative document to manage and change existing resources within the four units (e.g., removing structures)

This UMP has been developed pursuant to, and is consistent with, Article 9, Titles 5 and 7, of the New York State Environmental Conservation Law (ECL) and associated rules, regulations, and policies. Moreover, the UMP adheres to the State Forest Unit Management Planning Handbook; the Mount Loretto Concept Plan; the Mount Loretto Custodial Plan; the State Environmental Quality Review Act (SEQRA); and the Americans with Disabilities Act (ADA).

### **1.2 General History of State Forests**

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

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

The State Reforestation Law of 1929 and the Hewitt Amendment of 1931 set forth the legislation that authorized the Conservation Department to acquire land by gift

or purchase for reforestation areas. These State Forests, consisting of not less than 500 acres of contiguous land, were to be forever devoted to “reforestation and the establishment and maintenance thereon of forests for watershed protection, the production of timber, and other forest products, and for recreation and kindred purposes.” This broad program is presently authorized under Article 9, Title 5 of the Environmental Conservation Law.

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

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

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

Today there are over 770, 000 acres of State Forest land throughout the state. The use of these lands for a variety of purposes such as timber production, hiking, skiing, fishing, trapping, and hunting is of tremendous importance economically and to the health and well-being of the people of the state.

### **1.3 Location and Description of the Unit**

The Southern Staten Island Natural Areas located in Richmond County, New York consists of four non-contiguous parcels located at the Mount Loretto, Lemon Creek, Bloesser’s Pond, and Arden Heights (Figure 1-1, Project Area Map). The four parcels are located near the southern shore of Staten Island facing Prince’s Bay, a tributary inlet off Raritan Bay.

**Mount Loretto**

The Mount Loretto Unique Area is situated on the south side of Hylan Boulevard between Page Avenue (west) and Sharrott Avenue (east) in Tottenville (40.506/-74.217) (Figure 1-2, Land Tract Map – Mount Loretto Unique Area). It includes the 47 acre property acquired in 2006, previously known as Butler Manor. The northwestern boundary borders several residential properties along an upland wooded marsh area. A pond separates the residential houses and the sub-unit along the property boundary (Figure 1-3, Roads and Waterways Map – Mount Loretto). The eastern property line borders Sharrott Avenue and adjacent to the eastern property line along Sharrott Avenue is a parking lot and fishing pier constructed by the City of New York. There are five bodies of water, one public parking lot, and two permanent structures at the Mount Loretto sub-unit.

**Lemon Creek**

Lemon Creek is situated north of Hylan Boulevard, between Bayview Avenue to the west, Seguire Road to the east, and Oswald Place to the north. The Lemon Creek sub-unit is approximately 1.5 miles from Mount Loretto (40.521 / -74.202) (Figure 1-4, Land Tract Map –Lemon Creek and Bloesser's Pond). Lemon Creek is fed from a watershed that begins 2.5 miles from the creek in Porzio's Pond and flows through Bloomingdale Woods (Figure 1-5, Roads and Waterways Map – Lemon Creek and Bloesser's Pond). The 41.796-acre NYSDEC portion of Lemon Creek is connected to a 105.77-acre parcel owned and operated by the New York City (NYC) Department of Parks and Recreation. To date, the sub-unit has not been developed for recreational use and there are no improvements scheduled.

**Bloesser's Pond**

Bloesser's Pond is a freshwater wetland located on Woodvale Avenue, north of Hylan Boulevard, west of Sharrott Avenue, and east of LaTourette Street (40.517 / -74.209) (Figure 1-4, Land Tract Map – Lemon Creek and Bloesser's Pond). Bloesser's Pond shares the northern edge of the sub-unit with New York City Department of Environmental Protection (DEP) property and is part of the Stormwater Bluebelt Program (Figure 1-5, Roads and Waterways Map – Bloesser's Pond and Lemon Creek). Residential houses border the western and southern edges of the property. To date, the area has not been developed for recreational use and there are no improvements scheduled.

**Arden Heights**

Arden Heights is a forested wetland on the west side of Woodrow Road, between Arthur Kill Road and Arden Avenue (40.559 / -74.181) (Figure 1-6, Land Tract Map – Arden Heights Site). A slow stream meanders through the property from Woodrow Road feeding a larger pond bordering the western property line (Figure 1-7, Roads and Waterways Map – Arden Heights). To date, the area has not been developed for recreational use and there are no improvements scheduled.

### **North Mount Loretto Forest**

On January 11, 2008, Port Authority of New York/New Jersey donated North Mount Loretto Forest to the Department of Environmental Conservation (DEC). North Mount Loretto Forest encompasses 75-acre and is comprised of upland and freshwater wetlands (wet woods) that are a part of a larger wetland system regulated by the State Of New York (Figure 1-8, North Mount Loretto). The Mill Creek freshwater Wetland is a Class 1 wetland of approximately 42 acres in size. This wetland is significant because it provides flood and stormwater control, wildlife habitat, watershed protection, erosion and sediment control, open spaces, and aesthetics. The Mill Creek south branch originates within the North Mount Loretto property. A series of springs, vernal pools, and channels within the property collect and convey water towards Amboy Road. A wetland is situated within the North Mount Loretto property on a rich and diverse red maple and oak assemblage. The marsh areas contain sedges and rushes. The mixture of ephemeral ponds and flooded channels in mature woods is ideal for several species including gray tree frog, pickerel frog, green frog, and redbacked salamanders. Wood thrush, tufted titmouse, and American redstart would also be present. Appendix E contains a detailed description of Mount Loretto.

## **1.4 Acreage**

### **Mount Loretto**

Mount Loretto encompasses 241 acres, of which 49 acres are underwater lands.

### **Lemon Creek**

Lemon Creek encompasses 41.796 acres, the majority of which are wetlands and upland forest.

### **Bloesser's Pond**

Bloesser's Pond is a 3.629-acre forested freshwater wetland.

### **Arden Heights**

Arden Heights is an 8-acre forested freshwater wetland.

### **North Mount Loretto**

North Mount Loretto is a 75-acre forest that encompasses upland and freshwater wetlands (wet woods) that are a part of a larger wetland system.

## **1.5 General Access**

### **Mount Loretto**

Access to Mount Loretto is achieved principally through the parking lot on the northeastern edge of the property from Hylan Boulevard (Figure 1-3, Roads and Waterways Map – Mount Loretto). Access to the property can also be achieved from the NYC Parks and Recreation Lemon Creek Park parking lot and fishing

pier adjacent to the unit on Sharrott Avenue. Beach access can be navigated from the water (non-motorized watercraft only), although no designated beach area exists.

**Lemon Creek**

Lemon Creek can be accessed from Hylan Boulevard Bridge, Bayview Avenue, and Oswald Place (Figure 1-5, Roads and Waterways Map – Lemon Creek and Bloesser's Pond). In addition, the eastern edge of the property can be reached from Direnzo Court off of Seguine Avenue. There are no designated parking areas providing access to the NYSDEC property of Lemon Creek, but there is parking adjacent to the sub-unit along the roads.

**Bloesser's Pond**

Bloesser's Pond can be accessed from Woodvale Avenue; however, no designated parking is available at the sub-unit. Parking is available along the shoulder of Woodvale Avenue (Figure 1-5, Roads and Waterways Map – Bloesser's Pond and Lemon Creek).

**Arden Heights**

Arden Heights can be accessed off of Woodrow Road; however, no designated parking is located at the sub-unit. Parking is available along the shoulder of Woodrow Road (Figure 1-7, Roads and Waterways Map – Arden Heights).

**North Mount Loretto**

The Mill Creek bluebelt project site, owned by New York City Department of Environmental Protection (NYCDEP), borders North Mount Loretto Forest to the north. The Long Pond Natural Area, consisting of nearly 20 acres of freshwater, is owned by New York City Department of Parks and Recreation and borders North Mount Loretto Forest to the west (Figure 1-8, North Mount Loretto).

**1.6 History****Mount Loretto**

Historically, Mount Loretto was used as farmland for dairy and agricultural crops. In 1882, the Roman Catholic Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children acquired 258 acres of farmland and underwater lots on the site of the old Bennett farm along Raritan Bay and Prince's Bay. On Thanksgiving 1883, the land was opened as a mission for orphaned children, but farming continued to dominate the landscape. The mission continued to acquire land on both sides of Hylan Boulevard until it obtained its last 8-acre parcel in 1926 from the U.S. Department of Commerce. The small parcel housed the historic lighthouse and carriage house. The property was farmed until 1967, when the last dairy cow was sold off.

In 1998, the Trust for Public Land negotiated a deal with the Archdiocese of New York to purchase the waterfront portion of the Mount Loretto property south of

Hylan Boulevard. At the time of purchase, an endowment for the care of the Unique Area was created by the Archdiocese. The deal mandated that the State, in turn, would purchase the land from the trust in three phases and use the property for a public park. The following year the NYSDEC began acquisition of Mount Loretto in a three-stage process, but assumed management of the entire 194 acres concurrently. On March 7, 2002 the NYSDEC gained title to Mount Loretto. NYSDEC acquired Mount Loretto specifically to protect and enhance the natural resources present on the property.

Several months after the purchase of the Mount Loretto property in 1999, the historic orphanage burned down. The orphanage had not been used as a residence since 1988 and had been vacant since 1992. Shortly after burning, the building was demolished, in addition to two others that stood in disrepair on the property. Since the destruction of the buildings, their footprints have revegetated.

Acquisition of 18 acres of land adjacent to Mount Loretto, known as Butler Manor Woods, occurred in October of 2006, and is included in the Mount Loretto management unit.

### **Lemon Creek**

Historically, Lemon Creek was privately held and used as a salt marsh and meadow for horses adjacent to Bayview Avenue. The southern parcel of Lemon Creek was also a valuable access point to reach nearby shellfish beds. The New York City Department of Parks and Recreation purchased the southernmost section of Lemon Creek on the southern edge of Hylan Boulevard Bridge. NYSDEC acquired the property bordering the State's holdings on the northern side of the bridge. Since its acquisition, new culverts and soil stabilizing riprap have been constructed along Bayview Avenue as part of the DEP Bluebelt program.

### **Bloesser's Pond and Arden Heights**

Neither Bloesser's Pond nor Arden Heights has any documented historical significance. Both units have never been developed and have remained natural areas in a heavily urbanized environment. Since the purchase and acquisition of Arden Heights and Bloesser's Pond, no change has been made to the units.

## **1.7 Accomplishments and Changes**

### **Mount Loretto**

Since the Mount Loretto Concept Plan was completed in June 1998, several significant changes have occurred on the sub-unit. All of the buildings, excluding the main lighthouse and carriage house, have been torn down and their sites reseeded. In addition, a parking lot and toilet have been added on the northeastern edge of the sub-unit. Administrative barriers, kiosks, and signs have also been erected on the property.

The Department plans to construct an Operations Center on the Mount Loretto Unique Area. Site options throughout the region were examined in the interest of locating a site best suited for the program's needs while causing the least impact to the environment and the users of the site.

The St Rose building complex in the southwest corner of Mount Loretto is best suited for this building. The St Rose site was a complex of buildings including a gymnasium, school, and offices. The complex was removed soon after the purchase of the property. Therefore, the Operations Center will be constructed on a previously developed site.

The Operations Center will consist of a 40'x100' structure with hardened surface driveway and exterior storage. The design will be reminiscent of a barn structure; as barns and farm operations were a major component of the property in its early uses as an orphanage.

The Operations Center will be the headquarters for the Operations field staff and as a coordination center for all field work. There will a permanent staff and some daily visitors. Staff will use the south gate for access, minimizing traffic flow on the erosion-impacted lighthouse road.

### **Lemon Creek**

Several minor changes have occurred at Lemon Creek since it was acquired by the NYSDEC. The largest accomplishment is the addition of a stormwater culvert and additional riprap along Bayview Avenue. Also, several bird boxes and signs are present on the property.

### **Bloesser's Pond and Arden Heights**

Several State NYSDEC signs and other signs are present on the two sub-units.

# 2

## Inventory of Resources, Facilities, and Use

### 2.1 Natural Resources

#### 2.1.1 Physical

##### 2.1.1.1 Geology

The United States Geological Survey (USGS) as well as the Staten Island Geologic Society Inc. have described the geologic formations underlying Staten Island and Mount Loretto. The Southern Staten Island Natural Area, including Mount Loretto, Lemon Creek, Bloesser's Pond, and Arden Heights, are underlain by bedrock consisting of igneous, metamorphic, and sedimentary rocks ranging from Upper Proterozoic to Lower Jurassic age (Figure 2-1, Surficial Geology Map for the four natural areas). The bedrock is overlain by unconsolidated deposits of the Upper Cretaceous Raritan Formation, undivided, or by upper Pleistocene deposits of Wisconsinan glacial drift (Soren 1988). In addition, Holocene shore and salt marsh deposits that overlie the upper Pleistocene deposits in shore and low-lying areas are reported, particularly in the western part of Staten Island.

#### **Mount Loretto, Lemon Creek, and Bloesser's Pond**

Mount Loretto, Lemon Creek, and Bloesser's Pond have a bedrock depth of nearly 300 feet below sea level, consisting of Late Proterozoic and Cambrian, Unconformity of Manhattan Schist (Soren 1988). The Manhattan Schist is described as being a crystalline metamorphic rock complex (Lyttle and Epstein 1987) of a dark-gray micaceous unit overlain by the Upper Cretaceous Raritan Formation that consists of stratified white, light- to dark-gray, and red beds and lenses of clay, silt, and sand (Soren 1988).

A unique geologic feature found here is a Terminal Moraine. Behm and Okulewicz (2000) indicate that during the last ice age (10,000 to 20,000 years ago, the Pleistocene Epoch) the Wisconsin Glacier deposited a mass of rock material consisting of unsorted sand, silt, clay, gravel, cobbles, and boulders along its leading edge. The irregular hilly topography between Stapleton and Tottenville (Soren 1988) and viewed along Hylan Boulevard is the Harbor Hill Terminal Moraine. This moraine is aligned with the Harbor Hill Terminal Moraine of Long Island and extends southwestward into New Jersey (Soren 1988). A portion of the Harbor Hill Terminal Moraine became exposed after a severe coastal storm in the fall of 1980 (Sanders et al. 1995). The eroded bluff, upon which the Mount Loretto

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Lighthouse sits, exposes a slab of Upper Cretaceous sediments enclosed (folded) within typical reddish-brown Quaternary sediments (Sanders et al. 1995). This folded feature has produced a lot of geologic debate because of the unusual occurrence of older Cretaceous sediment overlying the younger Pleistocene glacial sediments (Sanders et al. 1995; Schuberth 1968).

In addition, both Holocene shore and salt-marsh deposits that overlie the Upper Pleistocene deposits of the Wisconsinan glacial drift are found within Mount Loretto and Lemon Creek. The Holocene deposit consists of sand and organic clay and silt, which are found in shore, near-shore, and inland marsh zones in the area (Soren 1988). This deposit makes up the majority of the Lemon Creek marshland, and is found at the northeastern most extent of Mount Loretto. Lastly, a periodic tidal influence from Raritan Bay continues to support salt-marsh vegetation at Lemon Creek and may potentially influence the Mount Loretto marsh along the eastern shoreline.

### Arden Heights

Arden Heights has a bedrock depth of nearly 100 feet below sea level; the bedrock consists of the Staten Island Serpentine of Merrill (1898, p. 21-31 (Soren 1988)). The Staten Island Serpentine is described as being greenish ultrabasic crystalline rock strongly resistant to weathering (Soren 1988). The Manhattan Schist appears to be underlain or intruded by the Staten Island Serpentine (Soren 1988). Unfortunately, the question of intrusion or the Staten Island Serpentine's structural connection to the Manhattan Schist has been reported by Soren to be unclear and consequently its age cannot be dated to the Late Proterozoic to Cambrian periods.

A unique geologic feature identified within Arden Heights is a ground moraine. Soren (1988) indicates that the ground moraine contains deposits of reddish-brown clayey glacial till derived from the Upper Triassic and Lower Jurassic shale and sandstone. The ground moraine is most likely associated with the Wisconsinan glacial period and is part of the Harbor Hill moraine, which deposited material in a distinct northwest-southeasterly band across Staten Island (Sanders et al. 1995).

#### 2.1.1.2 Soils

##### Soil Types

The U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS) has recently completed the soil mapping of Richmond County in cooperation with the New York City Soil and Water Conservation District. However, the *Soil Survey of Richmond County* has yet to be published. All soils information contained herein was obtained through the NRCS New York City Soil and Water Conservation District and is considered preliminary and subject to change.

## 2. Inventory of Resources, Facilities, and Use

The NRCS has mapped eight soil complexes that underlie the Southern Staten Island Natural Areas (Figure 2-2, STATSGO Soils for the four sub-units). These eight complexes include the following:

- Laguardia-Ebbets-Pavement and Buildings;
- Wethersfield-Ludlow;
- Haledon-Hasbrouck;
- Beaches;
- Ipswich-Pawcatuck-Matunuck Mucky Peats;
- Pavement and Buildings-Foresthills-Wethersfield;
- Wethersfield-Ludlow-Wilbraham; and
- Wethersfield-Foresthills-Pavement and Buildings.

A mapped soil complex is defined by the NRCS as a unit of two or more kinds of soil series in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. Table 2-1 lists each soil type and provides slope, parent material, and whether the soil is considered disturbed. A full description of each is also presented below.

**Table 2-1 Preliminarily Mapped Soil Series, Southern Staten Island Natural Area**

Soil Series	Percent Slope	Parent Material	Disturbed?
Beaches	<1	Sand	Yes
Ebbets	0 – 8	Mixed fill	Yes
Foresthills	0 – 8	Loamy fill	Yes
Haledon	0 – 3	Glacial till	No
Hasbrouck	0 – 3	Redeposited glacial till	No
Ipswich	<1	Organic	No
LaGuardia	0 – 8	Mixed fill	Yes
Ludlow	8 – 20	Glacial till	No
Matunuck	<1	Sandy sediment organic	No
Pawcatuck	<1	Sandy sediment organic	No
Pavement and Buildings	0 – 8	Covered	Yes
Wethersfield	8 – 20	Glacial till	No
Wilbraham	0 – 8	Glacial till	No

### Mount Loretto

Two soil complexes, specifically the Wethersfield-Ludlow-Wilbraham and the Haledon-Hasbrouck, dominate Mount Loretto. The Haledon-Hasbrouck complex

## ***2. Inventory of Resources, Facilities, and Use***

is situated in the northern half of the sub-unit and trends in a southwest to northeast direction. Deep, poorly drained glacial till soils having a dense layer (fragipan) between 16 and 36 inches below the ground surface describes this complex. Numerous ponds and a managed grassland community are found upon this soil complex.

The Wethersfield-Ludlow-Wilbraham complex dominates the southern half of the sub-unit with a similar trending as observed with the Haledon-Hasbrouck complex. Deep, well-drained soils formed in dense glacial till are characteristic of this complex. The area appears to be associated with the Harbor Hill terminal moraine with a general slope to the northwest. Observed occupying this complex were wooded and grassland communities.

The Pavement and Buildings portion is described by the NRCS as having 80% or more of the surface covered by asphalt, concrete, buildings, or other impervious materials. Five large asphalt lots exist on the property. In addition, three paved roads meander through the sub-unit.

### **Lemon Creek**

Two soil complexes, specifically the Wethersfield-Ludlow-Wilbraham and the Ipswich-Pawcatuck-Matunuck mucky peats, dominate Lemon Creek. As stated under the Mount Loretto soil-type, the Wethersfield-Ludlow-Wilbraham complex consists of deep, well-drained soils that formed in glacial till material. These soils are mapped in the northeastern quarter of the sub-unit and generally slope in a southwesterly direction. Observed upon these soils is a woodland community.

The Ipswich-Pawcatuck-Matunuck mucky peats are mapped by the NRCS within the Lemon Creek floodplain. They consist of deep, very poorly drained soils that formed in thick organic and sandy sediments. Observed occupying this soil complex is a marshland community.

### **Bloesser's Pond**

The Wethersfield-Forest Hills-Pavement and Buildings complex underlies Bloesser's Pond. Two components of this complex, the Wethersfield and Forest Hills, are described as very deep well-drained soils that formed in glacial till. The NRCS further describes the Forest Hills component as having a loamy fill placed upon the natural surface that may have had its topsoil layer removed prior to covering. The Pavement and Buildings portion are described by the NRCS as having 80% or more of the surface covered by asphalt, concrete, buildings, or other impervious materials. Many debris piles, which cover the soil surface, were observed in the southwestern corner of this forested sub-unit.

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### Arden Heights

Soils of Arden Heights have been mapped by the NRCS as a Wethersfield-Ludlow-Wilbraham complex. As previously described, this complex consists of very deep well-drained soils that formed in dense glacial till material. These soils appear to receive stormwater runoff from the surrounding residential developments, and debris piles were observed covering the soil surface along the northern boundary of this woodland community.

Additionally, each of the identified soil series is further described below. The listed series follow the NRCS descriptions as presented on the NRCS Soils Web-site (<http://soils.usda.gov>).

### General Soil Descriptions

**Beaches.** The beaches at Mount Loretto consist of nearly level to gently sloping areas of sand or sand and gravel adjacent to the Atlantic Ocean. Muck and other non-soil material may underlie the sand. These areas are inundated twice each day with saltwater at high tide. Beaches are not considered soil because they do not support vegetation, and are frequently reworked by wave and wind action. The width and shape of beaches can change during each major storm.

**Ebbets.** The Ebbets soil series comprises a very deep, well-drained thick mantle (>40 inches) of human-transported soil materials mixed with construction debris and formed on human-created or -modified landscapes. In general, coarse fragment (>2 millimeters) content, including natural rocks and human artifacts, averages from 35% to 75% by volume. Most of the artifacts, which can include concrete, asphalt, bricks, and coal ash, will act like rock fragments. Permeability is moderate in areas where the soil has not been compacted at the surface and moderately slow where it has surface compaction or platy soil structure. Examples of this soil series can be found at the sites of the demolished buildings at Mount Loretto.

The NRCS indicates this series is pending final classification approval and therefore is not listed within the Official Series Description Web site.

### Foresthills

The Foresthills soil series consists of very deep, well-drained soils having 10 to 39 inches of loamy fill placed over the natural surface that may or may not have had its topsoil layer removed prior to being covered. The natural soil typically has a fragipan (a naturally cemented layer high in silt or very fine sands that restricts root growth) or dense glacial till within 18 to 36 inches of its original surface layer, and, where the original surface layer is buried, these features are found within 40 to 60 inches of the existing surface layer. Rock fragments range from 1% to 20% and the soil is relatively clean of human-made artifacts. Permeability is moderate in areas where the soil cap has not been compacted, but is moderately slow where compaction and a platy soil structure are present.

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### **Haledon**

The Haledon series consists of very deep, somewhat poorly drained soils formed in glacial till, with a fragipan or dense layer beginning at a depth of 24 to 36 inches. The thickness of the biologically active soil horizons ranges from 40 to 60 inches. Rock fragment, typically basalt, shale, sandstone, and gneiss, ranges from 5% to 25% in the upper portions of the soil profile, and from 15% to 35% in the deeper subsoil portion. Permeability is moderately rapid or moderate above and slow or very slow within the fragipan layer.

### **Hasbrouck**

The Hasbrouck soils consist of very deep, poorly drained eroded and re-deposited glacial materials overlying glacial till, with a fragipan or dense layer between 16 and 30 inches. The makeup of the till material is primarily of red shale, red sandstone, and basalt. Rock fragments range from 0% to 35% by volume in the upper soil profile and 15% to 50% in the lower portions. Permeability is moderately rapid or moderate near the surface, slow or very slow within the fragipan, and moderately rapid or moderate below the fragipan layer.

### **Ipswich**

The Ipswich soil series consists of very deep, very poorly drained soils formed in thick organic deposits greater than 51 inches in depth. The soil is inundated by saltwater at high tide.

### **LaGuardia**

(Note: the LaGuardia soil series is considered fill.) The LaGuardia soils are very deep, well-drained, and formed on human-created or -modified landscapes. They consist of a thick mantle (>40 inches) of human-transported soil materials mixed with construction debris. Coarse fragment content, including natural rocks and human artifacts, averages 35% to 75% by volume. Most of the artifacts will act like natural rock fragments and include concrete, asphalt, bricks, and coal ash. Permeability is moderate in areas where the soil has not been compacted at the surface and moderately slow where compaction or platy soil structure is evident.

### **Ludlow**

The Ludlow series consists of very deep, moderately well-drained soils formed in dense glacial till having an abundance mostly of reddish sandstone, shale, and conglomerate with some basalt. Soil thickness ranges from 20 to 40 inches and rock fragments range from 5% to 25% by volume in the upper portions and 5% to 35% in the lower soil profile. Permeability is moderate in the surface and subsurface layers, and slow in the dense lower profile.

### **Matunuck**

The Matunuck soil series consists of very deep, poorly drained soils formed in thick sandy sediments. Matunuck soils have a thin organic surface layer ranging from 8 to 16 inches and the soil is inundated by saltwater at high tide.

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### **Pawcatuck**

The Pawcatuck series consists of very deep, very poorly drained soils formed in sandy sediments and having a thin organic surface layer ranging from 16 to 51 inches. The soil is inundated by saltwater at high tide.

### **Pavement and Buildings**

The Pavement and Buildings classification consists of those areas in which 80% or more of the soil surface is covered by asphalt, concrete, buildings, or other impervious materials.

### **Wethersfield**

The Wethersfield soil series consists of very deep, well-drained soils formed in dense glacial till on upland plains. The soils are derived mostly from reddish sandstone, shale, and conglomerate with some basalt, and are acidic in nature. Rock fragments range from 5% to 25% by volume in the upper soil profile and 5% to 35% in the lower profile. Permeability ranges from moderately rapid or moderate in the upper soil profile to slow or very slow with depth.

### **Wilbraham**

The Wilbraham series consists of very deep, poorly drained loamy soils that formed in dense glacial till deposits consisting of reddish sandstone, shale, and conglomerate with some basalt. Rock fragments range from 5% to 25% in the upper soil profile and from 5% to 35% in the deeper portions. Permeability is moderate in the surface and subsurface layers, and slow or very slow in the dense lower layers.

#### **2.1.1.3 Terrain/Topography**

### **Mount Loretto**

The topography of the Southern Staten Island Natural Areas range from steep hilly to undulating and flat terrain (Figure 2-3, Topography Map for the four natural areas). The most dramatic elevation change of all the management sub-units is found at the 241-acre Mount Loretto. This area, situated upon the Harbor Hill Terminal Moraine, ranges in altitude from near sea level in the northeastern corner of the property to a high point of 75 feet above sea level (asl) at the Princes Bay Lighthouse (USGS). In general, the majority of the sub-unit has an undulating terrain sloping in a southeast to northwest direction from the Lighthouse knoll toward Hylan Boulevard. Within the sub-unit several open water ponds are found along the northern property line that are hydraulically connected to Raritan Bay through drainage channels near the eastern- and westernmost extents of the sub-unit. Lastly, 49 acres of the Mount Loretto property is underwater, extending into Raritan Bay.

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### **Lemon Creek**

Lemon Creek has an elevation of near sea level within the creek channel flood-plain rising sharply at its periphery to nearly 30 feet asl. The 41.796-acre property supports a portion of the 2-mile-long Lemon Creek, which begins in Porzio's Pond and runs southerly through Bloomingdale Woods, through the management unit, and discharges into Prince's Bay near Seguine Point.

### **Bloesser's Pond**

The 3.629-acre Bloesser's Pond sits at an elevation of nearly 30 feet asl, and has a slightly undulating terrain containing two depressional areas within its boundary. A minor drainage channel, which emanates from an open water zone just to the north of the parcel, runs southerly along the properties western boundary line.

### **Arden Heights**

Arden Heights encompasses 8 acres of land and is the northernmost sub-unit within the Southern Staten Island Natural Areas. This sub-unit has an elevation of nearly 50 feet asl, and is positioned upon a ground moraine having flat terrain (Soren 1988). Slight depressional zones are found within its boundaries and an open water area can be observed just to the west of the property.

#### **2.1.1.4 Water**

According to the DEP, three of the four properties are located within three different watersheds: Butler Manor (Mount Loretto), Lemon Creek/Sandy Brook (Lemon Creek), and the Arden Heights Woods watersheds (Arden Heights) (DEP 2003). Bloesser's Pond appears to drain into the Lemon Creek watershed and may partially drain into the Butler Manor watershed in the southwest corner of the property.

According to the New York State (NYS) Unified Watershed Assessment, all of the NYSDEC properties lie within the Sandy Hook-Staten Island watershed; Hydrologic Unit Code (HUC) 02030104. This watershed is on the Priority Waterbody List (PWL) for Total Maximum Daily Load (TMDL) assessment/development, fish consumption, and other precluded and impaired waterbodies. Precluded segments are those where a classified use of the resource cannot be met (i.e., fishing ban based on contaminant occurrence).

Impaired segments are waterbodies that frequently limit a classified use (i.e., secondary contact through exceedance of fecal coliform standards).

The water quality issues within Mount Loretto would not necessarily preclude the sustainability of fish production in the existing suitable waterbodies, but the issues have the potential to limit fish production. For instance, in waterbodies with fre-

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quent fecal coliform exceedances and high biological oxygen demand, dissolved oxygen (DO) concentrations may substantially decrease below standard levels, which would adversely affect fish survival and potential production. More specific information for each of the NYSDEC properties is discussed in further detail below.

### **Mount Loretto**

Mount Loretto is within the Butler Manor watershed (DEP 2003) and drains into Raritan Bay and the Atlantic Ocean (Figure 2-4, Hydrology and Wetlands Map – Mount Loretto). To the south, Mount Loretto is bounded by Raritan Bay. In addition, there are five bodies of water located on the property, three of which are mapped freshwater wetlands along the western border of the property, one is an unmapped freshwater wetland located in the center of the property along Hylan Boulevard, and the last is a mapped tidal wetland in the northeast corner of the property. In addition, there is a stream channel that connects the wetlands on the western edge of the property.

