CHAPTER 3

INVENTORY OF EXISTING CONDITIONS

IN THE HARBOR MANAGEMENT AREA

3.1 INTRODUCTION

This chapter of the Harbor Management Plan contains a comprehensive inventory of existing conditions in the Harbor Management Area. This information provides a critical foundation for defining the issues which are targeted for action in this HMP and formulating appropriate solutions to address these issues.

The inventory discussion is divided among two main sub-chapters, describing the harbor's land side and its water side. The Land Side sub-chapter (3.3) is organized according to topic (land use, zoning, environmental resources, etc.), with further subdivisions as appropriate to describe conditions in the various municipalities. The Water Side sub-chapter (3.4) also is organized according to topic (water quality conditions, ecological resources, vessel uses, etc.). However, in order to emphasize the concept of the harbor being a single entity, information in Sub-chapter 3.4 generally is not presented on a municipality-by-municipality basis.

Appendix A presents a series of photographs depicting representative features and key facilities in the HMP study area, both in the harbor itself and on the surrounding waterfront.

Before delving into the inventory of existing conditions, an overview of past uses and activities in Hempstead Harbor will establish the proper historic context. This historical overview is presented in Sub-chapter 3.2.

3.2 HISTORIC OVERVIEW

The information presented in this section is derived largely from *Hempstead Harbor: Its History, Ecology, and Environmental Challenges* (*Coalition to Save Hempstead Harbor*, 1998), the *Newsday* series *Our Towns* (as obtained from the worldwide web), *An Introduction to Glen Cove History* (D.E. Russell), and the web sites of the various municipalities.

Human presence in the Hempstead Harbor area dates back to the days of Native American settlements, perhaps as early as 3500 B.C. When Europeans began coming to the area, in the 1600s, they found the Harbor's shores to be rich in fish and shellfish and surrounded by gentle and fertile lands, with available freshwater and easy access to Long Island Sound for

transportation purposes. Small towns were established at the focal points of activity along the Hempstead Harbor waterfront, key among which were Roslyn and Glen Cove, while much of the outlying area (including much of present-day Flower Hill and Sands Point, and the northern portion of present-day Glen Cove) was used for farming. Other portions of the shoreline were preserved largely intact as wealthy industrialists purchased expansive tracts of land and built the impressive estates of the "Gold Coast".

In its early days, Roslyn had an intimate connection to the harbor, as evidenced by its prior names, Head of the Harbor and Hempstead Harbor. The energy of the headwater stream powered mills, one of which still stands on Old Northern Boulevard and is the subject of an ongoing preservation campaign. The Roslyn waterfront was once a bustling port, handling a wide variety of commodities, which made it the most important community on the harbor at that time. However, by 1900, siltation of the lower harbor made navigation difficult, such that larger vessels had to be off-loaded in order for goods to be delivered to the shore. Eventually, shipping to Roslyn became impractical, and its status as a port faded.

Like Roslyn, Glen Cove played an important early role in the development of Hempstead Harbor which was centered on water-related commerce, commencing with mill operations in the late 1600s at the head of Glen Cove Creek. Over time, Glen Cove became a regional center of industrial activity, especially in Glen Cove Creek which provided deep-draft, protected berthing. In the early 1880s, Glen Cove became a pottery center, using clay obtained locally from the Garvies Point area. The industrial boom in Glen Cove took off in earnest during the mid-1800s, with the establishment of the Duryea Corn Starch Manufacturing Company. Although contributing mightily to the local economy, the corn starch plant also produced prodigious quantities of organic waste which were discharged freely into Glen Cove Creek. The decay of this waste material destroyed the ecology of the creek and generated obnoxious odors that permeated the surrounding communities. The Duryea facility closed at the turn of the century, but was followed by even more intensive industry, involving even greater environmental hazards, including the Li Tungsten and Mattiace operations on sites which currently are undergoing major remediation (see Section 3.3.1.4).

Glen Cove historically has been a key terminal for passenger ship travel to New York City, with steamboat service out of The Landing (near present-day Morgan Park) commencing in 1828. This supported a thriving tourist industry, with several major hotels operating in the vicinity of The Landing. Additionally, steamboat operations made it possible for wealthy New York City businessmen to maintain summer homes in the Hempstead Harbor area (other landings occurred at Sands Point, Glenwood, and Roslyn) while also commuting to their offices in Manhattan, which supported the establishment of the "Gold Coast" estates.