**Raritan Bay – Atlantic Ocean.** Approximately 49 acres of Mount Loretto extends into the Raritan Bay littoral zone. Raritan Bay is the westernmost portion of the Lower New York Bay Complex, extending west from Crookes Point on Staten Island, New York, to Point Comfort, New Jersey. The bay is triangular in shape, with the apex of the triangle being the mouth of the Raritan River, the major source of freshwater input to Raritan Bay. A secondary source of significant volume contributes through the Arthur Kill, which carries water from Newark Bay and Upper New York Bay via the Kill Van Kull to Raritan Bay. The circulation pattern through Raritan Bay is counterclockwise, with water moving along the New Jersey shoreline toward the Bight. Flushing times are longer in this system than in other portions of the Hudson-Raritan estuary (USACE-NYD 1999).

Raritan Bay has extensive shoals and shallows cut by a network of navigation channels. The dredged navigation channels are 80 to 1,400 feet wide and are maintained to depths ranging from 10 to 35 feet – Mean Lower Low Water (MLLW). Outside the navigation channels, the bay has a mean depth of 22 feet and shoal depths are generally less than 20 feet. The mean tidal range is from 4.7 to 5.0 feet. The range of spring tides within the bay is 5.7 to 6.0 feet.

Water entering Raritan Bay carries a substantial amount of Sewage Treatment Plant (STP) effluent, and, consequently, is nutrient-rich. This, coupled with the Bay's relatively long flushing times and shallowness, provides ideal conditions for phytoplankton production. Shoreline development ranges from heavily developed industrial complexes in the vicinity of Perth Amboy to areas of intertidal marshes, creeks, dunes, sand beaches, and remnant forests along the Bay's southern and western ends. The Staten Island shoreline includes beach, forest, pond, and wetland areas, as well as intertidal and subtidal mudflats that extend out to 0.25 miles (USACE-NYD 1999). Furthermore, the Mount Loretto shoreline includes a long

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continuous undeveloped beach, which provides ample opportunities for recreational activities.

Raritan Bay is classified as Essential Fish Habitat, by the National Marine Fisheries Service (NOAA Fisheries), for a number of marine species. These include: Atlantic butterflyfish, Atlantic mackerel, Atlantic sea herring, black seabass, bluefish, cobia, king mackerel, red hake, scup, sea trout, Spanish mackerel, summer flounder, windowpane flounder, and winter flounder. The diversity of marine species in Raritan Bay is significant; therefore, the preservation of the Mount Loretto portion of this area will provide additional benefits to this important fish habitat.

**Streams.** Mount Loretto has a NYSDEC Class C stream that flows through the NYSDEC Wetlands (AR-15) along the western portion of the property (Figure 2-4, Hydrology and Wetlands – Mount Loretto). Class C streams are classified as best usage for fish propagation and survival and secondary contact recreation (6 NYCRR Part 701). The stream channel is approximately 890 feet in length and connects the wetlands in the northwest corner with the wetland in the southwest corner. Water quality is impaired by DO and bacteria (fecal coliform) based on studies from the NYCDEP (NYCDEP 2003). DO concentrations meet water quality standards (i.e., 5.1 to 5.4 milligrams per liter [mg/l]) in the upper stream, but decrease (as low as 0.5 mg/l) in the lower sections of the stream on the property (NYCDEP 2003).

**Tidal Wetland.** The salt marsh is located in the northeast corner of Mount Loretto (Figure 2-4, Hydrology and Wetlands Map – Mount Loretto). It is fed by both freshwater and marine waters, since portions of the marsh have salinities in the range of 0 to 27 parts per trillion (ppt) (Hazen and Sawyer 2003). The freshwater inlets include an underground drain tile outlet from the pond/wetland in the north central part of the property. The location where this input “daylights” is an old drain tile pipe. This input likely drained (and may still drain through remnant tile) the surrounding grassland through a network of drainage tile, as well as provided an overflow outlet for the pond. The other freshwater input is located in the northeast corner of the marsh and originates from stormwater input through the surrounding area, north of the sub-unit. The marine connection consists of a narrow inlet, which varies in its tidal exchange with the wetland. At low tides the lower channel is dry and there is a noticeable outflow of water from the tidal wetland. At certain high tides (extreme or during storm surges), waters from Raritan Bay enter into the tidal wetland. Based on the glacial moraine nature of the surrounding surficial geology, a marine groundwater connection may provide saline conditions in the wetland; however, this has yet to be confirmed.

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The tidal wetland consists of vegetated intertidal and high marsh habitats, mud flats, and open water habitats. The majority of the shoreline of the tidal wetland consists of giant reed (*Phragmites australis*). There is a small pond on the eastern side that has the highest salinity concentrations and as a result contains brackish vegetation: saltmarsh cordgrass (*Spartina alterniflora*), salt meadow grass (*Spartina patens*), and spikegrass (*Distichlis spicata*).

Numerous small fishes (i.e., killifish (*Cyprinodontidae sp.*) and mummichogs (*Fundulus heteroclitus heteroclitus*)) were observed in the lower portion of the tidal inlet channel. However, based on the fluctuating tidal connection, it is uncertain whether the tidal wetland could support a sustainable estuarine fishery, based on the frequent tidal barrier between the bay and the wetland.

**Freshwater Wetlands.** The unmapped freshwater wetland in the center of the property along Hylan Boulevard appears to be a former irrigation or stormwater detention pond, based on an examination of the 1911 aerial photos of the sub-unit, which show steep symmetrical contours around the perimeter of the pond (Figure 2-4, Hydrology and Wetlands Map – Mount Loretto). The photographs show a uniform, deep-sided pond, which appears to have been excavated. The depth of the pond appears to be approximately 10 to 15 feet, based on the historic topographic survey. If this depth is accurate, the pond would intercept the freshwater groundwater contours based on the groundwater investigations of Staten Island (USGS 1988). The sub-unit was formerly intensively farmed, and this pond was likely a source for irrigation water to the property. As mentioned earlier, this pond also provides a subsurface input to the Tidal Wetland located at the southeast edge of the property.

There are three freshwater wetlands located in the northwest corner of the sub-unit as well as along the western property line. These wetlands collectively represent the NYSDEC Tottenville Freshwater Wetland (AR-15). The wetlands drain from east to west and then north to south. The majority of the wetlands in the northeast corner are open water areas, and the southeast corner wetland is also an extensive open water area.

NYSDEC Freshwater Wetland AR-15 is a complex wetland system. This system is large, approximately 88 acres, and is rated as a Class 1 wetland. The Class 1 status is a result of the wetland having four or more Class 2 characteristics (contiguous to a tidal wetland, associated with permanent open water outside the wetland, supports animals in diversity or abundance unusual for the county, hydraulically connected to aquifer potentially useful water supply, and is within an urbanized area). There are several wetland cover types present in the greater wetland including: deciduous swamp (82 %), emergent marsh (10 %), wetland open water (6 %), and wet meadow (1 %). The majority of NYSDEC Wetland AR-15 is within the Mount Loretto sub-unit. Wetland vegetation on the NYSDEC property includes various species including: red maple (*Acer rubrum*), willows (*Salix sp.*), American elm (*Ulmus americana*), and swamp white oak (*Quercus bicolor*)

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in the tree layer. Alders (*Alnus sp.*), buttonbush (*Cephalanthus occidentalis*), and dogwoods (*Cornus sp.*) are present in the shrub layer, and cattails (*Typha sp.*), pickerelweed (*Pontederia cordata*), bulrushes (*Scirpus sp.*), and giant reed (*Phragmites australis*) are present in the herbaceous layer.

The primary wetland functions for AR-15 include: flood and storm water control, wildlife habitat, watershed/groundwater protection, recreation, pollution treatment, erosion/sedimentation control, education/scientific research, open space/aesthetic benefits, and fish habitat. These wetland benefits, realized with existing conditions, would support a determination to use the unit for environmental education, public recreation, and habitat preservation.

### Lemon Creek

Lemon Creek originates in the approximate center of the southern portion of Staten Island (Figure 2-5, Hydrology and Wetlands Map – Lemon Creek and Bloesser's Pond). The lower estuary is small, less than 10 acres, but contains a small boat harbor. The portion of Lemon Creek that is owned by NYSDEC contains a tidally influenced stream channel, surrounded by wetland marsh. The tidal portion extends throughout the majority of the site for a length of 2,963 feet. There are three tributaries that flow into the main channel, one in the northeast corner (approximately 400 feet in length), one that drains the Direnzo Court area in the central east portion of the site (approximately 810 feet in length), and a small tributary that drains from Bayview Avenue in the central west portion of the site (approximately 580 feet in length).

**Streams.** Lemon Creek flows through the approximate center of the NYSDEC sub-unit and branches at the northern end to contain a portion of the main channel on the western side, and a small tributary on the eastern side (Figure 2-5, Hydrology and Wetlands Map – Lemon Creek and Bloesser's Pond). The shoreline of the stream channel is surrounded by tidal wetlands, dominated by giant reed. Woody structures and other potential fish habitat (i.e., boulders) appears to be scarce. The main channel of Lemon Creek has a noticeable tide line but appears to be navigable just upstream from the Hylan Boulevard Bridge by canoe during high tide.

Organic matter and sands, with gravels and shells present in moderate abundance, dominate the lower channel substrate. The upper main channel portion (western tributary) is dominated by gravel/cobble and sand. Surveys conducted by the NYCDEP indicate that water quality in Lemon Creek periodically exceeds bacteria standards and fails to meet DO requirements under existing conditions (NYCDEP 2003).

Lemon Creek appears to support a sustainable estuarine fish population, although it is not known to be a major spawning or nursing area for fish (NYCDEP 2001).

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Numerous small fish (i.e., killifishes and mummichogs) were present in the upper main channel. In addition, no obstructions to fish migration were observed on the NYSDEC sub-unit. Although Lemon Creek is not on the New York State (NYS) 303(d) list for water quality impairments, urbanization of the upper watershed may cause occasional water quality issues (i.e., low DO concentrations), as indicated above. These water quality issues may limit production, but the tidal exchange appears to be large enough to dilute potential water quality issues. Indeed, fish documented as occurring in one of the tributaries (off the NYSDEC land) include catfish, sunfish, gambusia, and yellow perch (*Perca flavescens*) (NYCDEP 2003). Estuarine species expected to use the tidal wetland area include: mummichogs, white perch (*Morone americana*), and hogchocker (*Trinectes maculatus*). Game fish found in the bay including: weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), winter (*Pleuronectes americanus*) and summer flounder (*Paralichthys dentatus*) striped bass (*Morone saxatilis*), seabass (*Centropristis striata*), tautog (*Tautoga onitis*), and scupin (*Cottidea sp.*) are expected to occasionally use the tidal wetland area.

**Tidal Wetlands/Freshwater Wetlands.** The Lemon Creek tidal and freshwater wetlands are a component of a larger 106-acre Lemon Creek Park, owned by the NYC Department of Parks and Recreation. It is the only remaining natural tidal creek/wetland on the south shore of Staten Island. NYSDEC lands in this area are identified as a significant habitat, as a result of their significant urban wildlife habitat and nesting and feeding area for waterfowl and other birds. The New York State Department of State (DOS) has also identified the lower portion of Lemon Creek (from the mouth to the Woodvale Avenue Bridge) as a Significant Coastal Fish and Wildlife Habitat.

The tidal wetland includes a littoral zone, an intertidal marsh, and high marsh (Figure 2-5, Hydrology and Wetlands Map – Lemon Creek and Bloesser’s Pond). The littoral zone includes the channel area below 6 feet. The intertidal marsh includes a marsh dominated by salt marsh cordgrass that is inundated by marine tidal water twice a day. The high marsh is dominated by salt meadow grass, spike grass, and black grass with salt marsh elder, groundsel bush, and giant reed in the upper areas that are inundated by storm surges and spring high tides.

The Lemon Creek area also contains the Lemon Creek Tribs B and C Freshwater Wetland (AR – 34). The Lemon Creek wetland is a small 5-acre wetland, but is regulated as a wetland of unusual local importance because it is contiguous with a tidal wetland, and has wildlife habitat and open space/aesthetic value, being visible from Hylan Boulevard. It is a Class 2 wetland as a result of being contiguous with a tidal wetland and within an urbanized area. There are several wetland cover types present in the greater wetland including: wetland meadow (4%), deciduous swamp (73%), and shrub swamp (23%).

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Wetland vegetation on the Lemon Creek sub-unit is primarily dominated by red maple and swamp white oak. Dogwoods dominate the shrub layer and emergent vegetation includes giant reed.

The primary wetland functions for AR-34 include: wildlife habitat, recreation, pollution treatment, education/scientific research, open space/aesthetic, nutrient source, and fish habitat. These wetlands benefits realized under existing conditions will assist in the implementation of the UMP for this area and the use of the site for environmental education, public recreation, and habitat preservation, in particular, by demonstrating one of the ways in which a salt marsh can interface with inland freshwater systems and by showing the transition of wetlands to uplands.

The tidal wetland provides important habitat for fish production, as discussed above, but the freshwater wetlands are primarily forested and therefore cannot support fish production.

### **Bloesser's Pond**

Bloesser's Pond appears to drain into the Lemon Creek watershed and may partially drain into the Butler Manor watershed in the southwest corner of the property based on an examination of USGS topographic maps (Figure 2-5, Hydrology and Wetlands Map – Lemon Creek and Bloesser's Pond). The property has several small wetlands that are connected through topographic depressions and are seasonally dry.

Bloesser's Pond is a component of the NYSDEC Wetland AR-16. This wetland has significant value for its diversity of habitats (emergent marsh, sedge and rush wet meadow, and forested wetlands) and its location near the Mount Loretto grasslands and the salt marshes of Lemon Creek.

This wetland covers approximately 14 acres, and is rated as a Class 2 wetland. The Class 2 status is a result of three Class 2 indicators (supports animal species in diversity or abundance unusual for the county, prevents significantly flooding of a lightly developed area, and is located within an urbanized area). There are several wetland cover types present in the greater wetland including: deciduous swamp (86 %), emergent marsh (7 %), shrub swamp (6 %), and wet meadow (1 %). The wetland on the NYSDEC land is primarily emergent marsh, with a deciduous swamp fringe. These wetland areas on the NYSDEC property consist of a small basin dominated by buttonbush and red maple deciduous swamp.

Wetland functions of AR-16 include: flood and storm control, wildlife habitat, recreation, and open space/aesthetic. This NYSDEC property is located close to Mount Loretto and Lemon Creek. The sub-unit's presence between the two properties provides an additional component of habitat diversity and connectivity in an urbanized/developed area. These wetlands benefits realized under existing condi-

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tions will assist in the implementation of the UMP for this area and the use of the sub-unit for environmental education, public recreation, and habitat preservation.

The wetlands on Bloesser's Pond are likely too small and seasonally dry to support fish production.

### Arden Heights

Arden Heights is the only property within the Southern Staten Island Natural Area that drains into the Fresh Kills watershed (Figure 2-6, Arden Heights Hydrology and Wetlands Map). NYCDEP classifies the NYSDEC property as being located in the Arden Heights Woods watershed (NYCDEP 2003). Arden Heights serves as the headwaters area of an unnamed tributary that drains to Richmond Creek, a tributary to Fresh Kills Main Creek. Fresh Kills drains into the Arthur Kill, which eventually connects with Raritan Bay. There is one stream and one freshwater wetland on the property.

Approximately 50% (230 acres) of the 462-acre watershed is open space. About half of the watershed has storm and sanitary sewers, but portions of the residential areas around the sub-unit do not have sewers, and runoff flows into Arden Heights from street ends and outlets. One of these outlets forms the main tributary running through the NYSDEC property.

**Streams.** The stream and tributaries in the Arden Heights Woods are classified by NYSDEC as Class C, best usage for fish propagation and survival and secondary contact recreation (6 NYCRR Part 701). The stream drains through the approximate center of the property (Figure 2-6, Hydrology and Wetlands Map – Arden Heights). The stream channel on the NYSDEC property is intermittent and water is likely present during rainfall events and possibly during the spring. It is approximately 230 feet in length.

Water quality investigations by NYCDEP in the lower stream (i.e., off the NYSDEC property) indicate low concentrations of DO throughout the stream and high concentrations of fecal coliform bacteria in the upstream reaches. The residential areas that drain into the tributary in NYSDEC Arden Heights lands are partially sewer-connected. The headwater of the tributary is a depression with forested and emergent wetlands; the main inlet source is a pipe underneath Woodrow Avenue. This pipe drains surface water flow drainage collected from Woodrow Avenue and Alexander Avenue. Runoff also flows from uncontrolled street runoff during storm events.

**Freshwater Wetlands.** Arden Heights contains the Arden Woods Freshwater Wetland (AR – 5). Arden Heights is one of the largest and most undisturbed tracts of natural land on Staten Island, outside of the Greenbelt. The majority of the wetland, outside of the NYSDEC land, is protected in Arden Woods Park, a New York City park (Figure 2-6, Hydrology and Wetlands Map – Arden Heights). This system is large, approximately 69 acres, and is rated as a Class 1 wetland.

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The Class 1 status is a result of the wetland preventing significant flooding of a substantially developed area, and having four or more Class 2 characteristics (contains two or more wetland structural groups, supports animals in diversity or abundance unusual for the county, is within an urbanized area, and is within a publicly owned recreation area). There are several wetland cover types present in the greater wetland including: deciduous swamp (67 %), emergent marsh (28 %), shrub swamp (4 %), and wet meadow (1 %) (Figure 2-6 Arden Heights Woods Hydrology and Wetlands). Wetland vegetation on the NYSDEC sub-unit is primarily dominated by giant reed in the emergent marsh area, and red maple and sweetgum.

The primary wetland functions for AR-5 include: flood and storm control, wildlife habitat, watershed/groundwater protection, recreation, erosion/sedimentation control, education/scientific research, and open space/aesthetic benefits. These wetlands benefits realized under existing conditions will provide a rationale for the implementation of the UMP for this area and the use of the sub-unit for environmental education, public recreation, and habitat preservation.

The NYSDEC wetland on the edge of the sub-unit is primarily fed by surface water flow. The entire wetland system has developed in sandy lowlands and ravines in morainal soils, and is characteristic of poorly drained terminal moraines with connected lowland deciduous woods.

The wetlands and intermittent stream on the Arden Heights property are likely too small and seasonally dry to support fish production.

### 2.1.2 Biological

#### 2.1.2.1 Plant Life

##### General Plant Communities

The Southern Staten Island Natural Area UMP consists of four non-contiguous Management Sub-units that are identified as Mount Loretto, Lemon Creek, Bloesser's Pond, and Arden Heights. The UMP lands lie within two distinct Ecozones, as described in Ecological Communities of New York State (Reschke 1990), that include the Manhattan Hills and Coastal Lowlands. General Ecological Communities found within the UMP include: Marine, Estuarine, Palustrine, and Terrestrial (Reschke 1990).

**Mount Loretto.** The general Ecological Communities dominating Mount Loretto are Marine, Estuarine, Palustrine, and Terrestrial (Figure 2-7, Vegetation Map – Mount Loretto). A Marine Community System, as described within the Ecological Communities of New York State (Reschke 1990), consists of open ocean overlying the continental shelf, the associated is exposed to wind and waves, and

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shallow coastal bays that are saline because they lack significant freshwater inflow. An Estuarine Community System, as described by Reschke (1990), consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed but have open, partly obstructed, or sporadic access to open ocean or tidal fresh waters, and in which ocean water is at least occasionally diluted by freshwater runoff. Reschke (1990) describes the Palustrine Community System as consisting of non-tidal, perennial wetlands characterized by emergent vegetation. This system includes wetlands permanently saturated by seepage, permanently flooded, and seasonally or intermittently flooded. Lastly, the Terrestrial Community is a broadly defined system that consists of upland habitats having well-drained soils that are dry to moist (non-wetland), and a vegetative cover that is dominated by non-wetland type species (Reschke 1990).

- **Marine Community.** Subsystems of the general Marine Community identified within Mount Loretto include the Marine Subtidal, Marine Intertidal, and Marine Cultural.

The Marine Subtidal subsystem is an area that is permanently flooded with tidal water during the lowest tide period (Reschke 1990). A Marine Eelgrass Meadow community may be present within the underwater portions of the Management sub-unit. Reschke describes this community as being situated in quiet waters that lie below the lowest tide level and where fluctuations of salinity are minor.

The Marine Intertidal subsystem is associated with periodically exposed substrate areas, which are flooded by semidiurnal tides (two high and low tides per tidal day; Reschke 1990). A Marine Intertidal Gravel / Sand Beach community can be found along the eastern coastline section of the Management sub-unit. This community is washed by rough, high-energy waves, with sand and gravel substrates that are well-drained at low tide (Reschke 1990). This community supports minimal vegetation.

A Marine riprap / artificial shore community of the Marine Cultural subsystem is found along the entire coastline of Mount Loretto. This community, as defined in Ecological Communities of New York State (Reschke 1990), consists of constructed shores maintained by human activities in which the substrate is composed of broken rocks, stones, wooden bulkheads, or concrete placed in such a manner as to reduce coastal erosion. This community supports minimal vegetation.

- **Estuarine Community.** Located near the eastern and western boundaries of the Management Sub-units is a High Salt Marsh community of the Estuarine Intertidal subsystem. This coastal marsh community occurs in sheltered areas of the seacoast, is periodically flooded, and consists of a vegetative mosaic dominated by a single grass species (Reschke 1990). The dominant species within this community is Saltmeadow Grass (*Spartina patens*) and Giant Reed

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(*Phragmites australis*). Additionally, other marsh grasses present include Smooth Cordgrass (*S. alterniflora*) and Salt Grass (*Distichlis spicata*).

- **Palustrine Community.** A Forested Mineral Soil Wetland subsystem that is seasonally flooded and whose forest canopy cover is at least 50% further differentiates the general Palustrine Community. Associated with this subsystem, and identified with the Management sub-unit, are a Red Maple-Hardwood Swamp (Reschke 1990); Red Maple-Sweetgum Swamp, (Edinger et al 2002), and a Silver Maple-Ash Swamp (Reschke 1990).

The Red Maple-Hardwood Swamp community is broadly defined with many regional and edaphic variants; however, it is described as a hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils (Reschke 1990). This community was found scattered throughout the Mount Loretto sub-unit, primarily in association with depressional and open water pond areas. Dominant plants observed include American Elm (*Ulmus americana*), Sweetgum (*Liquidambar styraciflua*), and Red Maple (*Acer rubrum*).

Moreover, a Silver Maple-Ash Swamp community is located along the western boundary of Mount Loretto. This community type is generally situated on poorly drained soils along rivers, lakeshores, and depressional areas characterized by uniformly wet conditions having minimal seasonal fluctuations (Reschke 1990). Dominant plants found in this community included Silver Maple (*Acer saccharinum*), Green Ash (*Fraxinus pennsylvanica*), American Elm (*Ulmus americana*), Sweetgum (*Liquidambar styraciflua*), Sassafras (*Sassafras albidum*), and Eastern Cottonwood (*Populus deltoides*) observed near the open water pond in the northwestern corner. Understory vegetation was observed to include Virginia Creeper (*Parthenocissus quinquefolia*), Poison Ivy (*Toxicodendron radicans*), and Bull Briar (*Smilax rotundifolia*).

- **Terrestrial Community.** Subsystems of the general Terrestrial Community identified within Mount Loretto include Open Uplands and Forested Uplands.

The Open Upland subsystem is an area that supports upland communities having less than 25% forest canopy cover; dominant vegetation may include shrubs, herbs, grasses, sedges, mosses, or lichens (Reschke 1990). A Maritime Beach community is found along the shoreline in the western half of the management sub-unit. This community is sparsely vegetated and situated upon unstable sand, gravel, or cobble shores above mean high tide, where the shoreline is continuously modified by storm waves and wind erosion (Reschke 1990). Dominant vegetative species observed at Mount Loretto during the fall survey include Beachgrass (*Ammophila breviligulata*), Sea Rocket (*Cakile edentula*), Seabeach Sandwort (*Honkenya peploides*), and Seabeach Knotweed (*Polygonum glaucum*).

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A Maritime Shrubland community was observed along the south-facing bluff below the lighthouse facility. This community occurs on dry seaside bluffs and headlands exposed to offshore winds and salt spray (Reschke 1990). Typically, this community exhibits low diversity. Observed during the fall surveys were Sand Rose (*Rosa rugosa*), Shining Sumac (*Rhus copallinum*), and Pokeweed (*Phytolacca americana*). However, at Mount Loretto, American Holly and Highbush Blueberry were not noted.

A Successional Old Field community is found throughout the open meadows of Mount Loretto. Successional grasses, forbs, and shrubs dominate this community and are typical of relic farmlands. Observed vegetation included various Goldenrod species (*Solidago spp.*), Bluegrass (*Poa pratensis*, *Poa compressa*), Timothy (*Phleum pratense*), Quackgrass (*Agropyron repens*), Smooth Brome (*Bromus inermis*), Orchard Grass (*Dactylis glomerata*), Calico Aster (*Aster lateriflorus*), New England Aster (*Aster novae-angliae*), and Ragweed (*Ambrosia artemisiifolia*). Additionally, the Dogwoods (*Cornus foemina*, *Cornus amomum*), Arrowwood (*Viburnum recognitum*), various Raspberry species (*Rubus spp.*), and Sumacs (*Rhus typhina*, *Rhus glabra*) were also observed.

At Mount Loretto, the Forested Uplands subsystem consists of upland communities with more than 60% forest canopy cover. A Successional Southern Hardwoods community is found surrounding the open water areas along the northern portion of the sub-unit and within the hedgerows between the open meadows. This community is identified as occurring on sites once cleared for agriculture. Plant species observed include Silver Maple (*Acer saccharinum*), American Elm (*Ulmus americana*), Red Maple (*Acer rubrum*), Gray Birch (*Betula populifolia*), various Hawthorn species (*Crataegus spp.*), and Sassafras (*Sassafras albidum*).

Located upon the side-slope to the north of the Prince's Bay Lighthouse is an Oak-Tulip Tree Forest community (Reschke 1990). This community is found on moist, well-drained sites. Although this site may have been cleared of its original tree canopy, the observed vegetation falls closest to that associated with the Oak-Tulip community. Dominant plants observed include Sassafras (*Sassafras albidum*), Black Cherry (*Prunus serotina*), Paper Birch (*Betula papyrifera*), Sweetgum (*Liquidambar styraciflua*), and Pin Oak (*Quercus palustris*). Table 2-2 lists the dominant vegetation found within Mount Loretto.

**Table 2-2 Mount Loretto Dominant Vegetative Species List**

Common Name	Scientific Name	Found
<b>Trees</b>		
American elm	<i>Ulmus americana</i>	Northwest quarter
Green Ash	<i>Fraxinus pennsylvanica</i>	Throughout
Paper Birch	<i>Betula papyrifera</i>	Lighthouse Hill

## 2. Inventory of Resources, Facilities, and Use

**Table 2-2 Mount Loretto Dominant Vegetative Species List**

Common Name	Scientific Name	Found
Black Cherry	<i>Prunus serotina</i>	Lighthouse Hill
Eastern Cottonwood	<i>Populus deltoides</i>	Throughout
Horsechestnut	<i>Aesculus hippocastanum</i>	South-central (planted)
Silver Maple	<i>Acer saccharinum</i>	Western half
Sugar Maple	<i>Acer saccharum</i>	Western half
Sassafras	<i>Sassafras albidum</i>	Throughout
Sweetgum	<i>Liquidambar styraciflua</i>	Throughout
Pin Oak	<i>Quercus palustris</i>	Throughout
Black Willow	<i>Salix nigra</i>	Western half
<b>Shrubs</b>		
Arrowwood	<i>Viburnum sp.</i>	Throughout
Buttonbush	<i>Cephalanthus occidentalis</i>	Central
Choke Cherry	<i>Prunus virginiana</i>	Throughout
Fire Cherry	<i>Prunus pensylvanica</i>	Throughout
Flowering Dogwood	<i>Cornus florida</i>	Western half
Red-Osier Dogwood	<i>Cornus stolonifera</i>	Throughout
Gray Dogwood	<i>Cornus racemosa</i>	Throughout
Red Mulberry	<i>Morus rubra</i>	Throughout
Raspberries	<i>Rubus sp.</i>	Throughout
Multiflora Rose	<i>Rosa multiflora</i>	Throughout
Staghorn Sumac	<i>Rhus typhina</i>	Throughout
Winged Sumac	<i>Rhus copallina</i>	Throughout
Northern Arrowwood	<i>Viburnum recognitum</i>	Throughout
<b>Vines</b>		
Bull Briar	<i>Smilax rotundifolia</i>	Southwest woodland
Japanese Honeysuckle	<i>Lonicera japonica</i>	Throughout
Poison Ivy	<i>Toxicodendron radicans</i>	Throughout
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Throughout
Grape	<i>Vitis sp.</i>	Western quarter
<b>Herbs</b>		
Dogbane	<i>Apocynum sp.</i>	Throughout meadows
Rough-leaved Goldenrod	<i>Solidago patula</i>	Throughout meadows
Goldenrod	<i>Solidago sp.</i>	Throughout meadows
Fox Sedge	<i>Carex vulpinoidea</i>	Throughout meadows
Baltic Rush	<i>Juncus balticus</i>	Throughout meadows
Soft Rush	<i>Juncus effusus</i>	Throughout meadows
Boneset	<i>Eupatorium perfoliatum</i>	Eastern meadow
Hyssop-Leaved Thoroughwort	<i>Eupatorium hyssopifolium</i>	Central meadow
Joe Pye-Weed	<i>Eupatorium dubium</i>	Throughout meadows
Pokeweed	<i>Phytolacca americana</i>	Southeast cliff face

## 2. Inventory of Resources, Facilities, and Use

**Table 2-2 Mount Loretto Dominant Vegetative Species List**

Common Name	Scientific Name	Found
Mugwort	<i>Artemisia vulgaris</i>	Western half
Poison Ivy	<i>Toxicodendron radicans</i>	Throughout
Yellow nut-sedge	<i>Cyperus esculentus</i>	Central meadow
Wool-grass	<i>Scirpus cyperinus</i>	Central meadow
White Wood Aster	<i>Aster divaricatus</i>	Throughout
Late Purple Aster	<i>Aster patens</i>	Throughout
Aster(s)	<i>Aster spp.</i>	Throughout
Milkweed	<i>Asclepias sp.</i>	Throughout
Knotweed(s)	<i>Polygonum spp.</i>	Throughout
Horse Nettle	<i>Solanum carolinense</i>	Central meadow
Red clover	<i>Trifolium pratense</i>	Throughout
Plantain	<i>Plantago sp.</i>	Throughout
Cattails	<i>Typhae sp.</i>	Throughout marshland
Bulrush	<i>Scirpus sp.</i>	Throughout marshland
<b>Grasses</b>		
Bluegrass	<i>Poa sp.</i>	Throughout meadows
Redtop	<i>Agrostis stolonifera</i>	Throughout meadows
Orchardgrass	<i>Dactylis glomerata</i>	Throughout meadows
Timothy	<i>Phleum pratense</i>	Throughout meadows
Broomsedge bluestem	<i>Andropogon virginicus</i>	Throughout meadows
Little bluestem	<i>Schizachyrium scoparium</i>	Western half
Switchgrass	<i>Panicum virgatum</i>	Throughout meadows
Bermuda grass	<i>Cynodon dactylon</i>	Southwestern meadow
Foxtail	<i>Setaria spp.</i>	Southwestern meadow
Indian Ricegrass	<i>Oryzopsis hymenoides</i>	Northwestern meadow
Giant Reed	<i>Phragmites australis</i>	Throughout marshland
Saltmeadow Cordgrass	<i>Spartina patens</i>	Southwest corner
American Beachgrass	<i>Ammophila breviligulata</i>	Southwest beach
Fescue	<i>Festuca sp.</i>	South-central meadow
Perennial Rye	<i>Lolium perenne</i>	South-central meadow
Barnyard-grass	<i>Echinochloa crusgalli</i>	Central meadow
Reed Canarygrass	<i>Phalaris arundinacea</i>	Throughout marshland
Smooth Cordgrass	<i>S. alterniflora</i>	Southwest corner
Salt Grass	<i>Distichlis spicata</i>	Southwest corner

**Lemon Creek.** The general Ecological Communities dominating the Lemon Creek sub-unit are Estuarine, Palustrine, and Terrestrial (Figure 2-8, Vegetation Map – Lemon Creek and Bloesser’s Pond). An Estuarine Community System, as described by Reschke (1990), consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed but have open, partly obstructed, or

## 2. Inventory of Resources, Facilities, and Use

sporadic access to open ocean or tidal fresh waters, and in which ocean water is at least occasionally diluted by freshwater runoff. Reschke (1990) describes the Palustrine Community System as consisting of non-tidal, perennial wetlands characterized by emergent vegetation. This system includes wetlands permanently saturated by seepage, permanently flooded, and seasonally or intermittently flooded. The Terrestrial Community is a broadly defined system that consists of upland habitats having well-drained soils that are dry to moist (non-wetland), and a vegetative cover that is dominated by non-wetland type species (Reschke 1990).