Glenwood Landing was another important area of industrial development during the 1900s, due in large part to the occurrence of deep water near the shore in the natural channel between the tip of Bar Beach and the harbor's eastern shore. The Nassau Power and Light Company constructed a small, electric power plant on this shorefront in the early 1900s. This plant subsequently was expanded to accommodate increasing regional electrical demands, resulting in the conspicuous brick buildings and smoke stacks that tower some 246 feet above the community. Between 1908 and 1970, the world renowned Fyfe Shipyard operated in Glenwood Landing on property adjacent to the existing power plant. The current Exxon Mobil facility adjacent to the power plant began operating in 1923, after closure of the Socony-Vacuum distribution facility at this location. Prior to this industrialization, during the late 1800s, Glenwood Landing supported a tourist trade, with two hotels on the east side of Shore Road, between Scudders Pond and Glenwood Road, and another on the southwest corner of Glenwood Road and Schoolhouse Hill Road.

Like Roslyn, Glen Cove and Glenwood Landing, the early development of Sea Cliff was controlled strongly by its coastal geography. While the three former areas possess (or initially possessed) good vessel access to Hempstead Harbor, Sea Cliff's location atop a high bluff hindered water-borne commerce. However, the scenic beauty of Sea Cliff and its recreational amenities (e.g., fishing, swimming, boating, etc.) did attract a booming tourist trade and, starting in the 1800s, ferries and steamboats delivered a large number of seasonal vacationers who ascended to their hotels by way of an inclined railway along the bluff face.

Beginning around the 1920s, many of the large estates and farm tracts in the area around Hempstead Harbor were subdivided for single-family home construction. This type of development, on varying lot sizes depending on the local zoning requirements, characterizes much of the area in the five villages, the unincorporated communities of Port Washington and Glenwood Landing, and the northern portion of the City of Glen Cove.

The thick glacial deposits on the western shore of the harbor were mined for sand and gravel to serve the construction boom in New York City during the early and middle part of the twentieth century. It is estimated that as much as 140 million cubic yards of material were excavated from this area. The legacy of the Hempstead Harbor mining industry is evident today. The landscape at this location has been significantly and irreversibly altered: the high, vegetated bluffs that previously dominated the waterfront here were replaced by the flattened area of the former mine (now occupied largely by the Harbor Links Golf Course). Some of the pilings associated with the mining operation are still visible in the nearshore waters. Aggregate trans-shipment – involving the receipt of material by barge for trucking to inland markets, subsequent to the termination of active mining in Port Washington – still operates at its historic location just north of Bar Beach. One of the most notorious relics of the past mining industry, approximately 70

derelict barges that were abandoned in the western portion of the lower harbor, finally were removed from these tidal flats in 1993 following a sustained local effort over many years.

At one time, Hempstead Harbor was an important area for the shellfishing industry, providing abundant quantities of such species as clams, oysters, and mussels. However, after years of harvesting, quantities dwindled. Additionally, the deleterious effects of discharges from the adjacent, developed uplands caused water quality conditions in the harbor to deteriorate. As a result, the harbor has been closed for shellfish harvesting since 1966.

The history of Hempstead Harbor has been characterized by dramatic changes and strong contrasts. The early settlers enjoyed a pristine coastal water body that yielded abundant natural resources for their use, while also readily serving their commercial needs. However, heavy industrialization across two centuries led to the general deterioration of the area. More recently, a concerted and energetic initiative by residents, government, key property owners and facility operators has resulted in dramatic improvements to both the environment and quality of life in and around the harbor. The entire area in Hempstead Harbor (extending out to a line between Mott Point in the Village of Sands Point and the Morgan Park breakwater, and excluding the innermost section comprising Roslyn Creek) has been designated by the New York State Department of State and Department of Environmental Conservation as a Significant Coastal Fish and Wildlife Habitat, due to its extensive tidal wetlands, its use by waterfowl as a wintering area, and its productivity with respect to shellfish and finfish. There has been expanded recreational use of these waters – anglers, swimmers, and boaters are returning in increasing numbers. With the substantial improvement in the physical condition of the harbor, the aesthetic appeal of the waterfront also has been renewed, such that more people are being drawn back to enjoy the simple pleasure of viewing the harbor. However, significant work remains ahead.