The Estuarine System is further divided into an Estuarine Intertidal subsystem. This subsystem is described in the Ecological Communities of New York State (Reschke 1990) as including the area between the highest tide level and lowest tide level with some areas only irregularly exposed at low tide, while other areas are only irregularly flooded during high tide. Found within Lemon Creek is a High Salt Marsh Vegetative Community of the Estuarine Intertidal subsystem. This coastal marsh community occurs in sheltered areas of the seacoast, is periodically flooded, and consists of a vegetative mosaic dominated by a single grass species (Reschke 1990). The dominant species within this community is Salt-meadow Grass (*Spartina patens*).

A Red Maple-Hardwood Swamp Community (Reschke 1990) and Red Maple-Sweetgum Swamp, (Edinger et al 2002) typifies the vegetative community currently present throughout the northeastern portion of the Management sub-unit (Table 2-3). The Red Maple-Hardwood Swamp community is broadly defined with many regional and edaphic variants; however, it is described as a hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils (Reschke 1990).

Located upon the steeply sloping topography in the western and northern portions of the Management sub-unit is a Forested Uplands subsystem of the Terrestrial Community System (Reschke 1990). This subsystem, as defined in the Ecological Communities of New York State, includes upland communities having more than 60% forest canopy cover. This portion of the Lemon Creek is dominated by an Oak-Tulip Tree Forest community, which Reschke describes as occupying moist, well-drained sites in southeastern New York. Table 2-3 lists the dominant vegetation for this community found within Lemon Creek.

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**Table 2-3 Lemon Creek Dominant Vegetative Species List**

Common Name	Scientific Name	Found
<b>Trees</b>		
American Beech	<i>Fagus grandifolia</i>	Throughout
Chestnut Oak	<i>Quercus prinus</i>	Southwest side
Red Oak	<i>Quercus rubra</i>	Throughout
Pin Oak	<i>Quercus palustris</i>	Southwest side
Sugar Maple	<i>Acer saccharum</i>	Southwest side
Sassafras	<i>Sassafras albidum</i>	Southwest side
Sweet gum	<i>Liquidambar styraciflua</i>	Throughout
Tulip Tree	<i>Liriodendron tulipifera</i>	West side hill top
White Pine	<i>Pinus strobus</i>	West side hill top
White Oak	<i>Quercus alba</i>	Throughout
<b>Shrubs</b>		
Elderberry	<i>Sambucus canadensis</i>	Southwest corner
Northern Arrowwood	<i>Viburnum recognitum</i>	Throughout
Witch-Hazel	<i>Hamamelis virginiana</i>	West side hill top
Multiflora Rose	<i>Rosa multiflora</i>	Throughout
<b>Vines</b>		
Poison Ivy	<i>Toxicodendron radicans</i>	Throughout
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	East and north quarter
<b>Herbs</b>		
White Wood Aster	<i>Aster divaricatus</i>	Throughout
Spotted Touch-me-not	<i>Impatiens capensis</i>	Throughout
Solomon's-Seal	<i>Polygonatum biflorum</i>	Northern half
New York Aster	<i>Aster novae-belgii</i>	Northwest corner
Aster	<i>Aster sp.</i>	Northwest corner
Salt-Marsh Fleabane	<i>Pluchea purpurascens</i>	Northwest corner
Marsh Fern	<i>Thelypteris palustris</i>	Northeast quarter
Goldenrod	<i>Solidago sp.</i>	Northwest corner
Poison Ivy	<i>Toxicodendron radicans</i>	Throughout
<b>Grasses</b>		
Giant Reed	<i>Phragmites australis</i>	Throughout meadow
Saltmeadow Cordgrass	<i>Spartina patens</i>	Throughout meadow
Smooth Cordgrass	<i>Spartina alterniflora</i>	Throughout meadow
Reed Canary-grass	<i>Phalaris arundinacea</i>	Throughout meadow

## **2. Inventory of Resources, Facilities, and Use**

**Bloesser's Pond and Arden Heights.** The general Ecological Community dominating Bloesser's Pond and Arden Heights is Palustrine (Figure 2-8, Vegetation Map – Lemon Creek and Bloesser's Pond and Figure 2-9, Vegetation Map – Arden Heights). A Palustrine Community System, as described by Reschke (1990), consists of non-tidal, perennial wetlands characterized by emergent vegetation. This system includes wetlands permanently saturated by seepage, permanently flooded, and seasonally or intermittently flooded. A Forested Mineral Soil Wetland that is seasonally flooded and whose forest canopy cover is at least 50% further differentiates the general ecological designation.

A Red Maple-Hardwood Swamp (Reschke 1990); Red Maple-Sweetgum Swamp, (Edinger et al 2002) typifies the vegetative makeup currently present within the two Management Sub-units. This community is broadly defined with many regional and edaphic variants; however, it is described as a hardwood swamp that occurs in poorly drained depressions, usually on inorganic soils (Reschke 1990). Tables 2-4 and 2-5 list the dominant vegetation found within the Bloesser's Pond and Arden Heights Management Sub-units, respectively.

### **Unique, Critical, and Significant Wildlife Habitat**

Mount Loretto consists of upland habitats including successional Old Field communities found throughout the open meadows of the Management Sub-unit. This community offers unique habitat, significant to wildlife, and specific to and supporting populations of grassland breeding birds in the area. Figure 2-10, Unique, Critical, and Significant Habitats – Mount Loretto, indicates the different grassland organization at Mount Loretto. No other areas contain unique, critical, or significant habitats.

#### **2.1.2.2 Wildlife**

##### **Birds**

Avian field surveys within the NYSDEC Southern Staten Island Unique Area were conducted following a modified point-count survey method between September 16 and 18, 2004 and April 28 and 29, 2005. The Southern Staten Island Natural Area includes Arden Heights, Bloesser's Pond, Lemon Creek, and Mount Loretto.

Literature research was completed concentrating on Bird Conservation Areas (BCA), Important Birding Areas (IBA), and Breeding Bird Atlas (BBA) surveys for the region.

## 2. Inventory of Resources, Facilities, and Use

**Table 2-4 Bloesser's Pond Dominant Vegetative Species List**

Scientific Name	Common Name	Found
<b>Trees</b>		
Pin Oak	<i>Quercus palustris</i>	Throughout
Chestnut Oak	<i>Quercus prinus</i>	Northeast quarter
White Oak	<i>Quercus alba</i>	Northeast quarter
Northern Red Oak	<i>Quercus rubra</i>	Throughout
Sassafras	<i>Sassafras albidum</i>	Southern quarter
Sweetgum	<i>Liquidambar styraciflua</i>	Throughout
Red Maple	<i>Acer rubrum</i>	Throughout
<b>Shrubs</b>		
Buttonbush	<i>Cephalanthus occidentalis</i>	Central depression
Northern Arrowwood	<i>Viburnum recognitum</i>	Throughout
Prickly Brambles	<i>Rubus sp.</i>	Throughout
Roses	<i>Rosa sp.</i>	Throughout

**Table 2-5 Arden Heights Dominant Vegetative Species List**

Scientific Name	Common Name	Found
<b>Trees</b>		
Sweetgum	<i>Liquidambar styraciflua</i>	Throughout
Red Maple	<i>Acer rubrum</i>	Throughout
Pin Oak	<i>Quercus palustris</i>	Eastern quarter
<b>Shrubs</b>		
Arrowwood	<i>Viburnum recognitum</i>	Throughout
Spicebush	<i>Lindera benzoin</i>	Northeast quarter
<b>Vines</b>		
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Eastern quarter
<b>Herbs</b>		
White Wood Aster	<i>Aster divaricatus</i>	Eastern quarter
Aster	<i>Aster sp.</i>	Throughout
Bracken Fern	<i>Pteridium aquilinum</i>	Southeast quarter
Marsh Fern	<i>Thelypteris palustris</i>	Eastern quarter
Touch-me-not; jewel weed	<i>Impatiens capensis</i>	Throughout
<b>Grasses</b>		
Giant Reed	<i>Phragmites australis</i>	Southern half

The primary source of literature data utilized was the New York State Breeding Bird Atlas (BBA) (Figure 2-11, Breeding Bird Atlas Map). The BBA is a cooperative project between NYSDEC, NYS Ornithological Association, Cornell University (Department of Natural Resources, Lab of Ornithology) and NY Cooperative Fish and Wildlife Research Unit. The foundation of the project is composed

## 2. Inventory of Resources, Facilities, and Use

of over 1,000 volunteers who completed the actual on the ground surveys. The BBA is a comprehensive, statewide survey that reveals the current distribution of breeding birds in New York. The Atlas 2000 project began in January 2000 and will continue through 2005, with earlier surveys from the 1980s (1980-1985) completed. This is a five-year project where the data concerning the presence or absence of certain species in areas of New York are interim data, representing three years of fieldwork. The intensity level and effort in data collection varies throughout the State. Some areas have been more thoroughly researched than others, and the data remain subject to change as the Atlas project continues. For this reason, the Atlas cannot provide a definitive statement concerning the absence of breeding activity for a certain species in a particular area of the state. The Atlas can only provide a listing of species known to be breeding or suspected of breeding in certain areas of the state. The Atlas typically forms the baseline for fall and spring avian surveys that agencies generally recommend developers perform pre-construction (Breeding Bird Atlas 2000).

It is anticipated that the BBA, in combination with North American Breeding Bird Surveys (BBS) and available Christmas Bird Counts (CBC), would provide the basis for more detailed evaluation of avian resources associated with the Southern Staten Island Natural Area and the region. The BBS, which has continental monitoring programs for all breeding birds, has no routes located on Southern Staten Island Natural Area, with the closest routes (three) located in the central portion of Long Island, NY. The purpose for such extensive surveys is a valuable source of information on bird population trends over time in given areas, locally and nationally. Breeding Bird Surveys are conducted during the peak-nesting season during which all birds heard or seen are recorded under specified protocol (Sauer et al. 2004).

The most recent BBA surveys compiled avian data from two BBA blocks for the Southern Staten Island Natural Areas of Arden Heights, Bloesser's Pond, Lemon Creek, and Mount Loretto (Figure 2-11, Breeding Bird Atlas Survey Blocks). The 1980 surveys and the most up-to-date (2004) list of species for BBA block numbers 5648A and 5648C were reviewed, finding evidence of Northern harriers (*Circus cyaneus*), a listed state threatened species in New York, to have potentially bred in the 5648C block within the last five years. Of historical note, upland Sandpipers (*Bartramia longicauda*), a listed state threatened species in New York, were recorded in the early 1980s as breeding in 5648C block, as well.

Various locations on Staten Island provide excellent birding opportunities, warranting areas to be set aside as major bird areas for the region. The Harbor Herons Bird Conservation Area (BCA) is located on the northeast corner of Staten Island and consists of wetland complexes of freshwater and tidal marshes, making this area a unique foraging and nesting area for wading birds, critical shoreline habitat, and important stopover locations for migrant birds.

## ***2. Inventory of Resources, Facilities, and Use***

Arden Heights and Bloesser's Pond were determined small enough in size to allow for the use of a single point-count method. Figures 2-12 (Arden Heights Bird Observation Location) and 2-13 (Bloesser's Pond and Lemon Creek Bird Observation Locations) present the sub-units' observation locations. Lemon Creek was surveyed following a multiple point-count method from three points having favorable visual observation lines of sight overlooking the riparian ecosystem. Lemon Creek observation points are designated A-C. Mount Loretto, the largest land area surveyed, also followed a multiple point-count method, having a total of six observation locations placed near open water, emergent marshland, oceanic shoreline, lowland and upland deciduous woodland, and grassland habitat communities (Figure 2-14, Mount Loretto Bird Breeding Locations). The Mount Loretto observation points have been labeled A-F.

Ten-minute point-counts were conducted at each location in an attempt to gather information on autumn resident and spring migrant birds at each of the management sub-units. An ongoing species list of birds was recorded while walking to and from each point in an effort to account for birds not represented during the survey counts. The survey followed standardized methodology including observations of birds by sight and sound within reasonable distance (100 meters) from each observation point. A distance of 100 meters allowed for the separation of stationary observation points. When birds were observed in flight, and 100 meters or more above the ground, over the established observation points, they were categorized as migrants. A complete species list of observed birds and reported birds from other sources is presented in Table 2-6.

Autumn surveys have an additional degree of difficulty since most birds are out of breeding plumage (less vibrant) and much less vocal. A comprehensive list, however, was developed from general on-site encounters, and supplemented by observations from local birding enthusiasts. Also included are birds recorded as rare for the Management Unit.

Spring surveys focused on the song bird migrants that would be moving through the Management Unit, or establishing residency for breeding in the area. Waterfowl were counted; however, waterfowl movements occur during late winter or early spring. Grassland ecosystems had been mowed during the previous autumn, and a re-growth was becoming established in which returning grassland birds could breed.

## 2. Inventory of Resources, Facilities, and Use

**Table 2-6 Bird Species List for the Southern Staten Island Natural Area**

Common Name	Scientific Name	Common Name	Scientific Name
Snow Goose	<i>Chen caerulescens</i>	Solitary Vireo	<i>Vireo solitarius</i>
Canada Goose	<i>Branta canadensis</i>	Blue Jay	<i>Cyanocitta cristata</i>
Brant Goose	<i>Branta bernicla</i>	American Crow*	<i>Corvus brachyrhynchos</i>
Wood Duck	<i>Aix sponsa</i>	Fish Crow	<i>Cornius ossifragus</i>
Gadwall*	<i>Anas strepera</i>	Horned Lark	<i>Eremophila alpestris</i>
American Wigeon	<i>Anas americana</i>	Purple Martin	<i>Progne subis</i>
American Black Duck	<i>Anas rubripes</i>	Tree Swallow	<i>Tachycineta bicolor</i>
Mallard	<i>Anas platyrhynchos</i>	No. Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Northern Shoveler	<i>Anas clypeata</i>	Cliff Swallow	<i>Hirundo pyrrhonota</i>
Northern Pintail*	<i>Anas acuta</i>	Barn Swallow	<i>Hirundo rustica</i>
Green-winged Teal	<i>Anas carolinensis</i>	Black-capped Chickadee	<i>Parus atricapillus</i>
Canvasback	<i>Aythya valisineria</i>	Tufted Titmouse	<i>Baeolophus bicolor</i>
Ring-Necked Duck	<i>Aythya collaris</i>	Red-breasted Nuthatch	<i>Sitta canadensis</i>
Greater Scaup	<i>Aythya marila</i>	White-breasted Nuthatch	<i>Sitta carolinensis</i>
Bufflehead	<i>Bucephala albeola</i>	Brown Creeper	<i>Certhia americana</i>
Common Golden Eye	<i>Bucephala clangula</i>	Carolina Wren	<i>Thryothorus ludovicianus</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>	House Wren	<i>Troglodytes aedon</i>
Common Merganser	<i>Mergus merganser</i>	Winter Wren	<i>Tragloodytes tragloodytes</i>
Red-Breasted Merganser	<i>Mergus serrator</i>	Ruby-crowned Kinglet*	<i>Regulus calendula</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>	Eastern Bluebird	<i>Sialia sialis</i>
Ring-necked Pheasant	<i>Phasianus colchius</i>	Hermit Thrush	<i>Catharus Guttatus</i>
Ruffed Grouse	<i>Bonasa umbellus</i>	American Robin	<i>Turdus migratorius</i>
Red-throated Loon	<i>Gavia stellata</i>	Gray Catbird	<i>Dumetella carolinensis</i>
Common Loon	<i>Gavia immer</i>	Northern Mockingbird	<i>Mimus polyglottos</i>
Pied-billed Grebe*	<i>Podilymbus podiceps</i>	Brown Thrasher	<i>Toxostoma rufum</i>
Horned Grebe	<i>Podiceps auritus</i>	European Starling	<i>Sturnus vulgaris</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	American Pipit	<i>Anthus rubescens</i>
Great Cormorant	<i>Phalacrocorax carbo</i>	Cedar Waxwing	<i>Bombycilla cedrorum</i>
American Bittern	<i>Botaurus lentiginosus</i>	American Kestrel	<i>Falco sparverius</i>
Great Blue Heron	<i>Ardea herodias</i>	Merlin	<i>Falco columbarius</i>
White Egret	<i>Casmerodius albus</i>	Peregrine Falcon*	<i>Falco peregrinus</i>
Great Egret	<i>Casmerodius albus</i>	Yellow Rail**	<i>Coturnicops noveboracensis</i>
Green Heron	<i>Butorides striatus</i>	American Coot	<i>Fulica americana</i>
Black-crown night-Heron	<i>Nycticorax nycticorax</i>	Killdeer	<i>Charadrius vociferous</i>
Turkey Vulture	<i>Cathartes aura</i>	Upland Sandpiper	<i>Bartramia lonicauda</i>
Osprey	<i>Pandion haliaetus</i>	Purple Sandpiper	<i>Calidris maritima</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Dunlin	<i>Calidris alpina</i>
Northern Harrier *	<i>Circus cyaneus</i>	Common Snipe	<i>Gallinago gallinago</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>	American Woodcock	<i>Scelopax minor</i>
Cooper's Hawk *	<i>Accipiter cooperii</i>	Eastern Phoebe	<i>Sayornis phoebe</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>	Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>	Eastern Kingbird	<i>Tyrannus tyrannus</i>
Rock Pigeon	<i>Columba livia</i>	Laughing Gull	<i>Larus atricilla</i>
Mourning Dove	<i>Zenaida macroura</i>	Ring-billed Gull	<i>Larus delawarensis</i>
Barn Owl	<i>Tyto Alba</i>	Kentucky Warbler	<i>Oporoonis formosus</i>

## 2. Inventory of Resources, Facilities, and Use

**Table 2-6 Bird Species List for the Southern Staten Island Natural Area**

Common Name	Scientific Name	Common Name	Scientific Name
Eastern Screech Owl	<i>Megascops asio</i>	Common Yellowthroat	<i>Geothlypis trichas</i>
Great-horned Owl	<i>Bubo virginianus</i>	Wilson's Warbler	<i>Wilsonia pusilla</i>
Chimney Swift	<i>Chaetura pelagica</i>	Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	American Tree Sparrow	<i>Spizella arborea</i>
Belted Kingfisher*	<i>Ceryle alcyon</i>	Field Sparrow	<i>Spizella pusilla</i>
Red-headed Woodpecker*	<i>Melanerpes erythrocephalus</i>	Song Sparrow	<i>Melospiza melodia</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	Fox Sparrow*	<i>Passerella iliaca</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Swamp Sparrow	<i>Melospiza georgiana</i>
Downy Woodpecker	<i>Picoides pubescens</i>	White-throated Sparrow	<i>Zonotrichia albicollis</i>
Hairy Woodpecker	<i>Picoides villosus</i>	White-crowned Sparrow*	<i>Zonotrichia leucophrys</i>
Northern Flicker	<i>Colaptes auratus</i>	Dark-eyed Junco	<i>Junco hyemalis</i>
Herring Gull	<i>Larus argentatus</i>	Snow Bunting	<i>Plectrophenax nivalis</i>
Great Black-backed Gull	<i>Larus marinus</i>	Northern Cardinal	<i>Cardinalis cardinalis</i>
Bonaparte's Gull	<i>Larus philadelphia</i>	Bobolink	<i>Dolichonyx oryzivorus</i>
Common Tern	<i>Sterna hirundo</i>	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Least Tern	<i>Sterna antillarum</i>	Eastern Meadowlark	<i>Sturnella magna</i>
Yellow-rumped Warbler	<i>Denroica coronata</i>	Common Grackle	<i>Quiscalus quiscula</i>
Pine Warbler	<i>Dendroica pinus</i>	Brown-headed Cowbird	<i>Molothrus ater</i>
Palm Warbler*	<i>Dendroica palmarum</i>	Baltimore Oriole	<i>Icterus galbula</i>
Black and White Warbler	<i>Mniotilta varia</i>	House Sparrow	<i>Passer domesticus</i>
American Redstart	<i>Setophaga ruticilla</i>	American Goldfinch	<i>Carduelis tristis</i>
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	House Finch	<i>Corpodacus mexicanus</i>

Note:

\* Observed

### Mammals

No formal mammalian surveys were conducted within the NYSDEC Southern Staten Island Natural Areas. However, during other surveys in the week of September 15-18, 2004 and April 28-29, 2005 at the four locations, mammal observations were recorded, and a search of existing mammals for the area was completed after the site visits. General observations while surveying the properties, walking to and from plot locations, and spending time on site allowed for various species to be noted. Small mammals were evident along the trails and roadways of all four sub-units from observations of tracks, foraging activity, fecal material, and burrowing activity. Table 2-7 shows the mammals that could possibly occur around the southern portion of Staten Island according to a literature review and local sighting reports. A rating of Abundant (A), Common (C), Occasional (O), Rare (R), and an asterisk (\*) was used for observed mammals to denote the best assumptions for mammalian activity for the properties.

**Table 2-7 Mammal Species List for the Southern Staten Island Natural Area**

Common Name	Latin Name		Common Name	Latin Name	
Virginia Opossum	<i>Didelphis virginiana</i>	O*	Meadow Jumping Mouse	<i>Zapus hudsonius</i>	C
Short-tailed Shrew	<i>Blarina brevicauda</i>	R	White-footed Mouse	<i>Peromyscus leucopus</i>	C

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Masked Shrew	<i>Sorex cinereus</i>	R	Black Rat	<i>Rattus rattus</i>	U
Star-nosed mole	<i>Condylura cristata</i>	R	Norway Rat	<i>Rattus norvegicus</i>	C
Hairy-tailed Mole	<i>Pasascalops breweri</i>	U	Muskrat*	<i>Ondatra zibethicus</i>	O
Eastern Mole	<i>Scalopus aquaticus</i>	U	Eastern Chipmunk	<i>Tamias striatus</i>	C
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	U	Gray Squirrel	<i>Sciurus carolinensis</i>	C*
Eastern Pipistrelle	<i>Pipisrellus subflavus</i>	U	Red Squirrel	<i>Tamiasciurus hudsonicus</i>	R
Big Brown Bat	<i>Eptesicus fuscus</i>	O	Southern Flying Squirrel	<i>Glaucomys volans</i>	U
Red Bat	<i>Lasiurus borealis</i>	U	Woodchuck	<i>Marmota monax</i>	C
Small-footed Myotis	<i>Myotis leibii</i>	O	Striped Skunk	<i>Mephitis mephitis</i>	A
Little Brown Bat	<i>Myotis lucifugus</i>	O	Raccoon	<i>Procyon lotor</i>	A*
Eastern Cottontail	<i>Sylvilagus floridanus</i>	A*	Ermine	<i>Mustela erminea</i>	R
Meadow Vole	<i>Microtus pennsylvanicus</i>	C	Long-tailed Weasel	<i>Mustela frenata</i>	U
S. Red-backed Vole	<i>Clethrionomys gapperi</i>	U	Red Fox	<i>Vulpes vulpes</i>	O*
Striped Skunk	<i>Mephitis mephitis</i>	C	White tailed Deer	<i>Odocoileus virginianus</i>	R
Harbor Seal	<i>Phoca vitulina</i>	O	Deer Mouse	<i>Peromyscus maniculatus</i>	C
House Mouse	<i>Mus musculus</i>	O	Woodland Vole	<i>Microtus pinetorum</i>	U

Note:

\* Observed.

Key:

A = Abundant.  
 C = Common.  
 O = Occasional.  
 R = Rare.  
 U = Unknown.

Species that were observed included Virginia Opossum (*Didelphis virginiana*), Eastern Cottontail (*Sylvilagus floridanus*), Gray Squirrel (*Sciurus carolinensis*), Woodchuck (*Marmota monax*), Striped Skunk (*Mephitis mephitis*), Raccoon (*Procyon lotor*), Muskrat (*Ondatra zibethicus*), and evidence of Red Fox (*Vulpes vulpes*). A report of mice and voles was received; however, no trapping efforts were made to verify the species that were seen. Harbor Seals (*Phoca vitulina*) also periodically visit the beaches and rocks of Mount Loretto in the fall and spring. A report of released cottontails was received from observers involving a local dog trainer who releases rabbits for training purposes. Of greatest interest is the reported spotting of a White-Tailed Deer (*Odocoileus virginianus*) at Mount Loretto in May. White-tailed deer have previously been present only on the Northwest side of Staten Island near Great Kills and their presence at the Mount Loretto must be considered in the long-term management of the sub-unit, particularly if their population increases.

## 2. Inventory of Resources, Facilities, and Use

### Fish

Two sub-units within the Southern Staten Island Natural Area contain significant habitat to support fish production in the Staten Island area. The Raritan Bay portion of the Mount Loretto sub-unit is listed as Essential Fish Habitat (EFH) by NOAA Fisheries. In addition, Lemon Creek is a NYS-listed significant fish and wildlife habitat. Table 2-8 presents the marine species list with essential fish habitat for the Southern Staten Island Natural Area.

**Table 2-8 Marine Species List with Essential Fish Habitat for the Southern Staten Island Natural Area**

Species List	Comments	NYSDEC UMP Presence
Atlantic butterfish	Larvae, juveniles, and adults may be present in the marine and brackish components of Raritan Bay.	Based on habitat preferences (pelagic to bottom waters of estuaries), butterfish may be present in the Mount Loretto waters.
Atlantic mackerel	Juveniles and adults may be present in the marine components of Raritan Bay.	Based on habitat preferences (pelagic waters 0 to 15 meters for eggs, 10 – 130 for larvae, 0 to 320 for juveniles, and 0 to 380 for adults), this species may be present in Mount Loretto waters.
Atlantic sea herring	Larvae, juveniles, and adults may be present in the marine and brackish components of Raritan Bay.	Based on habitat depths (greater than 15 to 20 meters), Atlantic herring are not likely to utilize Mount Loretto waters.
Black sea bass	Juveniles and adults may be present in the marine and brackish components of Raritan Bay.	Based on habitat preferences (bottom waters and structure in depths of 1 to 40 meters for juveniles and 20 to 50 meters for adults), this species may be present in Mount Loretto waters.
Bluefish	Juveniles and adults may be present in the marine and brackish components of Raritan Bay.	Based on habitat preferences (pelagic waters of estuaries), bluefish may be present in Mount Loretto and Lemon Creek.
Cobia	Eggs, larvae, juveniles, and adults may be present in Raritan Bay.	Based on habitat preferences (all coastal inlets), this species may be present in Mount Loretto or Lemon Creek.
King mackerel	Eggs, larvae, juveniles, and adults may be present in Raritan Bay.	Based on habitat preferences (all coastal inlets), this species may be present in Mount Loretto or Lemon Creek.
Red hake	Larvae, juveniles, and adults may be present in the marine and brackish components of Raritan Bay.	Based on habitat preferences (surface waters <200 meters for larvae, bottom habitats <100 meters for juveniles, and bottom habitats 10 to 130 meters for adults), red hake may be located in Mount Loretto waters.
Scup	Eggs, larvae, juveniles, and adults may be present in the marine components of Raritan Bay.	Based on habitat preferences (pelagic and bottom waters of estuaries), scup may be present in the Mount Loretto waters.
Spanish mackerel	Eggs, larvae, juveniles, and adults may be present in Raritan Bay.	Based on habitat preferences (all coastal inlets), this species may be present in Mount Loretto or Lemon Creek.

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**Table 2-8 Marine Species List with Essential Fish Habitat for the Southern Staten Island Natural Area**

Species List	Comments	NYSDEC UMP Presence
Summer flounder	Larvae, juveniles, and adults may be present in the marine and brackish components of Raritan Bay. Larvae may also be present in freshwater areas of Raritan Bay.	Based on habitat preferences (0 to 5 meters for juveniles and 0 to 25 meters for adults), this species may be found in Mount Loretto and Lemon Creek.
Windowpane flounder	Eggs, larvae, juveniles, adults, and spawning adults may be found in the marine and brackish components of Raritan Bay.	Based on habitat preferences (<100-meter depths at surface, pelagic, and bottom habitats), windowpane flounder may be present in Mount Loretto.
Winter flounder	Eggs, larvae, juveniles, adults, and spawning adults may be found in the marine and brackish components of Raritan Bay.	Based on habitat preferences (<6 meters for eggs and juveniles and <100 meters for juveniles and adults), this species may be found in Mount Loretto and Lemon Creek.

There are 13 marine species with listed EFH in Raritan Bay, with some species having the potential to be present in Mount Loretto and Lemon Creek. These species are both littoral and pelagic inhabitants. The most important game species for recreational fisherman on Mount Loretto are bluefish (*Pomatomus saltatrix*) and striped bass (*Morone saxatilis*), when present. Local reports also suggest that summer flounder (*Paralichthys dentatus*), weaks (*Cynoscion regalis*), various snapper species (*Lutjanus spp.*), and Blue Claw crabs (*Callinectes sapidus*) are popular in the spring and summer, and winter flounder (*Pseudopleuronectes americanus*) is a popular fish for anglers in the late fall and early spring. Preservation of the Mount Loretto shoreline will provide long-term opportunities for its continued future use by recreational anglers.

Freshwater species have the potential to inhabit wetlands in Mount Loretto and possibly the freshwater portions of Lemon Creek, although this habitat is limited. Species that may be present include: largemouth bass (*Micropterus salmoides*), sunfish (*Lepomis auritus*), yellow perch (*Perca flavescens*), various cyprinids species (*Osteocheilus spp.*), and catfish. The NYSDEC freshwater wetland may have water quality issues (i.e., low dissolved oxygen), as discussed in Section 2.1.1.4, that limit fish production. However, there are reports of anglers occasionally fishing in the northwest corner wetland. The portion of Lemon Creek that is freshwater is characterized by small shallow riffles, which may provide limited habitat for small lotic species (i.e., some cyprinids). Bloesser's Pond and Arden Heights are seasonal wetlands and are not capable of supporting fish production.

### Reptiles and Amphibians

The Southern Staten Island Management Area contains unique and significant habitat to support reptiles and amphibians. Though no formal species documentation was recorded for reptiles and amphibians, during other surveys during the week of September 15 through 18, 2004 at the four sub-units, reptile and amphib-

## 2. Inventory of Resources, Facilities, and Use

ian observations were recorded, and a search of existing records were made. General observations by surveyors made while surveying the properties, walking to and from plot locations, and spending time on site noted several species (Table 2-9). In addition, species lists were provided by the New York City Department of Parks.

**Table 2-9 Reptile and Amphibian Species List for the Southern Staten Island Natural Area**

Common Name	Scientific Name
<b>Reptiles</b>	
<b>Chelonia</b>	
Snapping turtle*	<i>Chelydra serpentina</i>
Common musk turtle	<i>Sternotherus odoratus</i>
Eastern mud turtle	<i>Kinosternon subrubrum subrubrum</i>
Spotted turtle	<i>Clemmys guttata</i>
Wood turtle	<i>Clemmys insculpta</i>
Eastern box turtle	<i>Terrapene carolina carolina</i>
Northern diamondback terrapin	<i>Malaclemys terrapin terrapin</i>
Red-eared slider	<i>Trachemys scripta elegans</i>
Eastern painted turtle	<i>Chrysemys picta picta</i>
Green turtle	<i>Chelonia mydas</i>
Atlantic hawksbill	<i>Eretmochelys imbricata imbricata</i>
Loggerhead	<i>Caretta caretta</i>
<b>Serpents</b>	
Brown snake	<i>Storeria dekayi</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Eastern hognose snake	<i>Heterodon platyrhinos</i>
Milk snake	<i>Lampropeltis triangulum</i>
Northern black racer	<i>Coluber constrictor</i>
Northern ringneck snake	<i>Diadophis punctatus</i>
<b>Squamata</b>	
Northern fence lizard	<i>Sceloporus undulatus</i>
<b>Amphibians</b>	
<b>Caudata</b>	
Spotted salamander	<i>Ambystoma maculatum</i>
Jefferson salamander*	<i>Ambystoma jeffersonianum</i>
Blue-spotted salamander*	<i>Ambystoma laterale</i>
Marbled salamander	<i>Ambystoma opacum</i>
Red-spotted newt	<i>Notophthalmus viridescens viridescens</i>
Redback salamander*	<i>Plethodon cinereus</i>
Northern slimy salamander	<i>Plethodon glutinosus</i>
Northern dusky salamander	<i>Desmognathus fuscus fuscus</i>
Northern red salamander	<i>Pseudotriton ruber ruber</i>
Northern two-lined salamander	<i>Eurycea bislineata</i>
Four-toed salamander	<i>Hemidactylum scutatum</i>

## 2. Inventory of Resources, Facilities, and Use

**Table 2-9 Reptile and Amphibian Species List for the Southern Staten Island Natural Area**

Common Name	Scientific Name
<b>Anura</b>	
Eastern spadefoot	<i>Scaphiopus holbrookii holbrookii</i>
American toad*	<i>Bufo americanus</i>
Fowler's toad	<i>Bufo fowleri</i>
Upland (Northern) chorus frog	<i>Pseudacris triseriata feriarum</i>
New Jersey chorus frog	<i>Pseudacris triseriata kalmi</i>
Spring peeper*	<i>Pseudacris crucifer</i>
Northern cricket frog**	<i>Acris crepitans crepitans</i>
Northern gray treefrog	<i>Hyla versicolor</i>
Wood frog	<i>Rana sylvatica</i>
Southern leopard frog	<i>Rana sphenoccephala</i>
Northern leopard frog	<i>Rana pipiens</i>
Pickerel frog	<i>Rana palustris</i>
Green frog*	<i>Rana clamitans melanota</i>
Bullfrog*	<i>Rana catesbeiana</i>

Notes:

\* Reptile/amphibians observed.

\*\* Reptile/amphibians of rarity for area.

### 2.1.3 Visual/Scenic Resources/Land Protection

#### 2.1.3.1 Travel Corridors

##### Mount Loretto

The natural scenic resources viewed from Hylan Boulevard are exceptional. The northern edge of the property is bordered by Hylan Boulevard and extends south into Raritan Bay. Several forest hedgerows bisect the rolling grasses and meadows on the property, adding depth and contrast to the view. Beyond the Mount Loretto administrative barrier, there are two remnant paved roads (Kenney Road and Cunningham Road), providing recreational access and excellent views of the property (Figure 2-15, Visual Resources – Observation Points and photos).

##### Lemon Creek

The NYSDEC portion of Lemon Creek can be observed from the edge of Hylan Boulevard Bridge looking north. The bridge provides an excellent vantage point for viewing the wetland and observing wildlife. There is also an excellent view of the sub-unit from Bayview Avenue looking west across the wetland.

##### Bloesser's Pond

Because of the dense vegetation lining Woodvale Avenue, no uninterrupted scenic resources can be viewed from the neighboring roadways. However, the view of

## **2. Inventory of Resources, Facilities, and Use**

the forest stand provides a unique experience in Staten Island, where undeveloped forested land is rare.

### **Arden Heights**

Because of the dense vegetation lining Woodrow Road, no uninterrupted scenic resources can be viewed from the neighboring roadways. However, similar to Bloesser's Pond, the view of the forest stand provides a unique experience in Staten Island, where undeveloped forested land is rare.

#### **2.1.3.2 Observation Points**

##### **Mount Loretto**

Several sites on the Mount Loretto property provide excellent views of the sub-unit. Topographically, the highest publicly permissible point at Mount Loretto is on the eastern edge of the property near the wood fence surrounding the lighthouse parcel. There are panoramic views north towards Hylan Boulevard, south towards Raritan Bay, and west towards the edge of the property from this point. In addition, near the site of the old St. Elizabeth's school at the top of the small hill, views are available to the north, south, and east.

##### **Lemon Creek**

The best vantage point to view Lemon Creek is from the edge of the Hylan Boulevard Bridge. Another beautiful view exists on the north shore of Lemon Creek where a small, elevated opening provides panoramic views towards Prince's Bay. There is also an excellent panoramic view from each of the three small bridges on Bayview Avenue.

##### **Bloesser's Pond**

There are no landforms that offer potential summit and/or outcrop views of Bloesser's Pond, but the dense forest habitat provides excellent opportunity to view wildlife and enjoy the outdoors. In addition, there is a path leading from Woodvale Avenue into the property offering views of Bloesser's Pond.

##### **Arden Heights**

There are no landforms that offer potential summit and/or outcrop views of the Arden Heights sub-unit, but similar to Bloesser's Pond, there are incredible views of natural forest stands and ponds. In addition, along the western property line there is an excellent view of the pond and forest stands.

#### **2.1.3.3 Other Natural Areas/Notable Land Features**

##### **Mount Loretto**

Along the shoreline of Mount Loretto there are bluffs that extend along the majority of the waterfront, rising west to east, reaching a peak height of 75 feet asl near the lighthouse. The high point of the property lies approximately 500 feet from the eastern boundary of the property, before dropping abruptly to a tidal wetland

## **2. Inventory of Resources, Facilities, and Use**

area. Below the bluffs, a rocky sand beach stretches the entire length of the property. A local artist and nature enthusiast has developed countless natural rock and wood sculptures along the shoreline. In addition, Mount Loretto harbors five bodies of water, four of which are freshwater wetlands, the fifth being a tidal wetland.

### **Lemon Creek**

The most notable land feature located in the sub-unit is Lemon Creek, which meanders from the east and west through the property towards Hylan Boulevard and Prince's Bay.

### **Bloesser's Pond**

The most notable land feature is Bloesser's Pond, which lies along the northern edge of the NYSDEC sub-unit. Other notable features include large mature stands of trees, rare in this part of urbanized Staten Island.

### **Arden Heights**

The most notable feature at Arden Heights is the large State-owned pond bordering the western edge of the NYSDEC sub-unit. The pond provides excellent habitat for birds, reptiles, and amphibians, and other wildlife. Furthermore, mature forest stands provide excellent habitat for wildlife and offer good views of natural areas.

#### **2.1.3.4 Open Space**

### **Mount Loretto**

The majority of Mount Loretto has magnificent scenic value. The large amount of open grassland provides excellent views, and the shoreline and bluffs provide similar views of Raritan Bay.

### **Lemon Creek**

Marsh grasses dominate the wetland area of Lemon Creek, providing excellent habitat for native species as well as an uninterrupted view of the entire wetland.

### **Bloesser's Pond**

There are no long vistas at Bloesser's Pond, but the natural scenery is beautiful and rare in this part of Staten Island with excellent views of mature tree species.

### **Arden Heights**

There is no significant open space at Arden Heights except for the bordering pond on State property. However, the sparse understory and the large mature trees provide excellent views of the management area.

## **2.2 Man-Made Facilities**

### **2.2.1 Mount Loretto**

#### **Buildings**

Bordering the shoreline above the bluffs on the southeastern edge of the property are two historically significant buildings. The lighthouse and carriage house have existed on the property since the late 1800s. A plastic/canvas-covered tractor shed is located east of the lighthouse. Additionally, there is the potential opportunity to construct more educational kiosks on the property in the future (Figure 2-16, Site Plan with Man-Made Facilities).

#### **Roads, Trails, and Parking Areas**

There is a gravel parking lot adjacent to Hylan Boulevard on the northeastern corner of the sub-unit. The parking lot provides space for 14 cars.

Approximately 6,300 linear feet of paved roads traverse the property. Two roads, Kenney Road and Cunningham Road, traverse north/south from Hylan Boulevard to the shoreline, connecting the various ponds and fields. A third road along the south shore of the property intersects the other two roads and provides access to the lighthouse and carriage house. Public vehicular access is not permitted on any of these roads.

In addition to the paved roads, there are two designated foot trails that traverse the property east to west: Wetland and Grassland Trails, respectively. Several numbered signs are placed along the Wetland Trail. Permissible activity on the paths is limited to walking. Horses are permitted along the shoreline, but they are prohibited from using any other parts of the property.

#### **Water Control Structures**

A series of culverts and underground water pipes exists in Mount Loretto. Historically, the pipes were used to irrigate the agricultural land, but are no longer maintained. Additional water control structures will be added as part of the DEP's Bluebelt Best Management Practice (BMP) program to manage stormwater. One location along the northeast corner of the property has been approved for Bluebelt development (BMP B-5). A flow monitor is going to be installed near Richard Avenue to regulate the stormwater input into the northwestern most wetland at Mount Loretto. A formal user agreement between NYSDEC and DEP regarding use of NYSDEC lands is pending.

#### **Fishing Access Sites and Parking Areas**

Adjacent to Mount Loretto is the city-owned Lemon Creek Park fishing pier and parking area, which has a capacity for 60 cars. Many anglers use the Lemon Creek parking area to access Mount Loretto to fish along the shoreline.

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### **Restrooms, Gates, Signs, Shrines, and Kiosks**

On the southern edge of the parking lot, an accessible portable toilet is installed as well as an informational sign describing Mount Loretto and its permissible activities. Across the entrance road next to the parking lot, a steel administrative barrier blocks public vehicular entry to the property. There is an identical administrative barrier in the northwest corner of the property at Kenney Road. There are also NYSDEC signs describing permissible activities and rules.

Two shrines, one stone and one brick, are present near the site of the leveled St. Elizabeth's school. The condition of the stone shrine is excellent but the other, brick shrine is overgrown with ivy and barely discernable.

### **Miscellaneous**

Heading south along the Mount Loretto center road (Cunningham Road) toward the beach are several old sites on which buildings once stood and blacktops existed. There are five existing blacktops (asphalt pads) and one large mound, which was historically the site of the St. Elizabeth's school.

Along the shoreline several stone structures have been constructed as natural artwork bordering the edge of the shoreline. The stone structures range in size and height and extend down the shoreline nearly .5 miles.

### **2.2.2 Lemon Creek**

#### **Roads, Trails, and Parking Areas**

Off of Oswald Place on the northern edge of Lemon Creek, a short footpath leads to a point overlooking the property. Similarly, a very short footpath is present off of Bayview Avenue between two residential houses leading to the water. There are no designated parking areas; however, there is parking access on all of the roads adjoining the Lemon Creek property except for Hylan Boulevard.

#### **Buildings**

There are no buildings at Lemon Creek.

#### **Water Control Structures**

On the northwest side of the property, off of Bayview Avenue, three bridges cross the border of the property. Each bridge has a concrete culvert running beneath the road connecting the two wetlands. On the southern edge of the property bordering the NYC Department of Parks and Recreation property is a large bridge crossing Lemon Creek. Riprap is present beneath and alongside the edges of the Hylan Boulevard Bridge.

## **2. Inventory of Resources, Facilities, and Use**

### **Signs**

There are a limited number of NYSDEC property signs bordering the sub-unit. In addition, several DEP Bluebelt signs are present on the western edge of the property on the edge of Bayview Avenue.

### **Other Structures**

Several freestanding bird boxes that are present on the NYSDEC Lemon Creek property are in poor condition.

### **2.2.3 Bloesser's Pond**

#### **Roads, Trails, and Parking Areas**

A single-track footpath leads into the property from Woodvale Avenue. The walking path does not lead to a clear destination, nor is it actively patrolled or maintained by NYSDEC staff. No paved roads exist on the property, but Woodvale Avenue on the eastern edge of the property borders the sub-unit. No designated parking exists on the property; however, vehicle parking is legal adjacent to the property on Woodvale Avenue.

#### **Buildings**

No buildings exist at Bloesser's Pond.

#### **Water Control Structures**

A DEP Bluebelt stormwater management culvert crosses Woodvale Avenue into Bloesser's Pond adjacent to the NYSDEC property.

#### **Signs**

There are a limited number of NYSDEC property signs and DEP Bluebelt signs bordering Bloesser's Pond along Woodvale Avenue.

### **2.2.4 Arden Heights**

#### **Roads, Trails, and Parking Areas**

A single-track footpath leads into the 8-acre property from Woodrow Road. The footpath leads to the western edge of the property and the pond. The foot path is not patrolled nor is it actively maintained. No paved roads exist on the property, but Woodrow Road on the eastern edge of the property borders the management area. There are no designated parking areas at the Arden Height's property, but parking is available along Woodrow Road. Aside from the footpath, no significant man-made structures occur on the property apart from debris (abandoned cars). Private residences border the northern edge of the property.

#### **Buildings**

No buildings exist at Arden Heights.

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### Water Control Structures

One culvert exists on the edge of Woodrow Road and Alexander Road near the northeastern corner of the NYSDEC property. The culvert runs beneath Woodrow Road carrying stormwater runoff into the sub-unit.

### Signs

There are a limited number of signs located at Arden Heights including NYSDEC property signs and signs posting rules and regulations.

## 2.3 Past Influences

A preliminary literature review, historic map analysis, site file check, and walk-over reconnaissance of the four sub-units was conducted to identify all known cultural resources. The historic map analysis, site file check, and walkover reconnaissance indicate that little or no development has occurred in Arden Heights, Lemon Creek, or Bloesser's Pond. The historic overview and map analysis are therefore relevant to Mount Loretto only.

### 2.3.1 Cultural

#### Mission of the Immaculate Virgin at Mount Loretto

The Mission of the Immaculate Virgin at Mount Loretto is a manifestation of the Catholic Church's response to a dire societal dilemma that began in the second half of the nineteenth century. At that time, the need for orphanages had been exacerbated by waves of typhus and other epidemics that left in New York an estimated 40,000 children orphaned. In response to the growing crisis, the Children's Aid Society formed and initiated several programs. One such program was the Saint Vincent's Home for Homeless Boys of All Occupations at 53 Warren Street in lower Manhattan. To care for the children, the order of Sisters of Saint Francis of the Immaculate Conception was formed. Initially, the shelter was successful but only on a small scale. This changed in 1871, when Father John C. Drumgoole, an Irish immigrant, was given full control over the shelter. He lived at the shelter, attending to the needs of the children and patrolling the streets for destitute children. In an era of intense bigotry and racism, Father Drumgoole admitted children of all colors and creeds into his care.

In order to acquire the additional funds necessary to run the expanding shelter, Father Drumgoole created the Saint Joseph's Union. For an annual dues of 25 cents, members received Father Drumgoole's prayers and a copy of *The Homeless Child*, a publication that documented the ways in which the dues benefited the children and solicited donations. By 1878, Saint Joseph's Union had 300,000 members. With the union dues and contributions from the pope, world leaders, and thousands of sympathetic Catholics, Father Drumgoole began the construction of a larger shelter, the Mission of the Immaculate Virgin, at the intersection of Great Jones and Lafayette Streets in Manhattan.

## ***2. Inventory of Resources, Facilities, and Use***

The 10-story, Mission of the Immaculate Virgin shelter opened its doors in 1881 and was quickly filled with needy children. The overcrowding brought forth a plan for a large orphanage with academic and vocational training in an agricultural setting. After a brief search for a suitable property, Father Drumgoole settled on the Bennett Farm in Pleasant Plains in Staten Island. He purchased the 138-acre farm, including its machinery, livestock, crops, and 2,000 feet of Prince's Bay shoreline for \$22,000 in June of 1882. Soon after, he also purchased the adjacent, 70-acre Jessup farm and smaller Nance farm. He named the new campus Mount Loretto after an order of nuns known as the Ladies of Loretto.

The following year (1883), before the buildings at Mount Loretto were even finished, Father Drumgoole began moving children there from the Manhattan and associated Fort Washington shelters. There were soon over 600 children housed at Mount Loretto. The campus was divided by gender. The "boys' side" was north of Hylan Boulevard and the "girls' side" was to the south. With a staff of seven teachers, the children received commercial, vocational, and academic training. By 1886, Father Drumgoole was caring for a total of 1,180 children at the Missions of the Immaculate Virgin at Mount Loretto and Manhattan.

The children at Mount Loretto made their own clothes and grew their own corn, wheat, potatoes, and other vegetables and raised cattle, pigs, chickens, and horses. As a result, Mount Loretto became one of the most productive farms on Staten Island. The farm boasted 300 head of cattle, 600 pigs, and 50 horses. It could produce 1,000 quarts of milk daily. The farming program operated at Mount Loretto until 1961. The self-sufficiency, union dues, and donations allowed the home to be completely free of debt.

By 1887, Mount Loretto cared for 1,600 children in two homes. The children were receiving vocational training including agriculture, carpentry, and mechanics. For their labor, they received pay equivalent to that of farmhands, which many saved to pay for their own farms after graduation. The shelter in Manhattan had developed into a center for commercial education. Its students were trained as bankers, truck drivers, tailors, and butchers; many of them went on to college.

The construction of the Church of Saints Joachim and Anne began that summer (1887). Unfortunately, Father Drumgoole would not survive to see its completion. Aged 71 years, Father Drumgoole died of pneumonia March 28, 1888. He was buried in a small cemetery at Mount Loretto among the few children that had died there. In 1900, his remains were exhumed and interned in a mortuary chapel.

Father Drumgoole was succeeded by Father James Dougherty as the mission's director. From 1888 to 1943, Mount Loretto also housed an asylum for the blind. The construction of Saint Elizabeth's, a five-story, brick, Georgian-style dormitory for girls, was completed in 1897. It housed 350 girls and the Sisters of Saint Francis. The building contained an auditorium that could seat over 300 people, a chapel that could seat over 400 people, a library, and beautiful stained glass win-

## ***2. Inventory of Resources, Facilities, and Use***

dows and icons. Duval Hall, a cruciform, three-story, brick building, was later constructed to the east of Saint Elizabeth's. At some time after 1917, the building became the Infants Home of the Immaculate Virgin.

Mount Loretto's final land acquisition occurred in 1926, when the Prince's Bay Lighthouse and surrounding land was purchased from the Federal Government. The keeper's cottage served as a residence for Mount Loretto's director. By 1947, Mount Loretto consisted of 42 buildings, including the Church of Saints Joachim and Anne, boys and girls dormitories and schools, infirmaries, a convent, and residences for priests. Most of these buildings were located north of the Hylan Boulevard, outside of the study area.

The mission spread over 700 acres and housed 700 boys, 360 girls, 85 Franciscan nuns, and 5 priests. By that time, it had already been the home of over 50,000 children and was the largest of the nine New York Catholic Charities' orphanages. The mission adopted a philosophy of promoting the children's welfare by emulating the lifestyles of typical families while enjoying the benefits of group living. With an in-house dental and medical program, it boasted an excellent healthcare record with few incidents of mortality. The program included two 24-hour infirmaries, three attending physicians (two of which were surgeons), several nurses, two dentists, and an ophthalmologist. The program was designed to meet the needs of the individual child, rather than provide a wholesale and uniform treatment. The mission's dietary, recreational, and guidance departments also ministered to healthcare.

With a teaching staff of approximately 45, children aged 3 to 18 were educated from nursery school through vocational and high school. The academic and commercial education was provided by Tottenville high school. Teachers appointed by the New York City Board of Education taught vocational school at the mission. There, the children over 12 years of age learned the skills of woodworking, electrical work, printing, tailoring, baking, painting, dairying, arts and crafts, music, homemaking, cooking, mechanics, sewing, and knitting.

Mount Loretto had varsity baseball, basketball, and football teams that competed with the nearby high school teams. The orphanage also had its own orchestra, which supplied the music for the frequent dances. Mount Loretto's brass band, established in 1882 by Father Drumgoole, marched down Fifth Avenue in every Saint Patrick's Day Parade for almost a century.

During the 1960s Mount Loretto de-emphasized its identity as a Catholic orphanage and became a foster care agency in cooperation with the City. By 1964, the orphanage no longer cared for children under the age of six. At that time, there were over 900 boys and girls, aged 6 to 18 living there.

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Saint Elizabeth's continued to be used as a residence until 1988 when the girls were moved to the boys' side of Mount Loretto. It was then used as an administrative building until 1992 when it was completely vacated.

In 1998, the Catholic Archdiocese sold the 194-acre, girls' side of Mount Loretto for a little more than half of its value so that its natural and recreational resources could be made available to the public. The property was sold to the Trust for Public Land. The sales contract mandated that NYSDEC would purchase the land from the trust in three phases.

Unfortunately, a fire set by two teenage boys in March of 2000 devastated Saint Elizabeth's. Deemed unsafe by the city, Saint Elizabeth's structural remains were ordered to be demolished. The terms of the sale of the property, stipulated that the Archdiocese would be responsible for any demolition costs should it become necessary prior to the completed transfer of the land to the NYSDEC. At a cost of \$800,000, the demolition of the ruin commenced April 3, 2000. The Archdiocese also agreed to have Duval Hall demolished due to the lack of structural integrity. Today, all that remains are grassy mounds where the buildings once stood.

A three-by-four foot panel of stained glass depicting Father Drumgoole and three orphans was salvaged by Mission staff just days before the fire. It has since been installed in Mount Loretto's administrative building. Five statues were also removed from Saint Elizabeth's prior to the sale of the property. The rooftop crosses and cornerstones of Saint Elizabeth's and Duval Hall were also salvaged and moved to the Loretto campus north of Hylan Boulevard. In addition, an independent photographer toured and photographically documented the ruins of Saint Elizabeth's and Duval Hall prior to their destruction. Images of the buildings, including stained glass panels and icons, can be viewed and purchased at his website (<http://www.oboylephoto.com/ruins/index.htm>).

### **Historical**

**Prince's Bay (Red Bank) Lighthouse.** Also known as the Red Bank Lighthouse, the original Prince's Bay Lighthouse was built of rubble stone in 1828 on the highest point along the shoreline of the southern end of Staten Island, where the cliffs rise 85 feet above the water. The tower emitted a fixed white light from a height of 106 feet above sea level. The original beacon contained 10 or 12 lamps with reflectors. At that time, the access road from Hylan Boulevard approached the lighthouse from the northeast. The lighthouse aided the ships and the fishermen and oystermen that sailed along the coast of Staten Island toward New York and New Jersey. Oyster farming was one of Staten Island's primary industries throughout the nineteenth century.

In 1837, a Navy Commission recommended that additional westward reflectors be added to the beacon. The Navy had noticed that the light emitted from the Prince Bay lighthouse was only visible from a north-northeast to south-southwest direc-

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tion which was only useful for ships traveling to and from New York City. The recommendation was put into place shortly thereafter.

In 1857, a 3.5-order Fresnel lens was installed, displaying a flashing white light every two seconds. In 1863, a wood-framed tower was built to temporarily replace the rubble stone tower due to its poor condition. This wood-framed tower served as a temporary lighthouse while the new brownstone tower was under construction. In 1864, construction of the brownstone tower was completed and the Fresnel lens was then transferred from the temporary tower. The new lighthouse contained a cast-iron staircase that wound around the central pillar, leading up to the lantern room. In 1890, the light source was downgraded to a fourth-order Fresnel.

The two-story brownstone keeper's cottage was constructed next to the tower in 1868. A passageway connects the cottage to the lighthouse. The first floor contained a kitchen, pantry, dining room and a sitting room. There were four bedrooms upstairs and the attic contained two more rooms. The former residence was torn down following the completion of the new cottage.

The lighthouse was deemed unnecessary and deactivated in August of 1922. The lighthouse was unnecessary because acetylene lights were installed in Raritan Bay making the Prince's Bay Lighthouse redundant. In 1926, the lighthouse and property were purchased at an auction by the Mission of the Immaculate Virgin, a residence and school for seventeen hundred orphans that surrounded the lighthouse on three sides. The lantern was replaced by a statue of the Virgin Mary called "Star of the Sea". The U.S. Coast Guard constructed a new tower in 1953 on the mission's property, southeast of the lighthouse. The U.S. government paid the Mission \$32 per year to place the range light on the small piece of land.

The lighthouse and the keeper's house are associated with the name of John Cardinal O'Connor, a native of Philadelphia, where he was ordained as a priest in 1945. In 1983 he became Bishop of Scranton, Pennsylvania, and in 1984, Archbishop of New York. He was elevated to a Cardinal in 1985.

During 1990s Cardinal O'Connor spent weekends in the keeper's house and intended to retire there. It appears that the interior of the keeper's house was remodeled for his use. O'Connor became ill and died on May 3, 2000.

In 1999, the lighthouse, 145 acres of surrounding land and 45 marine acres were jointly purchased from the Archdiocese of New York by New York State under an agreement with the Trust for Public Land. The State bought out the trust's two-thirds portion of land over the following two years.

Currently, the property is known as the Mt. Loretto Unique Area and is managed by the New York State Department of Environmental Conservation. The lighthouse has been reactivated and is not open to the public.

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**Historic Maps and Photographs.** No structures or features were identified in Arden Heights, Lemon Creek, or Bloesser's Pond on any of the historic maps or photographs.

An 1874 map of Mount Loretto shows three parcels and four structures. The western parcel contained one structure and was owned by I.K. Jessup. The large, central parcel contained two structures and was owned S.N. Bennett. The east parcel was owned by the U.S. government and contained the lighthouse and keepers cottage. The map depicts the access road to the lighthouse along the coastline to the northeast to Hylan Boulevard. (Figure 2-17 – 2-21, Historic Maps and Photos).

An 1898 map of Mount Loretto shows many of the improvements made by the orphanage. The structure owned by Jessup in 1874 was still extant and identified as "Old Saint Elizabeth's." In addition, this map depicts a pavilion, two stables, and two associated buildings. To the south and east of the Old St. Elizabeth the map shows the new St. Elizabeth' mission building and another structure identified as "Old Portiuncula Cottage." There was also a schoolhouse on Hylan Boulevard identified as "B.S.SH." To the southwest of the schoolhouse, there was a pond and icehouse. There was an outbuilding identified as a "seed house" in the center of the parcel. In addition to the lighthouse and keepers cottage depicted on the 1874 map, the carriage house was also depicted. There are several roads depicted on the map that are no longer present. To the south of the new Saint Elizabeth's, there was a large pier identified as a floating bathhouse. To the south of the Old Portiuncula Cottage, there was another large pier identified as a floating dock.

A 1907 map of Mount Loretto indicates few changes from the 1898 map. The pavilion and one of the buildings associated with Old Saint Elizabeth's were no longer depicted.

A 1911 map of Mount Loretto indicates few changes from the 1898 map. The icehouse was no longer depicted. There were numerous roads, including the original access road to the lighthouse, that are no longer present. At that time, the northwestern third of the property was under cultivation and the western area was an open field, likely pasture. A narrow gage railway connected Hylan Boulevard with the floating dock. Two large piers, several smaller jetties, and a sewer pipe extended into the bay from the shoreline. The map indicates that the waters off the shore of Mount Loretto had two "Water Grants" given to Bernard Reilly and James E. Dougherty in the 1880s. The grants likely gave them right to farm the rich oyster beds that were common off Staten Island.

A 1917 map of Mount Loretto indicates few changes from the 1911 map. The access road to the lighthouse is illustrated as having a bridge that crosses the small creek in the east edge of the property.