Restoration efforts in Hempstead Harbor must deal with the legacies of the past: industry no longer dumps chemicals freely, but hazardous waste sites dot the harbor's shores; sewage treatment plants have been built and upgraded, but sanitary discharges to on-site cesspools in large portions of the watershed still leach poorly treated effluent into the harbor; and the harbor still suffers from deteriorated visual character in some areas. Additionally, conflicts still exist among the various user groups: areas that are more natural and pristine stand almost side-by-side with areas that are intensively developed (including a number of hazardous waste cleanup sites); vessel uses in these waters range from large commercial barges to small hand-powered and wind-powered recreational boats; and there are beaches within a stone's throw of petroleum facilities. Accommodating these varying conditions and uses, to achieve the optimal level of benefit for all parties involved, will be a special challenge that the Harbor Management Plan is intended to address.

3.3 INVENTORY OF EXISTING LAND-SIDE CONDITIONS

The Harbor Management Area stretches along approximately 19.5 miles of shoreline which extends from Prospect Point in the Village of Sands Point to the east, southward to the outlet from Roslyn Mill Dam in the Village of Roslyn, and northward to Matinecock Point in the City of Glen Cove on the east side of the harbor. This waterfront land area covers a total of 4.8 square miles stretching across eight municipalities. The geographic limits of these municipalities, in reference to the boundary of the Harbor Management area, are illustrated on Map 3-1.

3.3.1 Land Use

3.3.1.1 General Pattern of Land Use in the Harbor Management Area

Land use in the Harbor Management Area is governed independently by the eight municipalities that have shoreline on the harbor, primarily through their zoning codes. In many cases, the existing pattern of land use reflects zoning that was instituted many years ago by the respective municipal legislative boards. However, ongoing redevelopment in certain areas (e.g., Glen Cove Creek) is being guided by zoning amendments that have been enacted in the recent past. A similar initiative is under way in the Town of Oyster Bay portion of Glenwood Landing, with the January 2004 enactment of waterfront zoning in this area, which it is hoped will encourage suitable redevelopment to replace the existing pattern of industrial land use along this section of the harborfront reflecting the zoning that had been in place for many decades. The upland zoning of the Harbor Management Area is discussed in detail in Section 3.3.2.

As shown in Map 3-2, distinct differences in the pattern of land use are clearly evident as one travels around the rim of Hempstead Harbor. Mixed residential development and recreation/open space occupy most of the land in Sands Point, Roslyn Harbor, Sea Cliff and the portion of the City of Glen Cove to the north of the creek. Open space lands dominate along the western shoreline of the lower harbor. Mixed uses occur in the Village of Roslyn. More intensive waterfront uses, including most of the marine-commercial facilities in the harbor, are concentrated in Glen Cove Creek and Glenwood Landing, where very little natural vegetation or areas providing suitable wildlife habitat remain.

Overall, public open space and recreational uses comprise the largest portion of the land use in the upland portion of the study area, at 81.7 percent of the total. Residential is the next most common use, at 8.5 percent of the total. Private recreation comprises 3.6 percent of the total, private vacant/unutilized 1.8 percent, general commercial 1.6 percent, industrial and institutional about 1 percent each, and marine-commercial and mixed use less than 1 percent each.

3.3.1.2 Marine-Commercial/Water-Dependent Uses

Marine-commercial uses include businesses that are water-dependent (i.e., those uses which require a location on the water or at the shoreline in order to function). This includes marinas, boat yards, ferry operations, facilities that receive goods or ship products via water-borne vessels, and similar uses. Marine-commercial uses that provide access to the waters of Hempstead Harbor for recreational vessels (e.g., marinas) are discussed in Section 3.3.1.3, which also addresses facilities such as yacht clubs and boat launching ramps.

The Glen Cove Creek portion of Hempstead Harbor is one of ten maritime centers in the Long Island Sound region of New York State that have been designated by the New York State Department of State (NYSDOS) in its *Long Island Sound Coastal Management Program* (1994 draft report with thorough inventory; 1998 updated summary). A Maritime Center is defined as a segment of "working coast" which contains a high concentration of water-dependent uses, including public and private marinas, yacht clubs, boat yards, commercial or recreational fishing vessels, ferries, and/or water-borne commerce. For Glen Cove Creek, the maritime center designation was based on the presence of marinas, yacht clubs, a boat yard, aggregate trans-shipment facilities, and an oil transfer and storage facility (as identified by NYSDOS in the inventory conducted for its 1994 draft report). In addition, NYSDOS recognized the maritime importance of the water-dependent uses on the west shore of the harbor (including the aggregate trans-shipment facilities), although concern was expressed that these uses should not impair existing parks in the vicinity. However, it is important to recognize that the eastern shoreline of the harbor below Glen Cove Creek also contains a number of water-dependent uses, including Tappen Marina and the Exxon-Mobil storage and distribution facility, as well as the Gladsky marine salvage operation (which has been relocated to Glenwood Landing from Glen Cove Creek since the time of that earlier study by NYSDOS).