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A 1935 aerial photograph of the girls' side of Mount Loretto shows Saint Elizabeth's and Duval Hall on the west and east sides of the main entrance road, respectively. There is a covered walkway that connects Saint Elizabeth's to a play pavilion to its northeast. There is also a fenced-in asphalt pad, likely a tennis court, further to the north. At the foot of the main road, by the beach, stood a chevron shaped building. The sandy beach was roughly 75 feet wide and was maintained by, low, wood jetties and larger stone piers. A reinforced concrete wall prevented shoreline erosion. The remains of the jetties, concrete wall, and chevron shaped building are still visible. The concrete wall was reinforced with a variety of steel scraps.

A 1999 map of Mount Loretto no longer illustrates any of the structures formerly identified as Old Saint Elizabeth's.

**Existing Historical Resources.** Today, the only surviving structures at Mount Loretto are the Prince's Bay Lighthouse and its keeper's house and carriage house.

The only aboveground remains relating to the St. Elizabeth girls orphanage south of Hylan Boulevard are 2 shrines of brick and mortared field stones in the vicinity of the orphanage.

**Potential Historic Archaeological Resources.** Historical sources and field observations indicate that Mount Loretto contained a number of structures datable to 19<sup>th</sup>-20<sup>th</sup> centuries. These included:

- St. Elizabeth's girls' orphanage (1883);
- The boat house and bath house south of the former location of the St. Elizabeth building (20<sup>th</sup> century);
- Six structures associated with the Old Saint Elizabeth's orphanage (former I.K. Jessup's structure, pre-1874);
- Duval Hall (infant orphanage/girls dormitory, pre -1935);
- The early school house (pre-1898);
- Brick one-story school (circa 1950s);
- The ice house (pre -1898);

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- The seed house (pre- 1898);
- The two structures depicted in the S.N. Bennett parcel (pre -1874);
- The chevron shaped building in the 1937 photograph;
- Underground brick-lined vaulted heating tunnels leading from the mission north of the Hylan Boulevard to the former location of the St-Elizabeth orphanage; and
- Remnants of a railway.

The locations of all or some of these former structures may contain historic archaeological resources.

**Known Prehistoric Archaeological Resources.** The files of the New York State OPRHP were reviewed in order to identify known cultural resources within or adjacent to the four Southern Staten Island Natural Areas. No historic archaeological sites are recorded within or adjacent to any of the study areas. Five prehistoric archaeological sites are known to be within or adjacent to Mount Loretto, Lemon Creek, and Bloesser’s Pond. No sites were identified within or adjacent to the Arden Heights Study Area. A summary of the identified sites is presented in Table 2-10.

**Table 2-10 Prehistoric Sites Within or Adjacent to the Study Area**

Site Number	Name	Location	Description
NYSM #741	Red Bank (Area)	Approximately 9-acre site centered on the former girls’ home within Mount Loretto.	“Traces of occupation” transcribed from an 1898 site file map. Reported by A.B. Skinner in 1909.
NYSM #4620	No Information.	Approximately 90-acre site corresponding to the south portion of Mount Loretto.	A camp reported by A.B. Skinner and published by Arthur C. Parker in 1922.
NYSM #4621	No Information.	A roughly 350-acre site that overlaps with Lemon Creek and Mount Loretto and is adjacent to Bloesser’s Pond.	“Traces of occupation” reported by A.B. Skinner and published by Arthur C. Parker in 1922.
NYSM # 7264	No Information.	Large, undefined area centered on Lemon Creek.	Middens, possibly shell, in a few small isolated heaps. Reported by A.B. Skinner in 1909 and published by Arthur C. Parker in 1922.
NYSM #8484	No Information.	Undefined area north of the former girls’ home within Mount Loretto.	No Information.
NYSM #8489	No Information.	200 feet west of Mount Loretto.	“Traces of occupation”.

In addition, numerous prehistoric sites are located along the south shore of Staten Island in the vicinity of Mount Loretto, Lemon Creek, and Bloesser’s Pond. No

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historic archaeological sites are recorded as within or adjacent to the project area in the files of the NYS OPRHP (Office of Parks, Recreation, and Historic Preservation). A summary of the sites is presented in Table 2-11.

**Table 2-11 Prehistoric Sites in the Vicinity of Study Areas**

Site Number	Name	Distance from the Nearest Part of the Project Area	Description
NYSM #736	Wolfes Pond	2,700 feet southeast of Lemon Creek.	Shell Midden reported by A.B. Skinner. May be same site as NYSM 4610.
NYSM #4610	No Information.	2,700 feet southeast of Lemon Creek.	Small shell heap with potsherds and deer bone on a bluff overlooking the bay. Reported by A.B. Skinner and published by Arthur C. Parker in 1922.
NYSM #748	Hollowell	In vicinity, map is unclear.	Possibly Early or Middle Archaic period site. A vocational archaeologist found Kanawha projectile point with a bifurcated base.
NYSM #4609	No Information.	6,200 feet west of Mount Loretto.	Extensive shell mounds, burials, and a grooved axe. Reported by A.B. Skinner.
NYSM #4619	No Information.	4,200 feet west of Mount Loretto.	Camp reported by A.B. Skinner and published by Arthur C. Parker in 1922.
NYSM #7267	Burial Ridge	Not on map. This site is referenced in describing NYSM #4609's location.	Horn, bone implements, fabric, copper, and a grooved axe reported by George Pepper in 1895 and by Captain R.D. Wainwright n.d.
NYSM #8471	No Information.	1,400 feet west of Mount Loretto.	No Information.
NYSM #8486	No Information.	7,000 feet west of Mount Loretto.	Camp transcribed from a 1904 site file map.
NYSM #8487	No Information.	6,500 feet west of Mount Loretto.	Shell midden.
NYSM #9295	No Information.	6,700 feet west of Mount Loretto.	No Information.
No Information	Manee 1,2	In vicinity, map is Mount Loretto.	Contained hearths.
No Information	Tottenville	In vicinity, map is unclear.	Large site that includes Burial Ridge. Late Woodland site with possible pre-Woodland and Protohistoric components.
No Information	Wards Point	In vicinity, map is unclear.	Four of the eight defined strata contained cultural materials. Hearths were also present.
No Information	Whyte Field	In vicinity, map is unclear.	Three, non-superimposed occupations with hearths on a sandy knoll.

### 2.4 Public Use

Lands within this management unit are open to the public for walking and bird watching, but Mount Loretto is the only sub-unit among the four NYSDEC prop-

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erties that is open for recreational activities other than walking and wildlife observation by the public. Therefore, this discussion is limited to opportunities available at Mount Loretto only.

Recreational opportunities on land abound at Mount Loretto ranging from walking, running, cross-country skiing, and sledding. Bicycling is allowed at Mount Loretto only on the paved asphalt surfaces, and horseback riding is limited to the shoreline only. The use of ATVs, snowmobiles, and other off-road vehicles is strictly prohibited.

In addition, wildlife observation, painting, photography, and other passive recreational activities are encouraged at all of the sub-units. With respect to the fisheries at Mount Loretto, angling is permitted as long as it is done in accordance with state angling regulations. The majority of fishing is done on the eastern and western areas of the shoreline. The water resources at Mount Loretto may be utilized by non-motorized watercraft such as canoes and kayaks, but they may not remain overnight. Motorized watercrafts, including Jet skis, are not allowed to travel closer than 100 ft from the shoreline or where they can impact fishing.

The Division of Public Affairs and Education has an education staff available to offer periodic public walks and programs at Mount Loretto on a variety of natural history topics. Beach cleanups have been coordinated by the educator, who also provides roving interpretation at the sites. In the summer of 2008, wayside signs featuring New York State nature symbols, such as a beaver, sugar maple, bluebird, and scallop, were erected at Mount Loretto.

Since Mount Loretto's acquisition in 1999, documentation of visitor numbers and types of recreation has been minimal. Only in the summer of 2004 were visitor numbers, number of cars, and types of recreation observed and quantified. Visitor numbers were observed over an 11-week period from June to August. An observer watched from the lighthouse two to four days a week, oftentimes on Fridays and Saturdays. Visitor numbers were recorded in the morning and in the afternoon for approximately 1.5 hours each visit. The number of cars in different parking areas were noted, as well as the different types of activities, including dog walkers, walkers/runners, anglers, bicyclers, and boaters. More specifically, the types of trails most used, and the types of fishing (beach, pier, wading) and boating (seaside, bayside) were observed. The details can be reviewed in Table 2-12.

**Table 2-12 Visitor Numbers and Recreational Use at Mount Loretto  
(Sample count: June – August, 2004)**

	June	July	August	Total
<b>Cars</b>				
At 1 <sup>st</sup> gate	0	0	0	<b>0</b>
In parking lot	18	23	17	<b>58</b>
Along road	0	0	0	<b>0</b>
Sharrott Ave. Pier	86	122	104	<b>312</b>

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**Table 2-12 Visitor Numbers and Recreational Use at Mount Loretto  
(Sample count: June – August, 2004)**

	June	July	August	Total
<b>People</b>				
Dog Walkers	9	10	11	<b>30</b>
Number of dogs	11	11	11	<b>33</b>
<b>Walkers</b>	<b>36</b>	<b>54</b>	<b>60</b>	<b>150</b>
Wetlands trail	7	13	24	<b>44</b>
Grasslands trail	4	2	9	<b>15</b>
Beach	19	30	19	<b>68</b>
Other	6	9	8	<b>23</b>
<b>Anglers</b>	<b>21</b>	<b>26</b>	<b>42</b>	<b>89</b>
On shore	10	21	38	<b>69</b>
Wading	10	3	2	<b>15</b>
Leaving	1	2	2	<b>5</b>
<b>Other Activities</b>				
Boating	107	157	112	<b>376</b>
Bay side	18	39	14	<b>71</b>
Sea side	89	118	98	<b>305</b>
Bicycles	2	2	7	<b>11</b>

Analysis of the data indicates that Mount Loretto is used most by boaters; however it is difficult to determine whether the boaters were within the Mount Loretto property line. Second to boaters, walkers traveling along the beach were the largest group using Mount Loretto. This is supported by the parking lot numbers, which weigh heavily towards parking at the Sharrott Avenue Pier in comparison to the Mount Loretto parking lot. Angling is also a popular activity at Mount Loretto, predominantly occurring along the shoreline. Lastly, according to recorded observations in 2004, walking along the Wetland trail is three times more popular than walking along the Grassland trail.

After discussions with operations and facilities managers as well as other people frequenting Mount Loretto (education groups), the most popular time of year is during the summer months. The Staten Island Institute for Arts and Sciences reported that they conduct weekly educational walks during the summer and significantly fewer in the fall, winter and spring. No quantifiable information has been collected during the rest of the year, however qualitative reports indicate that sledding is a popular activity at Mount Loretto in the winter, with some days approaching more than 120 people. There is no quantitative or qualitative information regarding public use at any of the other management areas.

## **2.5 The Americans with Disabilities Act and Its Influence on Management Actions for Recreation and Related Facilities on State Forests**

The Americans with Disabilities Act (ADA), along with the Architectural Barriers Act of 1968 (ABA) and the Rehabilitation Act of 1973; Title V, Section 504, have had a profound effect on the manner by which people with disabilities are afforded equality in their recreational pursuits. The ADA is a comprehensive law prohibiting discrimination against people with disabilities in employment practices, use of public transportation, use of telecommunication facilities, and use of public accommodations. Title II of the ADA applies to the Department and requires, in part, that reasonable modifications must be made to its services and programs, so that when those services and programs are viewed in their entirety, they are readily accessible to and usable by people with disabilities. This must be done unless such modification would result in a fundamental alteration in the nature of the service, program or activity or an undue financial or administrative burden to the Department. Since recreation is an acknowledged public accommodation program of the Department, and there are services and activities associated with that program, the Department has the mandated obligation to comply with the ADA, Title II and ADA Accessibility Guidelines, as well as Section 504 of the Rehabilitation Act.

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

### **The Americans with Disabilities Act Accessibility Guidelines**

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

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Currently adopted ADAAG address the built environment: buildings, ramps, sidewalks, rooms within buildings, etc. The Access Board has proposed guidelines to expand ADAAG to cover outdoor developed facilities: trails, camp grounds, picnic areas, and beaches. The proposed ADAAG is contained in 36 CFR Part 1195.

ADAAG apply to newly constructed structures and facilities and alterations to existing structures and facilities. Further, it applies to fixed structures or facilities, i.e., those that are attached to the earth or another structure that is attached to the earth. Therefore, when the Department is planning the construction of new recreational facilities, assets that support recreational facilities, or is considering an alteration of existing recreational facilities or the assets supporting them, it must also consider providing access to the facilities or elements for people with disabilities. The standards which exist in ADAAG or are contained in the proposed ADAAG also provide guidance to achieve modifications to trails, picnic areas, campgrounds (or sites) and beaches in order to obtain programmatic compliance with the ADA.

### **ADAAG Application**

Current and proposed ADAAG will be used in assessing existing facilities or assets to determine compliance to accessibility standards. ADAAG is not intended or designed for this purpose, but using it to establish accessibility levels lends credibility to the assessment result. Management recommendations in each UMP will be proposed in accordance with the ADAAG for the built environment, the proposed 36 CFR Part 1195 for outdoor developed areas, the New York State Uniform Fire Prevention and Building Codes, and other appropriate guiding documents. Until such time as the proposed ADAAG becomes an adopted rule which will apply to state governments, the Department is required to use the best information available to comply with the ADA; this information includes, among other things, the proposed guidelines.

An accessible portable toilet is available at the parking lot at Hylan Boulevard entrance to Mt. Loretto. Plans to create an accessible parking spot and an access route to the portable toilet are mentioned in the "Proposed Management Recommendations" section. The road from the Hylan Boulevard parking lot to a point near the lighthouse has been assessed using the Universal Trail Assessment Process. Information relating to the slope, cross-slope, surface conditions, width of the road and any obstructions to use by a wheelchair have been collected and will be available to the public. This information will enable users to make their own decisions on the use of the road as a pedestrian route based on their own abilities. Future development of trails will follow the guidelines for accessibility put forward by the Federal Access Board relating to outdoor developed areas.

## **2.6 Relationship between Public and Private Land**

### **2.6.1 Land Ownership Patterns**

Fully developed private land adjacent to Mount Loretto, Lemon Creek, Bloesser's Pond, and Arden Heights has a negative impact on the management areas. Negative impacts include littering, trespassing, boundary disputes, conflicts with public users, and dilution of recreational and aesthetic experiences. These impacts are of concern within these properties, given the significant urbanization of the surrounding area on Staten Island.

#### **Mount Loretto**

Mount Loretto is bordered by residential properties along the western edge of the property. Access to the edge of the property is minimal and no walking paths exist within several hundred feet of the property boundary. Therefore, permissible activities at Mount Loretto have no impact on adjacent private landowners. Concurrently, adjacent private lands have moderate impact on the facilities and activities at Mount Loretto. For example, it has been speculated that illegal dumping of grass cuttings has altered the flow of the stream channel along Richard Avenue.

#### **Lemon Creek**

Lemon Creek is bordered by residential properties on the north, east, and western sides of the property. The southern border of Lemon Creek lies contiguous to city parkland and Hylan Boulevard. The impact on adjacent private lands is minimal, but trespassing and littering by neighbors is a problem on the state-owned property. Furthermore, septic leaching is a major concern along the northeast edge of the property.

#### **Bloesser's Pond**

Bloesser's Pond is bordered by nearby residential houses on the western and southern edges of property as well as DEP state land on the northern edge. Residential development has a moderate impact on the management area including illegal dumping, littering and septic leaching.

#### **Arden Heights**

The Arden Heights property has residential housing along the northern and southern border as well as adjacent city park land along the western border. Illegal dumping, littering and stormwater runoff are concerns due to the proximity to Bloomingdale Woods and neighboring residential areas.

### **2.6.2 Land Use Regulations**

#### **Zoning Regulations**

The general theme to planning and zoning in Staten Island is reemphasizing low-density development. The entire borough of Staten Island has been designated a Lower Density Growth Area. In August 2004, City Council adopted the Lower Density Growth Management Text amendments as proposed by the Mayor's Staten Island's Growth Management Task Force. The new rules apply to any de-

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velopment in residential districts within a designated Lower Density Growth Management Area, primarily affecting R1 through R5 residential zoning districts. The rules call for maintaining and enhancing existing neighborhood character by reducing the density of new residential development, and by ensuring better quality site design. The proposed zoning changes apply to yards and open space, parking and related provisions, new bulk and lot size regulations, and to private road developments.

In addition to the new designation, Staten Island is also considering down zoning several areas to encourage lower density residential. In southern Staten Island, areas in Tottenville Waterfront, Tottenville, Richmond Valley, and Prince's Bay are under consideration for down zoning from mid-density residential to low-density residential. The City is also currently evaluating demapping commercial overlay areas in Tottenville, Richmond Valley, and Great Kills that allow higher density residential. Once demapped, residential development will not be permitted.

### **Current Zoning**

The New York City Zoning Resolution establishes zoning districts, and sets forth the regulations governing land use and development within each district. Specific zoning for lands within and surrounding each management unit is discussed below. The zones and the uses within them are defined in the City of New York Zoning Resolution.

### **Mount Loretto**

Mount Loretto is zoned as R1-1 permitting single-family detached residences and community facilities. Land bordering the property on the north is zoned R3-2, allowing general residential units and community facilities while lands to the west, originally zoned R3X (single- and two-family detached residences and community facilities), has recently been rezoned R1-1. The area was rezoned to emphasize the necessity to preserve open areas near Mount Loretto. Open areas are unique to Staten Island, which has experienced heavy development and urbanization in the last several decades. By down zoning sections of Southern Staten Island, some of the original natural character of the area can be preserved. The area east of Mount Loretto is zoned as C3 Waterfront Recreation and allows both residential and community facility uses.

### **Lemon Creek**

Lemon Creek is zoned R3X permitting single- and two-family detached residential units and community facilities. Land to the north and west of the management area are also classified as R3X. Lands to the immediate south are classified as R3-2, which permits both general residential units and community facilities.

### **Bloesser's Pond**

Bloesser's Pond is zoned R3X, which permits single- and two-family detached residential units and community facilities. Lands to the north as well as east of

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the unit are also zoned R3X. Lands immediately to the west and south of the property are zoned R3-2, which allows both general residential units and community facilities. The Mount Loretto Resurrection Cemetery is located to the west.

### **Arden Heights**

Bordering the western edge of the Arden Heights Management Area is undeveloped DEP state land. The areas to the north, east, and south of the property are zoned R3-1 permitting single- and two-family detached and semi-detached residential units.

### **South Richmond Development District**

The southern portion of Richmond County in Staten Island has been classified as the South Richmond Development District (SRD), a Special Purpose District adopted by the City of New York Zoning Resolution in 1975. Until approximately 1965, Southern Staten Island was predominantly rural. The district was created to maintain the rural character of the area by mapping open space on both public and private lands. The purpose of this district is:

- To guide future development in accordance with established land use plans for the area;
- Promote balanced land use and development of future land uses, including open space;
- Avoid destruction of natural and recreational resources and to maintain the natural balance of the area with minimum disruption of natural topography and other natural features; and
- Promote the most desirable use of land. (City of New York, 2004).

The provisions of the SRD District Plan apply to all new developments, site alterations, and subdivisions. The District Plan also designates open space and an open space network, park streets, waterfront esplanade, and building setback lines.

### **Waterfront Development**

Chapter 2 of Article VI of the New York City Zoning Resolution outlines the special regulations applicable to waterfront areas. All development on zoning lots within waterfront blocks is subject to the provisions establishing public access and visual corridors. Water-dependent and waterfront-enhancement uses are defined here as well.

### **Additional Studies and Plans in Southern Staten Island**

**Staten Island West Shore Study.** The West Shore study area extends along the entire west shore of Staten Island, and is currently zoned for manufacturing. The total parcel is approximately 5,700 acres and includes wetlands. Since 2004, the

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Planning and Transportation departments have jointly been studying this area, specifically the land use and transportation uses. Historically, this area has been an underutilized area – over half of the area is currently vacant. The joint study will document the existing conditions, zoning, and traffic counts and provide an intersection analysis, employment trends, vacant property, and natural features.

**Staten Island South and West Shore Greenways Master Plan.** There is currently no continuous system of bicycle and pedestrian pathways along the south and west shore waterfront. As part of a city-wide effort to develop a comprehensive network of cycling lanes and greenways through the city, a route of approximately 17 miles of non-motorized commuting and recreational lanes and greenways has been proposed extending from Great Kills Park to the Conference House along Staten Island's south shore, continuing along the southern portion of the Arthur Kill to connect with Clay Pit Pond and Bloomingdale Parks. The goal of the Greenways Master Plan is to provide the public with a resource that will serve non-motorized commuting and recreational needs; improve waterfront access; connect natural and cultural resources; and link communities to one another, to employment centers, and commercial districts.

Because recommendations contained within the plan are not included in zoning regulation, they are not enforceable. Consequently, the master plan is often used as a negotiating tool with private developers.

**Staten Island Bluebelt Program.** The South Shore portion of Staten Island has a significant amount of freshwater wetlands. Development in the area has been serviced primarily by septic systems, instead of sanitary sewers. In the 1980's the NYC DEP created the Staten Island Bluebelt program. This award winning program aims to preserve and restore natural drainage corridors, called Bluebelts, including streams, ponds, and wetland areas for ecologically sound and cost-effective storm water management. It is crucial to preserve these wetland systems to allow them to perform their functions of conveying, storing and filtering storm water. For example, wetlands located within the watersheds located in the southern end of Staten Island, control flooding by temporarily storing flood waters. These wetlands protect adjacent and downstream property owners from flood damage. Bluebelts also serve as important areas for wildlife habitat and community open spaces.

The Bluebelt Program saves tens of millions of dollars in infrastructure costs when compared to providing conventional storm sewers. This program demonstrates how wetland preservation can be economically prudent and environmentally responsible.

Bluebelt plans have been completed for areas on the South Shore and include areas within Mount Loretto, Lemon Creek, Bloesser's Pond and Arden Heights. Plans are currently underway along the northeast edge of the island.

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### **2.6.3 Impact of NYS Ownership on Adjacent Lands**

While it is clear that the existence and use of the four management areas has an impact on the economy of the Staten Island region, through tourism and recreation, it is difficult to quantify. City park properties adjacent to the sites also provide for expanded recreational opportunities. Proximity to other natural areas owned by DEP and City parks also provide wildlife benefits, provide a sense of open space, and also may increase the value of surrounding residential development.

Visitors are attracted to the area for a variety of recreational and cultural uses. This benefits hotels, motels, groceries, service stations, restaurants, and sporting good stores.

There is no economic importance for game hunting on any of the Southern Staten Island sub-units, as it is not permitted. Fishing off the shoreline of Mount Loretto provides recreation and economic benefit to neighboring stores, however this benefit is difficult to quantify. Other passive recreational value of the resources at all four sub-units is significant. Birding is a popular activity at both Mount Loretto and Lemon Creek properties and likely provides economic benefit to the surrounding community. Additional passive recreational opportunities exist at Bloesser's Pond and Arden Heights, where wildlife observation may become more popular in the future.

### **2.6.4 Relationship to Adjacent Public Lands**

The New York City Department of Parks and Recreation owns a section of Lemon Creek that neighbor both Mount Loretto and NYSDEC's Lemon Creek. The adjoining public land provides very similar conditions to both properties, however the recreational opportunities on the Parks Dept. property far exceeds that of the NYSDEC Lemon Creek sub-unit. The NYSDEC Lemon Creek management area was not designed to provide recreational access in part because the parks department already developed their property for recreation. The Dept. of Parks property provides access to both NYSDEC sub-units and the fishing pier, which is a popular destination. The impact of the adjacent public Parkland is minimal to the NYSDEC properties.

Similarly, both Arden Heights and Bloesser's Pond adjoin city-owned land. Neither NYSDEC's nor city-owned management areas are designed for recreational use and therefore development is minimal within both properties. The impact each sub-unit has on another is minimal.

## **2.7 Physical, Biological and Social Capacity**

NYSDEC identified Mount Loretto as the only site within the Southern Staten Island Natural Area that would be actively managed among the four sub-units discussed in this UMP. Mount Loretto, like any other natural area, cannot maintain unlimited visitor use and recreational opportunities without the eventual loss of its critical, natural character. Therefore, monitoring of resource and social conditions

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is critical, in addition to implementation of long-term management objectives. In order to do so, “carrying capacity” must be defined with respect to the unit. Historically, carrying capacity has been defined as the maximum level of stress that an ecosystem can maintain. This definition has changed over time to include recreational uses. Unfortunately, applying recreational use to the traditional definition of carrying capacity is not adequate, in part because it has been found that the relationship between the amount of use and the resultant amount of impact is not linear (Krumpe and Stokes 1993). To illustrate this point, soil erosion from foot travel can increase disproportionately to the level of use, and for many activities, impacts occur at a very low level of use. Moreover, research has shown that many of the problems with recreational use were a function of human behavior rather than merely the numbers of people (Krumpe and Stokes 1993).

Therefore, to determine the appropriate amount of use at an area, the Lands and Forests Staff need to determine the level of change they believe is acceptable according to their long-term vision of the management area. The NYSDEC vision for the Southern Staten Island Natural Area is to develop Mount Loretto for passive recreation, research, and education activities and maintain the sub-unit in a “natural” grassland and upland forest community. The other three sub-units are not intended to be developed and will remain in their natural condition. However, management of these properties will be required since they could potentially be subject to degradation by adverse or excessive uses.

### **2.7.1 Physical/Social**

In general, the level of physical impact from human use at Mount Loretto does not appear to impact the natural resources of the property beyond its capacity to withstand passive recreational use (including fishing). However, the potential exists on all the management properties for overuse, inappropriate use, soil degradation, litter, and disturbance to critical habitats. In order to maintain management objectives and enforce the management area’s rules, NYSDEC hired a DEC Forest Ranger to oversee the care, custody and control of the four management areas. The NYSDEC will follow the below conditions to help continue to identify the necessary management actions at Mount Loretto, Lemon Creek, Bloesser’s Pond, and Arden Heights.

The identification of acceptable resource and social conditions as defined by measurable indicators;

- Analysis of the relationship between existing conditions and those desired;
- Determinations of the necessary management actions needed to achieve desired conditions; and,
- Establish a monitoring program to see if objectives are being met.

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### **2.7.2 Biological**

Wildlife use at Mount Loretto is limited to angling along the shoreline, organized bird watching, and passive observation. NYSDEC angling regulations are designed to protect fish populations from overexploitation; though oftentimes anglers do not follow the required 'take'. Therefore, strict enforcement must be managed to sustainably maintain the fish population to ensure over harvesting does not occur. Similarly, angling regulations must be enforced at Lemon Creek. Other wildlife use at all four NYSDEC properties includes birding and passive observation of other wildlife species.

### **2.8 Education, Interpretation, and Research**

Since acquiring Mount Loretto, NYSDEC's major interaction with the public has been through enforcement and limited educational activities with the forest ranger on-site. Occasional guided walks by the NYSDEC educator have been conducted since 2003. Education, interpretation, and research opportunities have been limited at Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond due to lack of staff to provide programs and to assess needs. NYSDEC encourages private organizations to conduct research and education programs where feasible, with approval and oversight provided by the department. Plans are underway to increase education, interpretation, and research opportunities at Mount Loretto; due to the more restricted management objectives of the three other properties, no NYSDEC-sponsored activities are expected to occur.

#### **2.8.1 Education**

In 2001, Division of Public Affairs and Education prepared a Draft Environmental Education Plan for Mount Loretto Management Area. Short-term goals included providing monthly nature walks for the general public, offering teacher workshops, creating school programs, and developing education and interpretive materials.

Division of Public Affairs and Education plans to work with other NYSDEC properties and nonprofit groups to increase education efforts at Mount Loretto. NYSDEC-sponsored workshops are currently being held on Staten Island to introduce educators to national environmental education programs such as WILD, Project WET (Water Education for Teachers) and Project Learning Tree. Because of the lack of facilities at Mount Loretto, these workshops are held in conjunction with other natural resource-based agencies and organizations. Future school programs at Mount Loretto include lessons on the varied habitat found on site. Topics such as wildlife, wetlands, grasslands, fire ecology, tidal wetlands, geology, and marine life will be featured. The national service program, AmeriCorps, will continue to play a critical role in providing programs for the general public and school groups.

#### **2.8.2 Interpretation**

NYSDEC staff are available to coordinate and conduct interpreted walks on topics such as wetlands, birds, and trees of the area on a periodic basis during the



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warmer months. A self-guided nature trail is being developed that highlights the major habitats of the property. NYSDEC education staff are also available to coordinate an annual stewardship project featuring the beach and shoreline. Since the purchase of Mount Loretto by NYSDEC in 1999, the Staten Island Institute for the Arts and Sciences and Protectors of Pine Oak Woods have offered organized walking tours. They are open to the public and are advertised in local newspapers and web sites on Staten Island.

### **2.8.3 Research**

The Staten Island Institute for the Arts and Sciences is the data repository for any information collected at Mount Loretto regarding species sightings for birds, amphibians, insects, and mammals. Much of this information is reported by nature enthusiasts. No formal research activities supported and approved by NYSDEC are currently underway at any of the four management areas on Staten Island.

# 3

## Management and Policy Overview

### 3.1 Introduction

It is the policy of NYSDEC to manage State lands for multiple benefits to serve the People of New York State. This management will be considered on a landscape level, not only to ensure the biological diversity and protections of the ecosystem, but also to optimize the many benefits to the public that these lands provide. The Unit Management Plan is the first step in carrying out that policy. The plan will be developed to address management activities on the Southern Staten Island Natural Area, including Mount Loretto, Lemon Creek, Bloesser's Pond and Arden Heights, for the next 10-year period, with a review due in 5 years (some management recommendations may extend beyond the 10-year period).

The conceptual plan for Mount Loretto was developed in 1998 to establish broad goals and alternatives that may be considered for the ultimate use of the property. The custodial plan, developed in 2003, presented the physical features currently existing at the site and provided management concerns and objectives to protect these areas. Because there was no physical development planned for the Arden Heights, Lemon Creek and Bloesser's Pond sites, the management of these areas was not included in either the Concept Plan or the Custodial Plan. The Unit Management Plan will incorporate the objectives and concerns addressed in the Conceptual and Custodial Plans, along with public concerns, in order to devise a comprehensive management plan for the entire Unit, including Mount Loretto, Arden Heights, Lemon Creek, and Bloesser's Pond.

This section is intended to lay the foundation for the development of specific management strategies necessary to attain a balanced multiple habitat Unique Area as part of the Southern Staten Island Natural Area Unit Management Plan. It includes descriptions of past management activities, existing management guidelines, principles of management important for achieving the objectives for the Unit, and an outline of management issues identified through the inventory process (with input from the Project Team and the public). This section will identify:

- **Past Management.** Assess past management activities including NYSDEC management activities, academic research projects, and initiatives undertaken by not-for-profit groups.

- **Management Guidelines.** Identify existing guidelines for the management, development or other use of the area including the guidelines and criteria set forth in the ECL and related rules, regulations, and policies, ADA, and other applicable federal and state laws, rules, regulations, policies and plans that are relevant to the use and management of public land. Identify any deed restrictions and deeded private rights that exist for the area.
- **Management Principles.** Identify management policies and principles that exist to guide the NYSDEC in managing urban public land.

## 3.2 Historical Management Principles

This sub-section provides an overview of past management activities within Mount Loretto. This documentation includes a description of Department management activities, academic research projects, and initiatives undertaken by not-for-profit groups, and known significant management activities of previous land-owners.

### 3.2.1 Pre-NYSDEC Ownership

A preliminary literature review, historic map analysis, site file check, and walk-over reconnaissance of the four properties of the South Staten Island Natural Area Unit Management Plan in order to identify all known cultural resources was conducted. The historic map analysis, site file check, and walkover reconnaissance indicate that little or no development has occurred in Arden Heights, Lemon Creek, or Bloesser's Pond. The historic overview and map analysis are therefore dedicated to the Mount Loretto study area.

The establishment of the Mount Loretto charitable institution began in 1882 with the acquisition of 258 acres of farmland and some underwater lots along Raritan Bay and Prince's Bay by the Roman Catholic Mission of the Immaculate Virgin for the Protection of Homeless and Destitute Children. Mount Loretto opened on this land as a missionary for orphaned children in 1883. The Mission continued to acquire land on both sides of what is now Hylan Boulevard to add to Mount Loretto. In 1926, the mission bought its final acquisition, the neighboring eight-acre Prince's Bay Lighthouse property from the US Department of Commerce. The children at the orphanage received vocational training including agriculture, carpentry, and mechanics. For their labor, they received pay equivalent to that of farmhands, which many saved to pay for their own farms after graduation.

During the 1960s, Mount Loretto de-emphasized its identity as a Catholic orphanage and became a foster care agency in cooperation with the City. By 1964, the orphanage no longer cared for children under the age of six. Saint Elizabeth's continued to be used as a residence until 1988 when the girls were moved to the boys' side of Mount Loretto. It was then used as an administrative building until 1992 when it was completely vacated.

### **3. Management and Policy Overview**

In 1999, the Catholic Archdiocese sold the 194-acre girls side of Mount Loretto for a little more than half of its value so that its natural and recreational resources could be made available to the public. The property was sold to the Trust for Public Land. The sales contract mandated that NYSDEC would purchase the land from the trust in three phases.

Today, the only surviving structures at Mount Loretto are the Prince's Bay Lighthouse and its keeper's house and carriage house.

The only above grounds remains relating to the St. Elizabeth girls orphanage south of Hylan Boulevard are 2 shrines of brick and mortared fieldstone in the vicinity of the orphanage.

#### **3.2.2 Existing Management Plans**

It is the policy of the Department to manage State lands for multiple benefits to serve the People of New York State. Since the acquisition of Mount Loretto, Lemon Creek, Arden Heights and Bloesser's Pond, two plans were developed to address the management actions desired to achieve this policy; the 1998 Concept Plan and the 2003 Custodial Plan. Although the four Management Areas are part of the Southern Staten Island Unit Management Plan, Mount Loretto was the only property addressed in either of the two plans.

The 1998 Concept Plan was the first step in carrying out that policy. The Concept Plan was developed to address management activities on the Mount Loretto site for the following 10 year period, although some management recommendations are expected to extend beyond this period. The Concept Plan was developed to establish broad goals and alternatives that should be considered for the ultimate use of Mount Loretto.

The 2003 Custodial Plan was developed as an interim phase to enable the NYSDEC to address immediate needs of Mount Loretto until the Unit Management Plan could be completed. The Custodial Plan identified specific concerns and objectives, included a schedule for completion and the designated NYSDEC units with the lead responsibility. The Custodial Plan builds upon the goals and management recommendations highlighted in the Concept Plan.

Both plans address long-term management of Mount Loretto with a focus on promoting educational development and passive recreational activities. Other management goals include:

- Protecting existing forests;
- Maintaining and enhancing grasslands, freshwater wetlands, tidal wetlands and coastal marine areas;

### **3. Management and Policy Overview**

- Improving access to Mount Loretto;
- Maintaining and improving buildings and facilities at Mount Loretto; and
- Improving security at Mount Loretto

#### **3.3 Management Guidelines**

This sub-section identifies existing guidelines for the management, development or other use of the Southern Staten Island Natural Area. It includes a brief description of Local and State Constitutional provisions, the guidelines and criteria set forth in the ECL and related rules, regulations, policies, and other applicable federal and state laws, rules, regulations policies, and plans that are relevant to the use and management of public land. This includes a description of any deed restrictions that exist for the property. The Department will promulgate Regulations similar to the posted rules listed below.

##### **3.3.1 Existing NYSDEC rules for Mount Loretto**

###### **General Rules**

- Open sunrise to sunset;
- No littering; “Carry in, Carry out” Area;
- Park vehicles only in designated areas;
- Vehicles are not allowed beyond the parking area and cannot remain on, near or adjacent to the property overnight;
- Horseback riding is limited to the shoreline only;
- Fishing is allowed subject to applicable regulations;
- Pedestrians are to remain on designated trails at all times;
- Bicycles are allowed only on asphalt surfaces (trail riding is prohibited);
- Dogs must remain on a leash at all times and owners must pick up after their dogs;
- Jet-skis and other motorized watercraft are not allowed within 100 feet of shore;
- Kayaks, canoes, and other non-motorized watercraft are allowed on the sea-shore but cannot remain overnight; and

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- Visitors must comply with all NYSDEC posted notices and NYSDEC personnel instructions.

#### Prohibited Activities

- Use of ATVs, snowmobiles, and other off-road vehicles;
- Use of model airplanes;
- All fires, including camp grills and cooking fires;
- Collection of plants and wildlife and/or cultural material, or any mineral or object;
- Introduction or release of plants and wildlife;
- Removal and/or defacement of state property;
- Hunting and trapping;
- Use and discharge of any firearm or weapon;
- Playing of radios, loudspeakers, or other sound equipment;
- Alcoholic beverages;
- Camping; and
- Ice-skating, except at the permission of the NYSDEC upon ensuring the safety of the ice.

*Note: The other three units adhere to the same general NYSDEC rules, though they have not been discussed in past management plans.*

#### 3.3.2 New York State Environmental Conservation Law (ECL)

- Article 9: Lands and Forests
- Article 11: Fish and Wildlife
- Article 15: Water Resources
- Article 23: Mineral Resources
- Article 24: Mineral Resources

- Article 33: Pesticides
- Article 71: Enforcement

**3.3.3 New York Code of Rules and Regulations (NYCRR) – Title 6**

- Chapter I: Fish and Wildlife
- Chapter II: Lands and Forests
- Chapter III: Air Resources
- Chapter IV: Quality Services
- Chapter V: Resource Management Services
- Chapter X: Division of Water Resources

**3.3.4 Department Policies**

- Acquisition
- Administrative Use of Motor Vehicles on the property
- Boundary Line Maintenance
- Fish Species Management
- Motor Vehicle Access for People with Disabilities
- Public Use
- Temporary Revocable Permits
- Tree Cutting

**3.3.5 Division of Lands & Forests Policies**

- Fireplaces and Fire Rings
- Foot Bridges
- Foot Trails
- Road Barriers

- Sanitary Facilities
- Trailheads

#### 3.3.6 Property Deed Restrictions

The *Memorandum of Agreement with Trust for Public Land to Manage the Lands of Mount Loretto* sets forth the terms and conditions and upon which NYSDEC operates and manages Mount Loretto (refer to Attachment 1). This agreement does not contain language that limits what activities can occur on the property, but only that the NYSDEC must police and manage the premises for the “benefit of the general public, in a manner similar to its policing and management of other lands under the jurisdiction of the NYSDEC, in order to maintain the premises in a safe and orderly condition.” It also states that the NYSDEC will comply with SEQR requirements and that “they will not take any action that will result in, or fail to take action that will allow, the substantial impairment or diminution in the value of the Premises.”

#### 3.4 Management Principles

The following sub-section outlines management principles that will guide the development of management objectives for Mount Loretto, Lemon Creek, Bloesser’s Pond, and Arden Heights. Unlike other Unit Management Plans in the State, the Southern Staten Island UMP is unique due to its proximity to highly urbanized environment. Consequently, management principles need to be considered with respect to the urbanized environment and long-term management goals need to address this issue. Development of these principles was based upon those contained within State-approved UMPs, the Mount Loretto Concept Plan (1998) and the Mount Loretto Custodial Plan (2003).

The following principles apply to Mount Loretto, Lemon Creek, Bloesser’s Pond, and Arden Heights:

1. **Manage the physical, biological, and social environment of the Management Area as interdependent resources.** Management of the unit should be based on maintaining the natural relationships between the physical, biological, and social resources. Before actions can be taken on one resource, the manager must consider the interrelationship between all of the resources since potential effects on other resources may be incurred.
2. **Protect the Management Areas by ensuring that natural environment of the Unit is not degraded.** Ensure that management of the Units maintains or improves the existing environmental conditions and does not degrade to levels below existing conditions. Where existing environmental conditions exceed thresholds set by state and federal regulations, management will strive to preserve existing environmental levels. The UMP will establish minimum

### 3. *Management and Policy Overview*

threshold levels that conform to state and federal action levels. Resource conditions will be monitored and evaluated.

3. **Establish and conduct a comprehensive program of interpretation, education, and information activities.** Education and outreach is key to helping the public better understand, appreciate, and take responsibility for the environment in general and Mount Loretto in particular. Guided walks, educational programming, interpretive signs and self-guided trails all raise public awareness and understanding of NYSDEC's programs and responsibilities to manage the State's natural resources and environmental quality.
4. **Protect the Unit by managing human influences.** Manage the four Management Areas to maintain long-term ecological processes and natural conditions and changes (such as natural fire control) while providing opportunities for passive recreation that do not degrade or disrupt ecological processes or natural conditions. The UMP recognizes the desire for current human activities and identifies management guidelines and actions to address the impact from allowing such uses in a highly urbanized environment. The impact from human uses (both active and passive) will be analyzed and a baseline will be determined to establish a reasonable standard for managing the resources long-term.
5. **Manage the four Management Areas while providing for human values and benefits.** The four management areas will be managed to not only protect flora and fauna within, but also to provide passive recreation, and educational opportunities, and enhance existing visual resources. This is critical due to the four properties proximity to New York City and other developed urbanized areas in Staten Island.
6. **Focus management on impacted sites or harmful activities.** Management of the four properties should first focus on those sites that have been the most negatively impacted, and/or those activities that are the most harmful to natural areas. The impact to natural resources is a top priority whether the impacts result from natural processes or from human influence. A secondary consequence is the impact on recreational opportunities resulting from the disturbed resource (i.e. closed trail due to erosion).
7. **Utilize the "minimum tool" rule to achieve management objectives.** The guiding principle of the "minimum tool" rule is that only the minimum tools, equipment, devices, regulation, or force necessary to achieve management objectives are needed. The degree of the "minimum tool" varies, but can either be direct through using restrictions or regulations, or indirect, through education or information. Each management objective will be reviewed to determine the minimum tool required to achieve the desired end result of the management objective.



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- 8. Include public involvement as a key in unit management.** Public involvement is a key component during development of an UMP. Facilitation of public comment has been achieved through several medias including public meetings, charettes, and surveys.
  
- 9. Monitor existing conditions and passive recreational opportunities to guide long-term stewardship objectives.** Once carrying capacities and minimum threshold levels have been established in the plan, it will be critical for the unit manager to evaluate the plan's progress towards achieving stated goals and objectives for physical, biological, and social resources over time.
  
- 10. Manage the four properties in relation to management of adjacent lands.** Similar to Principle #1, the unit management as a whole needs to be considered at a broader context outside of the boundaries of the four properties in relation to adjacent publicly and privately owned lands. Unit management should be coordinated with management of adjacent state- and city-owned lands. Consideration will include the evaluation of impacts of the sub-unit on adjacent state and city lands, as well as the impacts of management of adjacent lands on the management sub-unit. More importantly, the setting of the four properties in urbanized Staten Island is uniquely different from other UMP areas statewide. Therefore, emphasis on managing properties in urban environments should be considered critical to designing sustainable long-term management principles.

# 4

## Management Goals, Objectives and Actions

Recommendations were evaluated based upon NYSDEC's desire to maintain the four properties in a natural wildlife setting while promoting passive recreation and educational experiences. Each recommendation was considered to emphasize the importance of the four Management Areas close proximity to adjacent urbanized properties. Many of the recommendations were adapted from goals, objectives, and actions defined in previous plans such as the 1998 Concept Plan and the 2003 Custodial Plan. Recommendations were defined and timeframes in which to accomplish them were established. Timeframes include ongoing goals, short-term goals (<2 years), midterm goals (2-5 years) and long-term goals (>5 years) to accomplish management objectives at the four Management Areas. Goals and objectives that were incompatible with NYSDEC intentions for a specific Management Area, and/or non-applicable to a specific Management Area were included as well. A detailed management matrix (Table 4-1) highlights all management goals, objectives, and actions with their corresponding timeframes (defined above). Several of the management issues, goals, objectives, and corresponding actions have been highlighted below. The eight broad management goals below are fitting for each Management Area; thereafter, the goals become more specific to individual Management Areas.

1. Manage Mount Loretto, Lemon Creek, Bloesser's Pond, and Arden Heights so that changes in the ecosystems are primarily a consequence of natural forces, or within a range of natural variability and succession.
2. Maintain NYSDEC Southern Staten Island Management Areas in a natural ecologically sustainable condition while accommodating passive human use.
3. Provide outstanding opportunities for solitude.
4. Preserve natural resources for their inherent ecosystem and biological diversity values and for scientific research purposes.
5. Minimize long-term impacts caused by human uses.

**Table 4-1 Southern Staten Island Management Matrix**

Activity/Type of Use	Mount Loretto	Lemon Creek	Arden Heights	Bloesser's Pond	Cross-Reference Section
Unit maintenance	Ongoing	Ongoing	Ongoing	Ongoing	4.1, 4.2, 4.3, 4.4 & 4.5
Lighthouse maintenance	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.1, 4.3 & 4.4.1
Carriage House maintenance	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.3 & 4.4.1
Environmental learning center	Concept Plan 1998, Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.5.3
Education kiosks	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.5.1 & 4.5.3
Road maintenance	Ongoing	N/A	N/A	N/A	4.1.4, 4.2.1, 4.5.1 & 4.5.2
Trail monitoring and maintenance	Custodial Plan 2003, Ongoing	Ongoing	MT, LT	LT	4.1.1, 4.1.2, 4.1.4, 4.3 & 4.5
Trail construction	Custodial Plan 2003, Ongoing	MT, LT	MT, LT	LT	4.1.4, 4.1.6 & 6.1
Remove blacktops (e.g. asphalt and other foundations)	MT	N/A	N/A	N/A	4.3
Manmade debris removal	Ongoing	Ongoing	Ongoing	Ongoing	4.1.1, 4.1.2, 4.2.1 & 4.2.2
Remove redundant utility poles	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.4.1
Construct ADA compliant parking lot	Custodial Plan 2003, Completed	N/A	N/A	N/A	4.5.1
Construct active recreation trail	I/U	I/U	I/U	I/U	4.5.2 & 6.1
Construct storage and maintenance facility on Butler Manor.	ST	N/A	N/A	N/A	1.2
Construct kiosks at Lemon Creek, and at the start of the Conference House Park beach property, at the end of Richmond Avenue.	N/A	MT/LT	N/A	N/A	4.5.3
Construct protective barriers along bluff edges for safety	Custodial Plan 2003, ST, MT, LT	N/A	N/A	N/A	4.1.1 & 6.1
Construct viewing platforms to gain access to ponds	Ongoing	MT, LT	N/A	N/A	4.1.4
Construct soccer fields	I/U	I/U	I/U	I/U	6.1
Construct a wheelchair accessible parking spot at the Mount Loretto Unique Area parking lot.	Ongoing	N/A	N/A	N/A	4.5.1
Construct veteran cemetery	I/U	N/A	N/A	N/A	6.1 & 6.8
Provide electric shuttles from the parking lot to the top of the bluff	I/U	N/A	N/A	N/A	6.8
Relocate existing drainage ditches	Ongoing	N/A	N/A	N/A	4.1.2
Install and maintain erosion control devices on trails	Ongoing	Ongoing	Ongoing	Ongoing	4.1.2 & 4.1.4
Monitor units and streambeds	Ongoing	Ongoing	Ongoing	Ongoing	4.1.2
Monitor and quantify public use	Ongoing	ST	MT	MT	4.5.1

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**Table 4-1 Southern Staten Island Management Matrix**

Activity/Type of Use	Mount Loretto	Lemon Creek	Arden Heights	Bloesser's Pond	Cross-Reference Section
Consider/Conduct a land acquisition needs assessment	ST	ST	ST	ST	4.2.3
Install park registers and monitor use	Ongoing	N/A	N/A	N/A	4.5.1 & 4.5.2
Improve signage	Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.1.7 & 4.5.3
Site security	Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.4.1 & 4.5.1
Develop education programs	Concept Plan 1998, Custodial Plan 2003, Ongoing	MT, LT	LT	N/A	4.5.1 & 4.5.3
Develop educational trail guides	Custodial Plan 2003, Ongoing	MT, LT	LT	N/A	4.5.1 & 4.5.3
Develop an internet web page	ST	ST	ST	ST	4.5.3
Design/Implement water conservation plan in addition to conducting seasonal water quality testing.	ST	ST	ST	ST	4.1.2
Coordinate natural resource management with adjacent landowners	Ongoing	Ongoing	Ongoing	Ongoing	4.5.2
Develop Interpretive signage	MT	MT	MT	MT	4.1.7 & 4.5.3
Shellfish Transplant Monitoring Program	Ongoing	N/A	N/A	N/A	4.1.2 & 4.1.3
Hiking	Concept Plan 1998, Custodial Plan 2003, Ongoing	LT	LT	LT	4.5.2
Preserve Mount Loretto and other Management Areas for Passive Recreation	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.5.2, 4.5.3 & 5.1
Improve opportunities for recreation for persons with disabilities	Ongoing, ST	MT, LT	MT, LT	I/U	4.3, 4.5.2 & 6.1
Biking (along trails)	I/U	I/U	I/U	I/U	3.3.1 & 4.5.2
Biking (along roads)	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	3.3.1 & 4.5.2
Birding	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.5.2
Fishing (subject to applicable regulations)	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	MT	N/A	3.3.1, 4.1.7, & 4.5.2
Hunting (subject to applicable regulations)	I/U	I/U	I/U	I/U	3.3.1
Trapping	(subject to applicable regulations)	(subject to applicable regulations)	(subject to applicable regulations)	(subject to applicable regulations)	3.3.1
Restrict access of ATVs	Custodial Plan 2003, Ongoing	Ongoing	ST	N/A	3.3.1 & 6.6
Restrict use of ATVs	I/U	I/U	I/U	I/U	2.4, 3.3.1 & 6.6
Prohibit use of Snowmobiles	I/U	I/U	I/U	I/U	2.4 & 3.3.1
Limit horseback riding to posted areas	Custodial Plan 2003, Ongoing	I/U	I/U	I/U	3.3.1 & 6.6
Allow model airplane access/use	I/U	I/U	I/U	I/U	3.3.1 & 6.6
Sledding (restricted areas)	Ongoing	N/A	N/A	N/A	2.4

**Table 4-1 Southern Staten Island Management Matrix**

Activity/Type of Use	Mount Loretto	Lemon Creek	Arden Heights	Bloesser's Pond	Cross-Reference Section
Prohibit fires, including camp grills and cooking fires	I/U	I/U	I/U	I/U	3.3.1 & 4.3
Camping	I/U	I/U	I/U	I/U	3.3.1
Alcoholic beverages	I/U	I/U	I/U	I/U	3.3.1
Dogs (on leash)	Ongoing	Ongoing	Ongoing	Ongoing	3.3.1 & 4.1.4
Jet Skis prohibited within 100 ft. of shore	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	2.4 & 3.3.1
Non-motorized watercraft allowed on shore, but not overnight	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	3.3.1
Playing of radios, loudspeakers and other sound equipment	I/U	I/U	I/U	I/U	3.3.1
Collection of plants and wildlife and/or cultural material, or any mineral or object	I/U	I/U	I/U	I/U	3.3.1
Use and discharge of firearms or weapons	I/U	I/U	I/U	I/U	3.3.1
Introduction or release of plants and wildlife	I/U	I/U	I/U	I/U	3.3.1
Removal and/or defacement of state property	I/U	I/U	I/U	I/U	3.3.1 & 4.5.1
Cross-country skiing	Ongoing	N/A	N/A	N/A	2.4
Ice-skating, except at the permission of the DEC upon ensuring the safety of the ice	Custodial Plan 2003, Ongoing	I/U	I/U	I/U	3.3.1
No excavation	I/U	N/A	N/A	N/A	4.1.1 & 4.4.1
Film movies only during winter months	I/U	I/U	I/U	I/U	4.5.1 & 6.6
Manage invasives mechanically	Custodial Plan 2003, Ongoing	MT, LT	MT, LT	MT, LT	4.1.1 & 4.1.5
Manage invasives chemically		MT, LT	MT, LT	MT, LT	4.1.1 & 4.1.5
Maintain and enhance grasslands	Concept Plan 1998, Custodial Plan 2003, Ongoing	ST, MT, LT	N/A	N/A	4.1.2, 4.1.4 & 4.1.5
Selective tilling and planting	Concept Plan 1998, Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.5
Mow grasslands annually (not before the first frost and after March 15)	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.5
Mow and maintain shoulder of Management Area	Ongoing	Ongoing	Ongoing	Ongoing	4.2.1
Protect and enhance freshwater wetlands from natural and human influence	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.1.2 & 4.1.4
Monitor DEP Bluebelt BMPs and meet with NYCDEP on a regular basis to ensure proper implementation of stormwater BMPs.	Ongoing	Ongoing	ST, MT	Not Applicable	2.6.2, 4.1.2 & 6.3
Conduct hydrological studies and design/Implement water conservation plan for each Management Area.	Concept Plan 1998, Custodial Plan 2003, Ongoing	LT	LT	LT	4.1.2 & 4.1.4

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**Table 4-1 Southern Staten Island Management Matrix**

Activity/Type of Use	Mount Loretto	Lemon Creek	Arden Heights	Bloesser's Pond	Cross-Reference Section
Manage invasive species (ex. Phragmites, Japanese honey suckle)	Ongoing	Ongoing	Ongoing	Ongoing	4.1.1, 4.1.4, 4.1.5, 4.5.1,
Protect and enhance tidal wetlands from natural and human influence	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	N/A	N/A	4.1.7
Protect bluffs	Ongoing	N/A	N/A	N/A	4.1.1, 4.1.2 & 4.1.3
No excavation on unit	Ongoing	N/A	N/A	N/A	4.1.1 & 4.4.1
Conduct monitoring of cliff erosion to determine Long-term impact from human and natural weathering	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.1, 4.1.2 & 4.2.2
Protect beaches and shoreline areas from erosion and human influences	Concept Plan 1998, Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.1, 4.1.2, 4.1.3 & 4.2.2
Protect and enhance shellfish habitat and production	Ongoing	N/A	N/A	N/A	4.1.2, 4.1.3 & 4.1.4
Remove large debris (wood timber, concrete pilings etc)	Ongoing	N/A	N/A	N/A	4.1.1, 4.1.7 & 4.2.1
Enforce protective measures to manage bluff erosion and illegal excavations	Custodial Plan 2003, Ongoing	N/A	N/A	N/A	4.1.1 & 4.2.2
Manage forest stands for species diversity	Ongoing	Ongoing	Ongoing	N/A	4.1.5
Manage forest stands for education	Ongoing	N/A	N/A	N/A	4.1.5, 4.1.6 & 4.5.3
Manage invasive species	Ongoing	Ongoing	Ongoing	Ongoing	4.1.1, 4.1.5 & 4.5.1
Allow forest succession.	LT	N/A	N/A	N/A	4.1.5
Monitor vegetation	Ongoing	Ongoing	Ongoing	Ongoing	4.1.5
Support and enhance wildlife habitat	Concept Plan 1998, Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.1.6
Conduct faunal (i.e. herpetological) studies	Custodial Plan 2003, Ongoing	Ongoing	Ongoing	Ongoing	4.1.6
Conduct fish surveys and enhance aquatic habitat	Ongoing	Ongoing	Ongoing	Ongoing	4.1.7
Promote the occurrence of suitable habitat to encourage wildlife. (i.e. construct osprey stands and bird boxes)	Ongoing	Ongoing	MT, LT	N/A	4.1.6 & 6.3
Continue to monitor and inventory wildlife populations	Ongoing, ST, MT, LT	Ongoing, ST, MT, LT	Ongoing, ST, MT, LT	Ongoing, ST, MT, LT	4.1.6
Manage for native species	Ongoing	Ongoing	Ongoing	Ongoing	4.1.4, 4.1.5, & 4.1.6
Manage invasive species mechanically	Custodial Plan 2003, Ongoing	MT, LT	MT, LT	MT, LT	4.1.1 & 4.1.5

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**Table 4-1 Southern Staten Island Management Matrix**

Activity/Type of Use	Mount Loretto	Lemon Creek	Arden Heights	Bloesser's Pond	Cross-Reference Section
Manage invasive species chemically	Custodial Plan 2003, Ongoing	MT, LT	MT, LT	MT, LT	4.1.1 & 4.1.5
Initiate an invasive species management plan	ST	ST	ST	ST	4.1.6

Key

- Concept Plan 1998 (Custodial '98)
- Custodial Plan 2003
- I/U = Incompatible Use
- LT = Long-term Goal (>5 years)
- MT = Midterm Goal (2-5 years)
- N/A = Not Applicable
- ST = Short-term Goal (<2 years)

## 4. Management Goals, Objectives and Actions

6. Sustain natural and indigenous life forms.
7. Protect and preserve historic and cultural resources found at the four Management Areas.
8. Provide a comprehensive program of education, interpretation, and outreach that leads to a better understanding of and appreciation for the unique ecosystems managed by NYSDEC on Staten Island.

### 4.1 Bio-Physical Resources

#### 4.1.1 Geology, Topography and Soils

##### a. Issues Affecting the Resource.

Issues affecting the geology of the Southern Staten Island Natural Areas are primarily located at Mount Loretto and Lemon Creek. The coastal bluffs at Mount Loretto naturally erode, but the erosion rate has significantly increased as a result of illegal excavation along the bluffs and severe storm events. In addition, portions of Mount Loretto are covered with degraded blacktop, potentially degrading the surrounding soil structure during heavy rainfall.

Lemon Creek has recently undergone construction of two culverts, with riprap installed, to protect the shoreline from increased erosion. Erosion continues to be one of the largest issues in the future at both sites. Arden Heights and Bloesser's Pond do not have significant geological or topographical issues, but long-term soil compaction from overuse should also be considered a future management concern.

##### b. Future Management Concerns.

- Illegal excavation of the Mount Loretto bluffs.
- Soil compaction and erosion from overuse.
- Stormwater runoff increasing nutrient degradation.
- Increased invasive plant species in the seed bank changing soil strata and species diversity.

##### c. Proposed Management Policies and Objectives.

- Maintain and improve the existing condition of the bluffs at Mount Loretto.
- Minimize bluff erosion by creating stabilizing structures in high-use areas. In addition, establish procedures to enforce illegal activities along the bluffs.

#### **4. Management Goals, Objectives and Actions**

- Monitor and maintain trails to minimize soil compaction.
- Implement/design invasive species program at the Management Areas using multiple management techniques including mechanical and chemical removal, and removal of trees if necessary.
- Implement/design soil conservation plan for all UMP properties.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond

##### **d. Proposed Management Actions.**

- Conduct thorough field observation, inventory and monitoring of soil conditions to quantify the affects of recreational use over time.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Establish monitoring and erosion control programs including the DEC coastal zone management program to prevent further damage to the bluffs and to track long-term status of the bluffs at Mount Loretto.
  - Ongoing – Mount Loretto
- Construct stabilizing structures in high-use sensitive areas to help maintain the structure of the bluffs at Mount Loretto. Construct clearly marked signs marking sensitive bluff areas.
  - Short-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Close, relocate or restrict areas from recreational uses at the discretion of NYSDEC management to reduce negative impacts, including soil compaction, littering and erosion.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Institute soil stabilization techniques management practices to include planting of native grass and shrub species in disturbed areas. Utilize only native vegetation to restore areas negatively impacted by recreational use.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Periodically clean up waste at the four Management Areas.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.

#### **4. Management Goals, Objectives and Actions**

- Consider long-term plans to relocate road and lighthouse further away from encroaching bluffs.
  - Long-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond

##### **4.1.2 Water**

###### **a. Issues Affecting the Resource.**

Illegal dumping from adjacent neighborhoods, stormwater runoff, as well as gray water runoff from surface streets and leaching septic systems are management problems occurring on all four management units. Mount Loretto also has a large parcel of underwater property extending into Raritan Bay. This area has historically been a unique site for shellfish habitat, bird species, the occasional harbor seal, and is considered Essential Fish Habitat by the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries). In recent years, shellfish harvesting reduced significantly because of diseases and was consequently banned, but due to improved environmental conditions harvesting became permissible again in 2005. Harvesting of shellfish is monitored through the Shellfish Transplant Program which involves the harvest of hard clams from uncertified (polluted) waters and their relay to certified (clean) waters for cleansing and eventual marketing as a food product. The Shellfish Transplant Program operates on a seasonal basis when the water temperatures are high enough to allow shellfish to remain active and to adequately pump and cleanse themselves. Before it was stopped, the Shellfish Transplant Program accounted for almost 45 percent of New York State’s hard clam production.