Marine commercial uses within the study area are described as follows (see Map 3-3 for the location of these facilities and other key parcels and facilities in the study area):

Village of Sands Point

This portion of the study area does not contain any marine commercial uses.

Port Washington, Town of North Hempstead

The marine-commercial uses in this area include several aggregate operations located on the west side of the harbor just north of the Hempstead Harbor County Beach Park. These companies provide crushed stone, sand and gravel, asphalt and recycled materials to various buyers. Barges deliver bulk shipments of aggregate to the shoreside offloading facilities of Bay Aggregates, Tilcon Corporation, and Buchanan Marine. Cranes remove the materials from the barges and create large stockpiles on the subject property. The aggregate is transferred on-site

to trucks for transport to inland destinations. The barges are staged at moorings in the middle of the harbor, where they await conveyance by tug boat to aggregate sources.

Village of Flower Hill

This portion of the study area does not contain any marine commercial uses.

Village of Roslyn

This portion of the study area does not contain any marine commercial uses.

Village of Roslyn Harbor

This portion of the study area does not contain any marine commercial uses.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

Keyspan's **Glenwood Power Station** is located on approximately six acres on the east side of the harbor, in the North Hempstead portion of Glenwood Landing, just across the Oyster Bay Town line. The power plant currently has two operational units, which were constructed in 1952 and 1954. These two units initially were fueled with coal, were converted to oil combustion in the 1960s, dual-fuel (oil and gas) in the 1970s, and then went to gas-only operation in the 1980s. These units generate a combined electrical output of approximately 228 megawatts. A waterfront location is no longer needed for fuel deliveries, since oil use was phased out completely in the 1980s and the plant's gas supply arrives via pipeline. However, the water supply for non-contact cooling of the turbines continues to be drawn from the harbor, so that the facility in its present configuration still is considered to be a water-dependent use.

Exxon-Mobil Oil Company operates a fuel storage and transfer facility in the Town of Oyster Bay portion of Glenwood Landing. The current facility operation at this location commenced in 1923, after closure of the Sacony Vacuum distribution facility. The facility operates 24 hours-a-day and seven-days-a-week, and receives shipments of as much as 170-180 million gallons of petroleum per year. The product stored at the Exxon-Mobil tank farm is delivered to the site entirely by oil tanker. Shipments are off-loaded from these vessels at the oil company's harborside docking facility (situated on a small parcel within the study area) and transferred via a pipeline beneath Shore Road to storage tanks on the east side of Shore Road (just outside the study area).

The **Gladsky Marine Salvage** facility occupies an approximately 2.2-acre site (of which, roughly 1.5 acres are upland and the remainder is underwater land) located on Shore Road in the

Town of Oyster Bay portion of Glenwood Landing, between the vacant parcels owned by Key Span to the north and the Exxon-Mobil pier to the south. The Gladsky facility serves as the base for the recovery of sunken vessels and similar marine salvage operations throughout the region. The upland portion of the site contains a variety of heavy equipment, machinery, supplies and materials associated with this use. Floating docking structures provide boat slips, estimated at 12 or more in number at the time of this report.

The upland portion of the Gladsky property also is used for dry storage of commercial and pleasure craft, as well as a service area for all types of vessels. Wet berthing and a small marina facility also are provided (see Section 3.3.1.3). A site plan for existing and proposed improvements, including both the marine salvage and marina uses, was submitted to the Town of Oyster Bay prior to the institution of the moratorium adopted in association with the *Glenwood Landing Waterfront Redevelopment and Revitalization Plan*; this moratorium expired in September 2002. The plan proposes the construction of a 700-square foot office and storage facility, a 30-space parking lot, a 21-slip marina (over the northern portion of the underwater lands), a six-foot wide timber walkway, extension of the steel bulkheading along the northern and western shoreline, an outdoor storage area for equipment and machinery, and landscaping along the street frontage.