###### **b. Future Management Concerns.**

- Decrease in water quality levels from septic contamination, stormwater, and gray water runoff.
- Impacts on surface drainage networks.
- Illegal dumping impacting the water quality and water levels of the ponds.
- Damaged or overused shoreline areas.
- Degradation of shellfish habitat and marine ecosystem.

###### **c. Proposed Management Policies and Objectives.**

- Preserve and protect water resources.
- Minimize the amount of disturbances on water resources caused by stormwater runoff.

#### 4. Management Goals, Objectives and Actions

- Protect shoreline areas.
- Maintain a healthy marine ecosystem and shellfish habitat.

##### d. Proposed Management Actions.

- Examine the water budget of the Tidal Wetland to determine the relative contributions of freshwater and saltwater to the wetland system, and the relative sensitivity to additional freshwater inputs.
  - Short-term – Mount Loretto and Lemon Creek
  - Not Applicable – Arden Heights and Bloesser’s Pond.
- Examine relocating existing drainage ditches associated with Mount Loretto trails or facilities (as necessary) to reduce impacts to ponds and streams.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Consider conducting water quality tests seasonally to monitor water quality levels.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Install and maintain erosion control devices on the Wetlands and Grassland trails at Mount Loretto to minimize soil movement into wetlands. In addition, install and maintain erosion control devices at the other three Management Areas as needed.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Conduct site visits and continue to monitor streambeds to prevent clogging from illegal dumping and stormwater runoff.
  - Ongoing – Mount Loretto.
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Conduct a hydrologic survey at Mount Loretto and other UMP units.
  - Ongoing – Mount Loretto
  - Long-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Rehabilitate overused shoreline areas.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Remove manmade coastal debris.
  - Ongoing – Mount Loretto

#### **4. Management Goals, Objectives and Actions**

- Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Monitor shoreline areas to protect sensitive coastal areas from damaging activities and overuse.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Monitor Management Areas for illegal dumping and develop a maintenance schedule to manage each property.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond
- Design/Implement water conservation plan for each Management Area.
  - Ongoing – Mount Loretto
  - Long-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Continue to support the Shellfish Transplant Program and maintain a healthy environment for shellfish habitat at Mount Loretto.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Meet with NYCDEP on a regular basis to ensure proper implementation of stormwater BMPs at each Management Area.
  - Ongoing – Mount Loretto and Lemon Creek
  - Short-term/Midterm – Arden Heights
  - Not Applicable – Bloesser’s Pond

##### **4.1.3 Shoreline**

###### **a. Issues Affecting the Resource.**

Mount Loretto is the only Management Area that has coastal shoreline areas. Issues affecting the resource include: overuse, littering, and erosion. The other properties do not have any coastal shoreline; however there are areas of pond and creek shoreline at all of the sub-units. Issues affecting these areas include: introduction/expansion of flow rates, flow attenuation, storm water runoff, and erosion.

###### **b. Future Management Concerns.**

- Erosion (coastal and freshwater).
- Littering and illegal dumping.
- Beach degradation from overuse (human, dogs, horses, etc.)

###### **c. Proposed Management Policies and Objectives.**

#### **4. Management Goals, Objectives and Actions**

- Maintain a coastal shoreline.
- Maintain underwater marine habitat.
- Monitor and reduce impacts from erosion.
- Reduce litter and illegal dumping.
- Monitor public-use impacts and enforce rules and regulations.

##### **d. Proposed Management Actions.**

- Monitor and manage existing shorelines using an established baseline developed by NYSDEC.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Minimize impacts to high-use shoreline areas by periodically reviewing the impacts from human-related use, and natural processes.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Continue to cooperate with the Shellfish Transplant Program.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond

#### **4.1.4 Wetlands**

##### **a. Issues Affecting the Resource.**

Wetland presence is influenced by water quantity and quality. Water management is a critical issue for all wetland components in the UMP. NYSDEC continues to evaluate the ongoing impacts to water resources within the UMP drainage basin. Future management actions will be based upon the results of this analysis.

##### **b. Future Management Concerns.**

- Water management.
- Water quality fluctuations resulting from urbanization of the drainage basin.
- Control invasive species.

##### **c. Proposed Management Policies and Objectives.**

#### **4. Management Goals, Objectives and Actions**

- Preserve, enhance and support the expansion of wetland communities.
- Minimize, to the maximum degree possible, any impacts which reduce wetland benefits and functions.

##### **d. Proposed Management Actions.**

- Install and maintain erosion control devices on the Wetlands and Grassland trails at Mount Loretto to minimize soil movement into wetlands. In addition, install and maintain erosion control devices at the other three Management Areas as needed.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Relocate any trails or facilities when necessary to reduce the impacts on wetlands or associated vegetation.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Minimize the impacts of construction and maintenance activities.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Construct a wooden platform in one of the wetlands, yet to be determined, to provide additional opportunities for recreation and environmental education.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Not Applicable – Arden Heights and Bloesser’s Pond.
- Design/implement invasive species management plan.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Support native plant establishment and propagation by routinely planting native species and mechanically and chemically managing nuisance, invasive species.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Meet with NYCDEP on a regular basis to ensure proper implementation of stormwater BMPs.
  - Ongoing – Mount Loretto and Lemon Creek
  - Short-term/Midterm – Arden Heights
  - Not Applicable – Bloesser’s Pond

## 4. Management Goals, Objectives and Actions

### 4.1.5 Plant Life

#### a. Issues Affecting the Resource.

Invasive species and succession are among the largest concerns at Mount Loretto. The existing grassland habitat, if left unmanaged would succeed to a woody deciduous forest. This area is currently managed by mowing on an annual to biannual cycle. In addition, the invasion of Japanese honeysuckle has had a significant impact at Mount Loretto, densely covering large sections of open areas, out competing native grassland species. Lemon Creek, Arden Heights, and Bloesser's Pond all have invasive species issues, though the majority of plant life at these Management Areas is secondary deciduous forest and is not impacted greatly by invasive plant species. Regardless, management of invasives should be considered a top priority now and in the future at all four properties. A number of management strategies have been implemented to control invasive plant species including mechanical and chemical techniques; however added emphasis and research must be paid to this management issue. For instance, some invasive plant species are abundantly common in the area, making it unfeasible to use current NYSDEC resources to eradicate them from their locations (i.e. Giant Reed (*Phragmites sp.*) around the ponds).

#### b. Future Management Concerns.

- Proliferation of invasive plants, predominantly Japanese honeysuckle and non-native *Phragmites* (giant reed) are concerns predominantly at Mount Loretto, but also at the other three Management Areas.
- Decrease in species richness
- Forest succession.

#### c. Proposed Management Policies and Objectives.

- Manage plant community to expand and enhance avian usage at all components.
- Employ integrated plant management approach to invasive species control.
  - Limit soil disturbances associated with construction projects and re-vegetate disturbed areas with native species.
  - Respond rapidly to any new introduction.
  - Control existing invasives by choosing an effective measure which presents the lowest environmental impact. Mechanical control will be considered first, if research shows it will be effective. If this is not a viable option, biological controls will be considered and if necessary herbicide control measures will also be explored. Any herbicide use

#### **4. Management Goals, Objectives and Actions**

will be employed with low volume applications methods and the least toxic chemicals which are proven to be effective.

- Conduct a pilot study at Mount Loretto to determine the most feasible way to remove select invasive plant species in an urbanized environment. For instance, the use of herbicide management for poison ivy and a mix of mechanical and cut stump herbicide application of herbicide for Japanese honeysuckle.
- Protect species and ecological communities identified as rare, threatened, or endangered.
- Manage succession of Mount Loretto to maintain a predominant grassland habitat.

##### **d. Proposed Management Actions.**

- Encourage native vegetation by planting native grass seed in both disturbed and undisturbed areas at Mount Loretto (to be determined by NYSDEC). In addition, plant native species at the other three units in the future, as needed.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek
  - Midterm/Long-term – Arden Heights and Bloesser's Pond.
- Utilize only native vegetation to restore areas negatively impacted by recreational use.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek
  - Midterm/Long-term – Arden Heights and Bloesser's Pond.
- Initiate an invasive plant species management plan, to control plant species and ensure proper minimization and avoidance measures are used for any proposed actions on the sites.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond.
- Use, mechanical, chemical, and biological techniques to control invasive species in selected areas.
  - Ongoing – Mount Loretto
  - Midterm/Long-term (mechanical and chemical removal only) – Lemon Creek, Arden Heights and Bloesser's Pond.

##### **4.1.6 Wildlife**

###### **a. Issues Affecting the Resource.**

#### **4. Management Goals, Objectives and Actions**

Preserving wildlife species presence and diversity is a priority. Urbanization of the surrounding environment will alter patterns of migration and recruitment. Management of the UMP will be focused on sustaining suitable wildlife species, such as grassland birds. Grassland birds have experienced a decline within New York due to a variety of habitat alterations. The UMP presents a unique opportunity to support the expansion and persistence of wildlife species.

##### **b. Future Management Concerns.**

- Maintain sustainable wildlife populations on each sub-unit.
- Wildlife declines or shifts in occurrence due to recreational activities.
- Habitat fragmentation associated with urbanization of the surrounding environment.
- Population studies are needed to identify trends in species numbers and occurrence. Wildlife increases or declines may occur due to the urbanization of the surrounding environment. Identify trends and implement appropriate activities.

##### **c. Proposed Management Policies and Objectives.**

- Maintain appropriate wildlife populations.
- Conduct long-term studies to determine wildlife populations and resources required to manage grassland bird population.
- Improve wildlife habitat by constructing Osprey stands and bird boxes.
- Meet the public's desire for information about wildlife conservation and provide educational material regarding wildlife at the various units (interpretive signage).
- Restore degraded habitats to a natural condition.

##### **d. Proposed Management Actions.**

- Protect wildlife through enforcement of applicable state and federal laws.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond
- Continue to monitor and inventory wildlife populations.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond

#### 4. Management Goals, Objectives and Actions

- Initiate an invasive species management plan.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond
- Encourage and conduct further studies on wildlife species including herps and insects.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond
- Promote the occurrence of suitable habitat to encourage wildlife to use Mount Loretto and the other units (i.e. Osprey stands and bird-boxes)
  - Ongoing – Mount Loretto and Lemon Creek
  - Midterm – Arden Heights
  - Not-applicable – Bloesser’s Pond
- Develop educational materials informing the public about wildlife at the Management Areas, particularly Mount Loretto.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights
  - Not Applicable – Bloesser’s Pond

##### 4.1.7 Fish

###### a. Issues Affecting the Resource.

Fisheries management is an issue of concern at two of the four management units: Mount Loretto and Lemon Creek. As such, the following concerns, objectives, and actions are applicable to these two units alone. Arden Heights and Bloesser’s Pond are do not support fisheries.

###### b. Future Management Concerns.

- Fish species number and diversity.
- Water quality changes which influence fish survival and reproduction.

###### c. Proposed Management Policies and Objectives.

- Minimize impacts to aquatic species water quality and quantity fluctuations.
- Minimize alterations to fish habitat.
- Maintain and monitor use of the sites by freshwater and marine species.

#### **4. Management Goals, Objectives and Actions**

- Encourage and promote recreational angler use.
- Manage and enforce rules and regulations restricting angler ‘take’.

##### **d. Proposed Management Actions.**

- Conduct biological surveys of fish species within the individual Management Areas.
  - Ongoing – Mount Loretto and Lemon Creek
  - Not Applicable – Arden Heights and Bloesser’s Pond
- Conduct fisheries surveys in the tidal wetland in Mount Loretto.
  - Short-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Seasonally monitor water quality at all Management Areas.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond
- Through informational brochures and signage, promote recreational angler use.
  - Short-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Monitor, track, and enforce fishing activities, rules and regulations.
  - Ongoing – Mount Loretto and Lemon Creek
  - Midterm – Arden Heights
  - Not Applicable – Bloesser’s Pond
- Remove manmade coastal debris.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Manage invasive species.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.

## **4.2 Visual/Scenic Resources/Land Protection**

### **4.2.1 Travel Corridors**

#### **a. Issues Affecting the Resource.**

Mount Loretto and Lemon Creek both offer uninterrupted views from the roadways. In addition, Mount Loretto has several paved travel corridors between Hylan Boulevard and Raritan Bay. The conditions of the paved roadways are mediocre and in the future may require repaving. Several areas along the Mount Loretto travel corridors also have non-functional power lines and

#### **4. Management Goals, Objectives and Actions**

debris lining the edge. The other Management Areas do not have uninterrupted views of the properties, but they do provide scenic value from the neighboring roadways of forested lots. At the entrance to Arden Heights there is a small area to view several hundred feet into the forest landscape. Littering, illegal dumping, nuisance plant species, soil compaction, and erosion are among the issues of greatest concern at the different properties.

##### **b. Future Management Concerns.**

- Degradation of existing roadways at Mount Loretto.
- Continued degradation of non-functioning power lines.
- Poison Ivy and other nuisance vegetation.
- Littering and illegal dumping.
- Potential human injury on debris.

##### **c. Proposed Management Policies and Objectives.**

- Maintain and improve the conditions of the travel corridors when required.
- Remove nuisance vegetation along travel corridors using mechanical and chemical means.

##### **d. Proposed Management Actions.**

- Establish long-term maintenance plans and procedures to manage travel corridors at Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond.
  - Ongoing – Mount Loretto
  - Short-term/Midterm – Lemon Creek and Arden Heights
  - Midterm – Bloesser's Pond
- Maintain shoulder of roadways adjacent to the four Management Areas and improve signage along roadways.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond.
- Remove debris and nuisance vegetation at the four Management Areas.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond.
- Manage poison ivy along travel corridors.
  - Ongoing – Mount Loretto

#### **4. Management Goals, Objectives and Actions**

- Short-term – Lemon Creek and Arden Heights
- Midterm – Bloesser’s Pond
- Remove non-functioning, redundant power lines and poles.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond\
- Prune trees along power lines and behind the carriage house.
  - Ongoing – Mount Loretto
- When removing derelict poles, consider burying current power lines to avoid tree pruning and other tree-related problems in the future.

##### **4.2.2 Observation Points**

###### **a. Issues Affecting the Resource.**

There are several unique observation points at Mount Loretto along the coast-line above the bluffs. Continued erosion and illegal excavation have eroded areas of the bluffs reducing the size of the observation points. In addition, there are several observation points at Lemon Creek and Arden Heights. Bloesser’s pond does not have any prominent observation points, though views through the woods provide an equally rewarding experience. The main issues affecting all of the observation points at the units are littering, illegal dumping, nuisance species, soil compaction, and erosion.

###### **b. Future Management Concerns.**

- Continued unnatural erosion of the bluffs.
- Illegal dumping and littering at observation points
- Soil compaction and erosion at the observation points.

###### **c. Proposed Management Policies and Objectives.**

- Prevent additional erosion of the bluffs and other observation points.
- Maintain observation points by selectively cutting grasses and trees.

###### **d. Proposed Management Actions.**

- Establish management procedures to monitor and protect the coastline to minimize unnatural human-influenced erosion.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond

#### 4. Management Goals, Objectives and Actions

- Selectively cut and/or remove grasses and trees to maximize observation points at Mount Loretto.
  - Short-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Develop a maintenance schedule to clean observation points at each Management Area.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond
- Install benches and informational displays at selected observation points.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights
  - Inconsistent Use – Bloesser’s Pond

##### 4.2.3 Other Natural Areas/Open Space

###### a. Issues Affecting the Resource.

The State’s land acquisition efforts are guided by the most current version of *Conserving Open Space in New York State*. This plan was a joint effort between the NYSDEC and the Office of Parks, Recreation and Historic Preservation. The plan states the two most often cited priorities for the State in acquiring open space land are to limit development and to increase public access to water resources and existing State lands.

###### b. Future Management Concerns.

- Development on adjacent lands will negatively impact the visitor and recreational experience on State lands.

###### c. Proposed Management Policies and Objectives.

- Encourage land acquisition to enhance public access to and wildlife habitat in existing NYSDEC lands.
- Protect open land at Mount Loretto through best management practices (mowing,).

###### d. Proposed Management Actions.

- Conduct a land acquisition needs assessment for the area in accordance with the *Conserving Open Space in New York State* plan.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.

#### **4. Management Goals, Objectives and Actions**

- Consider land acquisition to enhance existing NYSDEC lands.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Implement best management practices to maintain existing open spaces at the four properties.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek
  - Midterm/Long-term – Arden Heights and Bloesser’s Pond

### **4.3 Man-Made Facilities**

#### **Building Facilities**

##### **a. Issues Affecting the Resource.**

There are no building facilities at any of the Management Areas other than Mount Loretto. The conditions of the two remaining buildings at Mount Loretto are good, though minor maintenance repairs need to be made annually. It is not known where the Verizon line is located relative to the house. In addition, there are a number of asphalt pads on the Mount Loretto property in various forms of re-vegetation.

##### **b. Future Management Concerns.**

- Vandalism of existing facilities.
- Illegal activities (bonfires, model airplane use) on the asphalt pads.
- Continued erosion of the bluffs encroaching on lighthouse.
- There is no backup power for the existing buildings (the solar panel only powers the lighthouse beacon).

##### **c. Proposed Management Policies and Objectives.**

- Long-term management of buildings.
- Reduced vandalism and illegal mischief.

##### **d. Proposed Management Actions.**

- Annual maintenance and inspection of existing buildings.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond

## 4. Management Goals, Objectives and Actions

- Break/Remove sections of the asphalt pads to promote re-vegetation of the area.
  - Midterm – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Consider long-term plan to move lighthouse and roads away from bluffs.
  - Long-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond

### 4.4 Past Influences

#### 4.4.1 Cultural and Historical Resources

##### a. Issues Affecting the Resource.

There are no historical or cultural sites on Bloesser’s Pond or Arden Heights Management Areas. There are cultural and historical sites located on the Mount Loretto property and Lemon Creek property, respectively. The St. Elizabeth’s girls’ dormitory, the infirmary/childrens hospital building, and the school and social services building no longer exist at Mount Loretto due to loss of building integrity. The Red Bank lighthouse and the carriage house still remain and are maintained by the NYSDEC. Both the lighthouse and cottage are closed to the public. A wooden fence currently extends around the perimeter of the lighthouse and cottage however most of the fence was replaced by a chain linked fence during the custodial period. Utility and communications poles and other equipment associated with the demolished buildings still remain on the property. Lemon Creek does not have any historical landmarks, but it does have historical shell casings from past shellfish harvesting activities.

##### b. Future Management Concerns.

- Unauthorized access to buildings and property.
- Vandalism.
- Degradation of visual environment.
- Safety concerns on areas around existing utility and communications poles and lines.
- Removal of historically significant artifacts.

##### c. Proposed Management Policies and Objectives.

- Protect historical and cultural sites and make them available for research.
- Maintain the lighthouse and cottage, as well as the wooden fencing.

## **4. Management Goals, Objectives and Actions**

- Establish protocols for enforcing NYSDEC rules and regulations around historical sites.
- Prohibit all excavation activities and discourage treasure hunting.

### **d. Proposed Management Actions.**

- Conduct site visits twice a day to ensure security and safety of the area. In addition, conduct periodic site visits to all of the Management Areas.
  - Ongoing – Mount Loretto
  - Short-term – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Remove the decommissioned utility and communications poles and lines at Mount Loretto.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Encourage research activities by fostering partnerships with local colleges and research institutions for assistance in management approaches.
  - Short-term – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.

## **4.5 Public Use**

### **4.5.1 Existing Use**

#### **a. Issues Affecting the Resource.**

Public use of Mount Loretto has been minimally monitored over the years. Trail registers are now installed in several of the units. NYSDEC uses the trail registers to monitor visitor attendance and comments. None of the designated walking trails are ADA compliant. No data has been collected at the other Management Areas because they are not actively managed for recreational use.

Two designated foot trails exist at Mount Loretto: the Grassland Trail, and the Wetland trail. The trails receive minimal impact and are generally in good condition. The paved networks of roads are in fair condition. However, the condition of the road that runs parallel to the coast from the orphanage to the lighthouse is worsening. The other properties have trails that are not actively maintained by NYSDEC, but are open to the public. The Arden Heights sub-unit has signage posted with rules outlining use of the area.

The Universal Trail Assessment Program (UTAP) has been conducted on Kenny Road and the road to the lighthouse to gather information on the slope, cross-slope, surface, width, and obstructions that currently exist on the road.

#### **4. Management Goals, Objectives and Actions**

This information will be made available to the public to enable them to make their own choices about recreational access.

##### **b. Future Management Concerns.**

- Trail erosion is a concern along the grassland and wetland trail network.
- Vandalism of trail registers, signs, and education materials is a concern.
- Littering and illegal dumping are management issues.
- Deterioration of the paved roadways.
- Development of ADA compliant facilities.

##### **c. Proposed Management Policies and Objectives.**

- Enforce existing laws, rules, regulations and policies.
- Permit and encourage recreational use levels consistent with the protection of the Management Area's natural resources and character.
- Provide users with information on the Management Area and its facilities, and the appropriate use of the property.
- Identify and develop methods to monitor public use accurately.
- Minimize user conflicts by providing appropriate information to visitors and improve educational opportunities along trails.
- Ensure department compliance with the Americans with Disabilities Act.
- Maintain and control invasive species.
- Manage poison ivy population along foot trails.
- Monitor trail use to minimize impacts and develop maintenance plans for management of trails at the four Management Areas.
- Develop a contiguous trail system through Mount Loretto, possibly linking up with the NY-NJ trail system.
- Maintain paved roads.

##### **d. Proposed Management Actions.**

#### **4. Management Goals, Objectives and Actions**

- Hire a Ranger to oversee management and maintain authority of the four Management Areas.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Construct an interpretive educational trail with signs and kiosks educating visitors about the area, management, habitat, and wildlife etc.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights
- Develop a system to monitor public use at Mount Loretto (i.e. park registers, site sampling – visitor counts etc). For example, install park registers at the Mount Loretto parking lot to monitor attendee numbers.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Monitor and maintain trails to reduce illegal dumping and littering. In addition, enforce rules and regulations to reduce vandalism.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek and Arden Heights
  - Long-term – Bloesser’s Pond
- Monitor soil compaction and erosion along trails and determine impact from recreation.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek and Arden Heights
  - Long-term – Bloesser’s Pond
- Assess Mount Loretto public facilities (trails, parking lot) to assess the level of accessibility provided to people with disabilities.
  - Short-term – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Develop a wheelchair accessible parking spot at the Mount Loretto Unique Area parking. A path will connect the parking spot with the accessible privy.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Improve recreational opportunities for people with disabilities.
  - Ongoing/Short-term – Mount Loretto
  - Midterm/Long-term – Lemon Creek and Arden Heights
  - Inconsistent Use – Bloesser’s Pond

#### **4. Management Goals, Objectives and Actions**

- Limit the filming of movies to winter months avoiding impacts to bird species during peak breeding months, March through August.
  - Ongoing

##### **4.5.2 Potential/Projected Use**

###### **a. Issues Affecting the Resource.**

Management of NYSDEC lands, particularly Mount Loretto will need to be coordinated with neighboring public and locally owned lands. The goals of public and local planning departments are different than those of NYSDEC. If it is not coordinated, development on adjacent lands could impact sensitive habitat, wildlife, visual environment, or recreational experience on the unique lands.

###### **b. Future Management Concerns.**

- Adjacent uses are non-consistent with natural resource management objectives of NYSDEC property and may result in negative resource impacts.
- Development on adjacent lands could result in illegal encroachment, stormwater, gray water, and septic leaching in the Management Area.
- Public interests at Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond could interfere with NYSDEC management objectives.

###### **c. Proposed Management Policies and Objectives.**

- Align natural management objectives with management objectives on adjacent state and city-owned properties.
- Maintain public access to Mount Loretto and the other three Management Areas.
- Increase existing levels of usage on Mount Loretto through public education and awareness.
- Protect natural resources of all NYSDEC Management Areas.
- Provide trails for passive recreation including walking, bird watching, photography, and painting etc.
- Ensure that unit management complies with applicable federal, state, and local regulations.

## **4. Management Goals, Objectives and Actions**

### **d. Proposed Management Actions.**

- Coordinate natural resource management with adjacent public landowners through regular semi-annual meetings with the Staten Island Planning Department.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Recommend continuing passive recreational uses on Mount Loretto, Lemon Creek, Bloesser’s Pond, and Arden Heights.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond.
- Regularly monitor and evaluate existing trail system, and perform maintenance on the trail system as needed.
  - Ongoing – Mount Loretto and Lemon Creek
  - Midterm – Arden Heights
  - Long-term – Bloesser’s Pond
- Construct new trails at the four Management Areas.
  - Short-term – Mount Loretto
  - Midterm/Long-term – Lemon Creek and Arden Heights
  - Long-term – Bloesser’s Pond
- Continue to evaluate the need to change appropriate use levels and visitor demands over time.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond

### **4.5.3 Education, Interpretation, and Research**

#### **a. Resource Issues.**

Area residents around Mount Loretto, Lemon Creek, Arden Heights, and Bloesser’s Pond need to be informed about short-term and long-term management objectives, and current and proposed uses. In addition, programming at Mount Loretto needs to be expanded to better incorporate educational opportunities for school groups, and to better accommodate research opportunities.

#### **b. Future Management Concerns.**

- Trespassing and vandalism.
- Prohibited recreational uses occurring.

#### **c. Proposed Management Policies and Objectives.**

#### **4. Management Goals, Objectives and Actions**

- Develop self-guided trails.
- Utilize wetlands as a key educational tool.
- Develop a comprehensive program of education, interpretation and outreach that both informs the public about the unit's natural resources, management objectives and recreational opportunities and helps reduce likelihood of trespassing and prohibited activities.
- Encourage volunteers and/or develop a volunteer program to assist with various activities including Arbor Day and Green Up Day.
- Short-term and long-term goals should be developed to improve educational and research opportunities at Mount Loretto.
- Establish a weather monitoring station.

##### **d. Proposed Management Actions.**

- Construct informational displays at key areas at Mount Loretto, such as observation points and historical sites. At each area the displays can educate the recreation user about the history, ecosystem, and management in the area.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser's Pond
- Develop and construct signage at all of the Management Areas to inform users about property management and the intent of the NYSDEC. Signs should identify, where appropriate, areas of sensitive resources, trails that are closed, and trails that are open for passive recreation.
  - Ongoing – Mount Loretto, Lemon Creek, Arden Heights, and Bloesser's Pond.
- The numbered signs posted along trails in Mount Loretto should represent areas of key natural, physical, or social importance. Informational brochures will contain information on these features, and will be numbered according to the posts to encourage self-guided tours of the area.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser's Pond
- Develop informational and educational material defining passive recreational uses.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights

#### **4. Management Goals, Objectives and Actions**

- Not Applicable – Bloesser’s Pond
- Construct kiosks at Lemon Creek and at the start of the Conference House Park beach property, at the end of Richmond Avenue.
  - Midterm/Long-term – Lemon Creek
  - Not Applicable – Mount Loretto, Arden Heights, and Bloesser’s Pond
- Construct an educational learning center at a site deemed appropriate by NYSDEC.
  - Ongoing/Short-term/Midterm – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Develop interpretive brochures and fact sheets for the public.
  - Ongoing – Mount Loretto
  - Not Applicable – Lemon Creek, Arden Heights, and Bloesser’s Pond
- Utilize volunteer efforts that are familiar with the four Management Areas to assist with educational and research opportunities.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights
  - Inconsistent use – Bloesser’s Pond
- Encourage school field trips.
  - Ongoing – Mount Loretto
  - Midterm/Long-term – Lemon Creek
  - Long-term – Arden Heights
  - Inconsistent use – Bloesser’s Pond
- Develop an Internet web page for Mount Loretto, Bloesser’s Pond, Lemon Creek, and Arden Heights. Include information about the properties, the unique natural resources present at the properties, and management strategies undertaken by NYSDEC.
  - Short-term – Mount Loretto, Lemon Creek, Arden Height’s and Bloesser’s Pond

# 5

## **Schedule for Implementation/Budget**

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
<b>Facilities</b>											
Property maintenance	200K	2,000,000									
Lighthouse maintenance	50K	10K	150K								
Carriage House maintenance	10K	2K	28K								
Education kiosks (6)	18K										18K
Road maintenance	102K	2K	120K								
Trail maintenance and monitoring	5 days	50 days									
Trail construction	25K										25K
Remove blacktops (asphalt and other foundations)	15K										15K
Manmade debris removal	5 days	50 days									
Remove redundant utility poles	10K										10K
Construct ADA accessible trail	15K										15K
Construct viewing platforms to gain access to ponds @ ML and LC	75K										
Construct veteran cemetery	N/A										N/A
Provide electric shuttles from the parking lot to the top of the bluff	N/A										N/A
Install and maintain erosion control devices on trails	2 days	20 days									
Monitor sub-units and streambeds	5 days	50 days									
Consider/Conduct a land acquisition needs assessment	5 days	50 days									
Install park registers and monitor use	1K 2 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	1K and 20 days
Improve signage	2K 2 days	20K and 20 days									

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
Improve site security	20K (alarms, etc.) and Ranger										20K + Ranger Time
<b>Programs</b>											
Develop education programs	Completed										
Develop educational trail guides	5K										5K
Develop an internet web page	Completed										
Design/Implement water conservation plan in addition to conducting seasonal water quality testing	10 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	2 days	28 days
Coordinate natural resource management with adjacent landowners	3 days	3 days	3 days	3 days	3 days	3 days	3 days	3 days	3 days	3 days	30 days
Develop educational interpretive signage	5K					3K (improvements)					8K
Support Shellfish Transplant Monitoring Program	20 BMR staff days										20 BMR staff days
<b>Recreational Activities</b>											
Preserve Mount Loretto and other management areas for passive recreation											\$0
Improve opportunities for recreation for people with disabilities											\$0
Hiking											\$0
Biking (along trails)											\$0
Biking (along roads)											\$0
Birding											\$0

5-4

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
Fishing (subject to applicable regulations)											\$0
Hunting (subject to applicable regulations)											\$0
Trapping (subject to applicable regulations)											\$0
<b>Enforcement</b>											
Restrict access of ATVs	Ranger										Ranger Time
Restrict use of ATVs	Ranger										Ranger Time
Snowmobiles	Ranger										Ranger Time
Limit horseback riding to posted areas	Ranger										Ranger Time
Sledding (restricted areas)	Ranger										Ranger Time
Prohibit fires, including camp grills and cooking fires	Ranger										Ranger Time
Alcoholic beverages	Ranger										Ranger Time
Dogs (on leash)	Ranger										Ranger Time
Jet Skis prohibited within 100 ft. of shore	Ranger										Ranger Time
Non-motorized watercraft allowed on shore, but not overnight	Ranger										Ranger Time
Playing of radios, loudspeakers and other sound equipment	Ranger										Ranger Time
Collection of plants and wildlife and/or cultural material, or any mineral or object	Ranger										Ranger Time
Use and discharge of firearms or weapons	Ranger										Ranger Time
Introduction or release of plants and wildlife	Ranger										Ranger Time

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
Removal and/or defacement of state property	Ranger										Ranger Time
Cross-country skiing	Ranger										Ranger Time
Ice-skating, except at the permission of the DEC upon ensuring the safety of the ice	Ranger										Ranger Time
<b>Grasslands</b>											
Manage invasive species mechanically	10 staff days	0 staff days	100 days								
Manage invasive species chemically	75K	5K	5K	120K							
Manage invasive species with prescribed fire	5 staff days	5 staff days	50 days								
Maintain and enhance grasslands	redundant										
Selective tilling and planting	3 days	3 days	30 days								
Mow grasslands annually (variable between October 15 and March 15)	25 days	25 days	250 days								
Mow and maintain shoulder of unit	40 days	40 days	400 days								
<b>Wetlands</b>											
Protect and enhance freshwater wetlands from natural and human influence											
Monitor DEP Bluebelt BMPs and meet with NYCDEP on a regular basis to ensure proper implementation of stormwater BMPs	5 days	5 days	50 days								

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
Conduct hydrological studies and design/ implement a water conservation plan for each Management Area	50K and 20 staff days										50K and 20 days
Manage invasive species	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	50 days
Protect and enhance tidal wetlands from natural and human influence	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	5 days	50 days
<b>Coastal Marine Areas (Mount Loretto Applicable only)</b>											
Protect bluffs	A large one time cost and ranger										
No excavation at Management Area	Ranger										
Conduct monitoring of cliff erosion to determine long-term impact from human and natural weathering	50 days										50 days
Protect beaches and shoreline areas from erosion and human influences	Ranger										
Protect and enhance shellfish habitat and production	BMR 50 days										BMR 50 days
Remove large debris (wood timber, concrete pilings etc)	100 staff and volunteer days										100 days
<b>Wildlife</b>											
Support and enhance wildlife habitat	10 days										10 days
Conduct faunal (i.e. herpetological) studies	5 days										5 days

**Table 5-1 Southern Staten Island UMP Budget**

Activity/ Type of Use	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Estimated Cost
Conduct fish surveys and enhance aquatic habitat	5 days										5 days
Promote the occurrence of suitable habitat to encourage wildlife (i.e. construct osprey stands and bird boxes)	1 K										1 K
<b>Invasive Species</b>											
Manage for native species	redundant										
Manage invasive species mechanically	redundant										
Manage invasive chemically	redundant										
Manage invasive with prescribed fire	redundant										
Initiate an invasive species management plan	Completed in UMP										
<b>Air</b>											
Monitor and track air quality levels	5K Div. of Air BAQS and 50 days										5K and 50 days

Key:  
 AH = Arden Heights  
 BP = Bloesser's Pond  
 LC = Lemon Creek  
 ML = Mount Loretto

# 6

## Management Issues

This section provides a list and discussion of the issues identified through the inventory of resources, facilities and use, discussions with the Project Team and through public comment that need to be addressed within the scope of the plan. Several issues are of concern to the Department and the public in the development of this UMP. Information regarding management of the four Management Areas has been obtained in a number of formats including scoping meetings, written comments, and individual discussions. The following issues and desires were received from the public and NYSDEC staff. Some of the issues and desires have not resulted in management recommendations and may not be discussed further. A management matrix was developed to clearly identify management issues addressed in past Department plans; short-term, mid-term, and long-term goals; as well as inappropriate use of state lands that will not be considered in this UMP (see Table 4-1).

Alternative development suggestions submitted by the public includes construction of a veteran cemetery and soccer fields at Mount Loretto. DEC purchased Mount Loretto specifically to protect and enhance the natural resources present on the property, including the grassland habitat provided by its open fields. Mount Loretto is characterized as a natural area rather than an active recreational park. It is open to the public for passive recreational uses which have little impact upon the area's natural resources; thus, this recommendation is not in line with DEC long-term goals for the property.

Additional public comments include expanding horseback riding at Mount Loretto, however the impact of horse travel along trails other than the beach area would significantly impact the trails and would exceed the current trails desired carrying capacity. Similarly, all-terrain bicycle and ATV use is prohibited from the trails because it is not passive recreation and the carrying capacity along the sensitive trails would be exceeded from such use. Therefore these development suggestions are not within the purview of the NYSDEC, as they do not fall under NYSDEC's mission to use Mount Loretto as a natural wildlife area for passive and educational recreation. Public comments regarding management at Mount Loretto properties along with NYSDEC responses can be reviewed in detail below.

## **6.1 Mount Loretto**

### **6.1.1 Trails and other Facilities**

- Construct a multi-use trail from Lemon Creek to Long Pond at Mount Loretto.
  - Comment noted and has been incorporated into administrative record.
- Construct designated horse trails as a right of way from Sharrott Beach – Wolf’s Pond – Long Pond to Clay Pit.
  - Comment noted and has been incorporated into administrative record.
- More multi-use trails for hiking, mountain biking, and roller-blading.
  - Comment noted and has been incorporated into administrative record.
- Continue to preserve Mount Loretto and other Management Areas for passive recreation (walking, jogging, photography).
  - Comment noted and recommendation developed in Table 4-1.
- Construct a playground for children at Mount Loretto.
  - Comment noted and has been incorporated into administrative record.
- Construct a picnic area.
  - Comment noted and has been incorporated into administrative record.
- Develop interpretive educational walks with signage along the trails.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.5.3.
- Construct soccer fields.
  - Comment noted and has been incorporated into administrative record and Table 4-1.
- Construct a veteran’s cemetery.
  - Comment noted and has been incorporated into administrative record and Table 4-1.
- Manage poison ivy along trails edge.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.5.2
- Maintain trails to prevent erosion.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.5.1.

### **6.1.2 Beaches and Bluffs**

- Clean and maintain Mount Loretto beach for recreation.

- Comment noted and recommendation developed in Table 4-1 and Section 4.1.3.
- Remove large debris (wood timber, concrete pilings etc).
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.1, 4.1.2, 4.1.3, and 4.1.7.
- Allow fishing in the surf at Mount Loretto.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.7.
- Preserve/protect natural shoreline.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.3 and 4.1.7
- Preserve rock art along the Mount Loretto shoreline.
  - Comment noted and has been incorporated into administrative record.
- Protect Bluffs from erosion.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.1.
- Enforce protective measures to manage bluff erosion and illegal excavations.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.1 and 4.1.3.
- Develop access from the bluffs down to the beach.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.5.2.
- Prohibit/allow horses on the beach.
  - Comment noted and recommendation developed in Table 4-1.

### **6.1.3 Wetlands and Ponds**

- Restore natural wetlands.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.4.
- Manage stormwater under the DEP Bluebelt Program.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.2 and 4.1.4.
- Reconnect the creeks and watershed using natural drainage system.

- Comment noted and recommendation developed in Table 4-1 and Sections 4.1.2 and 4.1.4.
- Eliminate illegal dumping.
  - Comment noted and recommendation developed in Sections 4.1.1, 4.1.2, 4.1.3, and 4.3.
- Utilize wetlands to promote and enhance environmental education at Mount Loretto.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.2, 4.1.4, and 4.5.3.
- Research and protect reptile/amphibian population including long-term research and monitoring activities.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.
- Manage invasive species.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.1.5, 4.1.6, and 4.2.2.
- Support and enhance waterfowl habitat.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.
- Construct avian nest boxes and platforms.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.

#### **6.1.4 Grasslands**

- Maintain and protect native grasslands as unique bird, mammal, and herp habitat.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.5.
- Manage and control invasive species (Japanese honeysuckle, *Lonicera japonica*).
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.5.
- Develop long-term management guidelines and alternative management for invasive species.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.5.

- Mow grasslands annually to preserve Mount Loretto as a grassland habitat.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.5.
- Conduct long-term research and monitoring activities.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.5.
- Allow natural succession and development of selected forest stands.
  - Comment noted and recommendation developed in Table 4-1.

### **6.1.5 Wildlife**

- Protect, maintain and improve native habitat for wildlife.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.
- Enforce leashes for dogs at all times.
  - Comment noted and recommendation developed in Table 4-1 and section 4.1.6.
- Manage invasive species.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.
- Conduct research on wildlife species.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.
- Improve educational opportunities regarding wildlife.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.1.6.

### **6.1.6 Recreation**

- Allow/prohibit ATV and other off-road vehicle use at Mount Loretto.
  - Comment noted and has been incorporated into administrative record and Table 4-1.
- Allow/prohibit horses.
  - Comment noted and has been incorporated into administrative record and Table 4-1.
- Allow/prohibit model airplane use.
  - Comment noted and has been incorporated into administrative record and Table 4-1.

- Allow/prohibit active recreation development such as playing fields.
  - Comment noted and has been incorporated into administrative record and Table 4-1.
- Prohibit the filming of movies during the breeding period (March through August) of various bird species.

### **6.1.7 Real Property**

- Do a better job of maintaining boundary lines.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.2.3.
- Improve posting/signage of NYSDEC Management Areas.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.3 and 4.5.3.
- Remove nuisance invasive tree species.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.2.1.
- Remove trees blocking view of Raritan Bay.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.2.1.
- Mow and maintain shoulder of Hylan Boulevard.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.2.1.
- Develop procedures and protocols to reduce and/or eliminate vandalism.
  - Comment noted and recommendation developed in Table 4-1 and Sections 4.4.1 and 4.5.1

### **6.1.8 Other**

- Provide electric shuttles from the parking lot to the top of the bluff.
  - Comment noted and has been incorporated into administrative record.
- Hire a ranger to manage Mount Loretto.
  - Comment noted and recommendation developed in Table 4-1 and Section 4.5.1.
- Remove non-conforming structures, facilities, and uses.
  - Comment noted and has been incorporated into administrative record.

- Improve economic opportunities in winter.
  - Comment noted and has been incorporated into administrative record.
- Research and protect horseshoe crab population.
  - Comment noted and has been incorporated into administrative record.
- Construct veteran cemetery.
  - Comment noted and has been incorporated into administrative record and Table 4-1.

In conclusion, the unique setting of the four Management Areas in an urbanized landscape does not lend well to heavy use of its resources. The small acreage of the sites, relative to other statewide units, demands that resource impact be minimal in order to protect the character and integrity of the natural area in an urbanized environment. In addition, NYSDEC does not have the funding and resources to manage the area under greater resource use. Several short, mid, and long-term management strategies have been identified in Sections 4 that are consistent with the issues and desires identified by the public. NYSDEC's intent is to provide recreational activities for the public while continuing to preserve and enhance native vegetation and wildlife, and discourage the introduction and proliferation of invasive species. Developing educational opportunities and research, through educational centers, signage, and published material, is a priority of NYSDEC and the continued development of the four Management Areas. Other priorities and/or initiatives include:

- Preserving the natural shoreline;
- Protecting bluffs from unnatural erosion;
- Restoring natural wetlands;
- Improving security to reduce the likelihood of mischief and vandalism on NYSDEC property;
- Managing Mount Loretto to expand and enhance grassland habitat; and
- Manage the four Management Areas to expand and enhance wildlife usage and habitat with emphasis on avian usage.

# 7

## Glossary

**Administrative Barrier.** A barrier that can be opened to allow travel over the road by State personnel for administrative or emergency purposes. An administrative barrier should consist of a swing barrier constructed of pipe.

**All Terrain Bicycle.** A non-motorized bicycle designed or used for cross-country travel on unimproved roads or trails.

**All Terrain Vehicle (ATV).** A motorized vehicle designed or used for cross-country travel on unimproved roads or trails.

**Ecosystem.** A complex of living organisms and their environment

**Endangered Species.** Those species of fish, shellfish, crustacea, and wildlife designated by the New York State Department of Environmental Conservation (NYSDEC), by order filed with the Secretary of State, as seriously threatened with extinction (Section 11- 0535 Environmental Conservation Law [ECL]).

**Fishing and Waterway Access Site.** A site for fishing or other water access that provides public access and parking for vehicles but that does not contain a ramp for or otherwise permit the launching of trailered boats.

**Foot Trail.** A marked and maintained path or way for foot travel.

**Hardwood forest.** A forest stand in which the two predominant species by percent is hardwood.

**Hardwoods.** Broadleafed trees.

**Motor Vehicle.** A device for transporting personnel, supplies, or material that uses a motor or an engine of any type for propulsion and has wheels, tracks, skids, skis, air cushion, or other contrivance for traveling on, or adjacent to air, land, and water or through water (see ATV).

**Motorboat.** A device for transporting personnel or material that travels over, on, or under the water and is propelled by a non-living power source on or within the device.

**Natural regeneration.** The regrowth of a forest stand by natural means.

**Natural Forest.** A forest established by natural regeneration

**Permanent Barrier.** A barrier that will close a road permanently to all future travel – public or administrative – on such road. A permanent barrier should consist of an earth, rock, or ditch (or any combination thereof) barricade of substantial proportions so as to be obvious and require little or no maintenance.

**Road.** An improved way designed for travel by motor vehicles and either (a) maintained by a State agency or a local government and open to the general public; or (b) maintained by private persons or corporations primarily for private use but which may also be partly or completely open to the general public for all or a segment thereof; or c) maintained by the Department of Environmental Conservation and open to the public on a discretionary basis; or (d) maintained by the Department of Environmental Conservation for its administrative use only.

**Regeneration.** To reestablish a forest stand.

**Small Ponds.** Ponds of less than 1 surface acre that are generally considered too small for management purposes or to provide significant angling opportunities.

**Small Streams.** Streams less than 1 mile long and less than 0.5 cubic feet per second (cfs) summer flow.

**Softwoods.** Needle bearing trees, conifers

**Special Angling Regulations.** Departures from the statewide angling regulations. These are currently expressed as options in the fishing guide, and may be more liberal or more restrictive than the statewide regulations.

**Species Diversity.** The occurrence of a variety of plants and animals.

**State Environmental Quality Review.** A process that requires all levels of State and local government to assess the environmental significance of actions that they have discretion to approve, fund, or directly undertake.

**Succession.** The gradual supplanting of one community of plants and animals by another.



**Trailhead.** A point of entrance to State land that may contain some or all of the following: vehicle parking, trail signs, and visitor registration structures.

**Unit Management Plan.** A document that identifies the natural resources, man-made facilities, public use, and past management within a described geographic unit of State land. The plan covers all aspects of the environment and is the basis for all future activities on State lands for a period of five years.

**Vegetative Type.** A description of a plant community based on species composition.

**Watershed.** The land area from which a stream receives its water.

**Wetland.** Land or area saturated and sometimes partially or intermittently covered with water. Class I, II, III or IV - The designation placed upon a mapped wetland by NYS DEC as required by 6NYCRR. The four classes rank wetlands according to their ability to perform wetland functions and provide wetland benefits. Class I is the most critical.

# 8

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# A

## Man Made Structure Inventory

**Table A-1 Man Made Structure Inventory**

Description	Asset Type	Asset	Condition
power line	electrical distribution system/sign	overhead primary/sign other	good
no horse sign	sign	sign other	good
power line no trespass	electrical distribution system/sign	overhead primary/sign other	good
blank sign by wood fence	sign	sign other	good
carry in / out sign	sign	sign other	good
wood fence [s end]	Fence	Wood Fence	good
lock and keep out sign	sign	park boundary sign	fair
wood gate at main	boundary	wood gate	fair
stanley auto gate opener	Miscellaneous	gate opener	good
flag pole	grounds structure	flag pole	good
carriage house [n]	building	utility shed/historic building	good
back of carriage house stairs and fence	fence	metal fence	good
fence rear of main building	fence	wood fence	good
tank rear house	water supply system	water storage tank	good
tractor shed	building	garage	good
lighthouse [westerly]	building	historic building	good
light on bluff	Miscellaneous	lighthouse	good
chain fence near east boundary at main building	fence	chain link fence	good
sw edge of main chain link fence	fence	chain link fence	good
fire hydrant	Miscellaneous	fire hydrant	good
main building front	building	historic building	good
benches front main building	Grounds Structure	Bench	good
front patio to main	grounds structure	patio	good
sewage exhaust main	waste water system	pressure pipe	good
no. 6 sign on side of road by main	sign	sign other	good
area closed sign	boundary/sign	park boundary sign/barrier	good
concrete beach break	retaining wall	concrete retaining wall	poor
area closed dune fragile sign	sign	special regulations area	good
asphalt pad large [130x90]	parking lot	paved parking lot	fair
brick shrine	grounds structure	historic ruin	N/A

## A. Man Made Structure Inventory

**Table A-1 Man Made Structure Inventory**

Description	Asset Type	Asset	Condition
asphalt pad small	parking lot	paved parking lot	fair
kiosk near shrine	trail structure	kiosk	good
bench	grounds structure	bench	good
shrine	grounds structure	historic ruin	good
st elizabeths top mound	grounds structure	historic ruin	
circle at st eliza	road	paved road	fair
dec sign	sign	facility ID sign	good
prohibited sign	sign	sign other	good
scenic dorm sea	n/a	n/a	n/a
rubbish/play equipment	grounds structure	playground equipment	poor
fallen power line	electrical distribution system	overhead primary	poor
erosion wall east	shore/bank protection	rip rap	fair
fire hydrant	miscellaneous	fire hydrant	fair
power line	electrical distribution system	overhead primary	fair
old parking lot	parking lot	paved parking lot	fair
power line	electrical distribution system	overhead primary	good
power line continue	electrical distribution system	overhead primary	good
power line cont same interval to rd	electrical distribution system	overhead primary	good
fire hydrant	miscellaneous	fire hydrant	fair
bird box	wildlife structure	bird box	fair
bird box	wildlife structure	bird box	fair
fallen cable	electrical distribution system	overhead primary	poor
no horse beyond pt	sign	sign other	good
scenic w pond view	n/a	n/a	n/a
fire hydrant in pond	miscellaneous	fire hydrant	poor
scenic view mid pond	n/a	n/a	n/a
pole near gate	boundary	barrier	good
dec sign at entrance	sign	boundary sign	good
chain link fence and 2 signs	fence/sign	chain link fence/sign other	good
gate at rich ave west	boundary	metal gate	good
beams for sign w/ background sign	sign	sign other	fair
chain fence face east hylan blvd.	fence	chain link fence	good
large bird box	wildlife structure	bird box	fair
grassland trail b/n roads	trail	foot trail	good
continued grassland trail (not ada accessible)	trail	foot trail	good
continued grassland trail to parking lot	trail	foot trail	good
grasslands walk sign	sign	sign other	good
wetlands walk/no horses sign	sign	sign other	good

## A. Man Made Structure Inventory

**Table A-1 Man Made Structure Inventory**

Description	Asset Type	Asset	Condition
wood post	miscellaneous	wood post	fair
wood post no sign	miscellaneous	wood post	fair
welcome kiosk	trail structure	kiosk	good
ada toilet	waste water system	port-a-john	good
metal gate post	boundary	metal gate	good
main gate	boundary	metal gate	good
nw end main park lot	parking lot	unpaved parking lot	good
nw end park lot [other is sw end]	parking lot	unpaved parking lot	good
wood fence east side gate	fence	wood fence	fair
area closed sign	sign	boundary sign	good
area closed sign	sign	boundary sign	good
bench w/ view	grounds structure	bench	good
no. 7 post	sign	sign other	good
bench w/ sea view	grounds structure	bench	good
dec sign	sign	facility ID sign	good
asphalt driveway	road	paved road	fair
fire hydrant by sea and st elizabeths	miscellaneous	fire hydrant	fair
asphalt pad very large	parking lot	paved parking lot	fair
burnt boat	miscellaneous	debris/waste	poor
no. 8 post	sign	sign other	good
no. 2 post	sign	sign other	good
no 2 post	sign	sign other	good
blank post	miscellaneous	wood post	fair
blank post	miscellaneous	wood post	fair
no. 1 post	sign	sign other	good
blank post	miscellaneous	wood post	fair
dep culvert at lemon creek	stormwater system	culvert pipe	good
lemon creek dep sign 'bluebelt'	sign	boundary sign	good
bridge concrete	bridge	vehicle bridge	good
fence to bridge	fence	chain link fence	good
sign oswald path	sign	boundary sign	good
scenic view oswald	n/a	n/a	N/A
start of main stone art installation	miscellaneous	stone art	n/a
end of main stone art installation	miscellaneous	stone art	n/a
start of concrete bulkhead	retaining wall	concrete retaining wall	poor
end bulkhead	retaining wall	concrete retaining wall	poor
concrete /metal debris	miscellaneous	concrete debris	poor
wood dock on beach	miscellaneous	concrete debris	poor
start concrete beach break	retaining wall	concrete retaining wall	poor
end beachbreak	retaining wall	concrete retaining wall	poor
start 2nd beachbreak	retaining wall	concrete retaining wall	poor
end 2nd beachbreak	retaining wall	concrete retaining wall	poor
concrete foundation	miscellaneous	concrete foundation	poor
no fire sign	sign	sign other	good
concrete foundation	miscellaneous	concrete foundation	poor
blank sign	sign	sign other	fair

## A. Man Made Structure Inventory

**Table A-1 Man Made Structure Inventory**

Description	Asset Type	Asset	Condition
no fires/no horses	sign	sign other	good
light-tower	miscellaneous	light tower	good
rock beachbreak	shore/bank protection	jetty	fair
eastend park rules/dec sign	sign	facility ID sign	good
dec sign	sign	facility ID sign	good
lemon creek bridge	bridge	vehicle bridge	good
dec sign edge of property	sign	facility ID sign	good
dec sign near path and edge	sign	facility ID sign	good
drainage pipe	stormwater system	culvert pipe	good
arden heights dec sign	sign	facility ID sign	good
prohibited dumping sign	sign	sign other	fair
prohibited dumping sign	sign	sign other	fair
no fires sign	sign	sign other	fair
dec sign in back of property	sign	facility ID sign	good
no fire sign	sign	sign other	fair
prohibited sign	sign	sign other	fair
prohibited sign	sign	sign other	fair
dec sign	sign	facility ID sign	good
prohibited sign	sign	sign other	fair
stone road support [wet area]	stormwater system	culvert pipe	fair



# Memorandum of Agreement with Trust for Public Land to Manage the Lands of Mount Loretto

1. **Premises to be managed by DEC.** In accordance with the terms of this Agreement, the DEC shall manage the Premises, excluding there from (i) the St. Elizabeth's building on Parcel B and grounds immediately surrounding it enclosed within an existing chain-link fence, as well as up to 5 acres of land that may be leased to a future tenant of St. Elizabeth's, and (ii) the lighthouse building and garage on Parcel C, and grounds surrounding it within an existing chain-link fence.
2. **Term.** This management agreement shall be in effect from the date hereof for so long as TPL is in possession of the Premises or any portion thereof; provided, however, that either the DEC or TPL may terminate this agreement upon 180-days' written notice to the other party.
3. **Consideration.** The consideration payable under this Agreement by DEC shall be the sum of \$1.00, the receipt of which is hereby acknowledged by TPL
4. **Management and Operation.** DEC agrees to police and manage the Premises, at its own cost and expense and for the benefit of the general public, in a manner similar to its policing and management of other lands under the jurisdiction of DEC, in order to maintain the Premises in a safe and orderly condition.
5. **Compliance with Applicable Laws, Etc.**
  - (a) DEC agrees that it will comply with all applicable laws and regulations, including New York State Health Laws and New York State Health Department Regulations, and that if the Premises or any part thereof is found to be unsatisfactory, to remedy the same as soon as possible.
  - (b) DEC shall comply with all requirements of the State Environmental Quality Review Act ( SEQRA ) as may be applicable to DEC management of the Premises.

***B. Memorandum of Agreement with Trust for Public Land to Manage the Lands of Mount Loretto***

(c) DEC agrees that it will not take any action that will result in, or fail to take action that will allow, the substantial impairment or diminution in the value of the Premises.

6. **No assignment.** DEC shall not assign this Agreement.
7. **Termination of Agreement.** Upon the termination of this Agreement, whether by the expiration of its term or by notice as provided in paragraph 2 above, DEC shall have no further obligations to TPL with respect to the management and operation of the Premises.
8. **Additional Provisions.** This Agreement in no way establishes DEC an agent, employee, lessee, or legal representative of TPL for any purpose whatsoever, and shall not be construed as creating a co-partnership or lease between TPL and DEC.

The DEC, for itself and its successors, agrees to hold TPL harmless against claims, losses, damages and expenses TPL may suffer as a result of DEC's negligence in properly managing the Premises or in constructing, maintaining, repairing or replacing or managing any public recreation or other amenities and actionable conduct of DEC as permitted by the Court of Claims Act and Section 17 of the Public Officers Law. The duty to indemnify and save harmless prescribed by this paragraph shall be conditioned upon (i) delivery to the Attorney General of the original or a copy of any summons, complaint, process, notice, demand or pleading within fifteen (15) business days after it is served with such document, (ii) representation by the Attorney General or representation by private counsel of TPL's choice, subject to the approval of the Attorney General, whenever the Attorney General determines in his sole discretion based upon his investigation and review of the facts and circumstances of the case that representation by the Attorney General would be inappropriate, and (iii) the full cooperation of TPL in the defense of such action or proceeding against TPL based upon the same act or omission, and in the prosecution of any appeal.

9. **Notices.** Any notice or other communication required to be made under this agreement shall be in writing and shall be deemed to have been duly given if delivered in person or mailed in a sealed envelope, postage prepaid, by certified or registered mail (return receipt requested) addressed to either party as follows:

If to DEC:

General Counsel  
NYS Department of Environmental Conservation  
50 Wolf Road



**B. Memorandum of Agreement with Trust for Public Land  
to Manage the Lands of Mount Loretto**

Albany, NY 12233

If to TPL:

Regional Counsel  
The Trust for Public Land  
666 Broadway, 9th Floor  
New York, NY 10012

Either party may designate another or further address by notice given in accordance with the terms of this section.

IN WITNESS WHEREOF, the parties have hereto caused this Management Agreement to be duly authorized and executed the day and year first written.

**THE TRUST FOR PUBLIC LAND**

By: \_\_\_\_\_

Name: Phyllis Nudelman

Title: Regional Counsel

**NEW YORK STATE DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION**

By: \_\_\_\_\_

Name: Peter Duncan

Title: Deputy Commissioner Natural Resources

APPROVED AS TO FORM:

Department of Law

Comptroller

Exhibits:

# C

## State Environmental Quality Review Act (SEQRA)

The State Environmental Quality Review Act (SEQRA) requires the consideration of environmental factors early in the planning stages of any proposed action(s) that are undertaken, funded, or approved by a local, regional, or state agency. A Long Environmental Assessment Form (LEAF) is used to identify and analyze relevant areas of environmental concern based upon the management actions in the draft unit management plan. For this plan, SEQRA review has been initiated with the preparation of the LEAF. Upon review of the information contained in the LEAF, there will not be any large or important impacts associated with any of the management actions, therefore there will not be a significant impact on the environment and a Negative Declaration will be prepared. Any changes that are made in this plan, based upon public comments, will be considered in the LEAF and determination of significance when the final plan is written.

**D**

**Public Meeting Comments**

# E

## North Mt. Loretto Forest

On January 11, 2008, Port Authority of New York/New Jersey donated North Mount Loretto Forest to the Department of Environmental Conservation (DEC). North Mount Loretto Forest is a 75-acre, 12.5 million dollar property located in southern Staten Island. Due to the recent acquisition by DEC, North Mount Loretto Forest is discussed briefly in this UMP. Detailed information (e.g., surveys and management plans) regarding North Mount Loretto Forest will be added to the updated UMP in the next five to seven years.

North Mount Loretto Forest is comprised of upland and freshwater wetlands (wet woods) that are a part of a larger wetland system regulated by the State of New York (Figure 1-7). The Mill Creek freshwater wetland is a Class 1 wetland that is approximately 42 acres in size. This wetland is significant because it provides flood and stormwater control, wildlife habitat, watershed protection, erosion and sediment control, open spaces, and aesthetics.

The Mill Creek south branch wetland originates on the North Mount Loretto Forest property. A series of springs, vernal pools, and channels collect and convey water towards Amboy Road. The wetland is situated on a rich and diverse red maple and oak assemblage. The marsh contains sedges and rushes. The combination of ephemeral ponds and flooded channels with mature woods provides an ideal habitat for several species including gray tree frog, pickerel frog, green frog, and redbacked salamanders. Wood thrush, tufted titmouse, and American redstart are also present throughout the wetland area.

The Mill Creek bluebelt project site, owned by New York City Department of Environmental Protection (NYCDEP), borders North Mount Loretto Forest to the north. The Long Pond Natural Area, consisting of nearly 20 acres of freshwater, is owned by New York City Department of Parks and Recreation and borders North Mount Loretto Forest to the west. Just south of Hylan Avenue is the Mount Loretto Unique Area, the southern Staten Island natural area that encompasses four Department of Environmental Conservation properties; Lemon Creek, Bloesser's Pond, Butler Manor Woods and Arden Heights Woods, discussed in this Unit Management Plan.

Recreational activities on the property include bird watching, hiking and educational trips such as nature walks. There are no historic areas located on the property except for a church, Mission of the Most Immaculate Virgin. North Mount Loretto Forest is on the priority list of the New York State Open Space Conservation Plan, 2006.

Integrating North Mount Loretto Forest into the UMP will serve to establish protected corridors and linkages among areas of significant conservation and ecological value in southern Staten Island. This will ensure the continuity of mapped and regulated wetlands while reducing the amount of impact from development and landfills that fragment wetlands into smaller areas.

The following short-term goals have been set for managing North Mount Loretto Forest:

- Close the Cunningham Road gates;
- Establish rules and property line signs;
- Install educational kiosks throughout the property;
- Remove abandoned cars;
- Continue working on encroachments;
- Establish DEC educational programs with schools;
- Identify and mark hiking trails; and
- Shut down ATV trails and continue enforcement.