Quality Marine Service, formerly Burtis Boat Works, is a boat yard and marine supplier located at the southern end of Shore Road in the Town of North Hempstead portion of Glenwood Landing. This facility is open year-round, and provides all types of marine repairs. No dockage is available at this location, which backs onto the north side of Motts Cove.

Village of Sea Cliff

This portion of the study area does not contain any marine commercial uses.

City of Glen Cove

The City of Glen Cove contains a number of marine commercial uses which are concentrated on Glen Cove Creek. These uses include marinas and boat yards (e.g., Jude Thaddeus Glen Cove Marina and Brewer's Yacht Yard), which provide various services, including boat repairs and maintenance, travel lifts, vessel storage, and fueling. All such facilities that are related to recreational vessel access are discussed in Section 3.3.1.3, below.

Ferry service historically has been an important marine-commercial, water-dependent use on the Glen Cove waterfront and has played an integral role in the City's development. As far back as

1829, ferry service connected Glen Cove to Manhattan. This led to many hotels being built in the area and supported a substantial tourist industry, and also attracted many wealthy entrepreneurs who constructed mansions on nearby estates.

The **Fox Navigation Ferry Terminal** had been located on the northern side of the mouth of the Glen Cove Creek, at the end of Garvies Point Road. Fox Navigation had operated a ferry service out of this location for several years, with round trip passage to New York City and excursions to Connecticut to visit the Foxwoods Casino. However, ferry operations ceased in October 2002 due to a reported lack of customers and high maintenance costs, and the future of the facility is uncertain, although the City has indicated that another operator will be sought if Fox Navigation is not able to meet its contractual commitment.

Because of heavy congestion and delays on regional road transportation systems, travel by ferry is being looked at with increasing interest. In 2002, the Long Island Waterborne Transportation Plan project began, with the mission of exploring the potential for expanding the use of the Long Island Sound and its tributaries for transportation (of both passengers and commercial freight). Consultants have been retained to analyze the existing marine facilities, marinas and harbors in the study area, which includes the Fox Ferry Terminal and other facilities located in Hempstead Harbor. The Waterborne Transportation Plan will also examine the range of potential ferry services and routes in the area. In the end, a Final Plan will be instituted to govern until 2025.

Bon-A-Fide Redi-Mix and **Rason Asphalt** operate from two separate parcels in the upper portion of Glen Cove Creek. Bon-A-Fide's property is on the north side of the creek, just downstream from the terminal bulkhead at Charles Street. The Rason Asphalt site is situated on the south shore, between the Nassau County and Glen Cove Department of Public Works facilities. Both Bon-A-Fide and Rason Asphalt receive water-borne shipments of aggregate material used in the construction industry.

The **Doxey** site occupies 0.64-acre on the north side of Glen Cove Creek, immediately east of the former Gladsky parcel and west of the Li Tungsten property. The Doxey facility is privately owned, and currently is being used for a salvage operation. Previously, the site was operated as a petroleum storage facility. The City is working with the owner to relocate this operation to another suitable site, in order to free up this parcel for redevelopment as part of the Glen Cove Creek Revitalization Plan.

Windsor Fuel Company operates from a 1.1-acre property located at the head of Glen Cove Creek, on its northern shore. The site recently was refurbished, including reconstruction of the bulkhead, removal of several above-ground tanks, and fresh coat of paint on the remaining tank. In the past, this facility has received bulk shipments of petroleum via barge, but this has not

occurred recently due to issues regarding the dredging of the Creek. The owners have expressed an interest in recommencing its water-side activities once dredging has been completed.

3.3.1.3 Recreational Vessel Access Facilities

Various facilities are available in the study area which provide for vessel access to Hempstead Harbor. These facilities – which range from launching ramps for small boats, including both trailered and car-top vessels (e.g., canoes and kayaks), public and private marinas, and yacht clubs – are described as follows (see Map 3-3 for the location of these facilities).

Village of Sands Point

This portion of the study area does not contain any facilities that provide vessel access to Hempstead Harbor.

Port Washington, Town of North Hempstead

The Beacon Hill community maintains a semi-private seasonal docking facility (Colony Marina), which provides approximately four berths and 12 moorings, and boat launching ramp.

The Town of North Hempstead's Bar Beach facility contains a boat ramp, which is located immediately to the south of Bar Beach peninsula. There is a $55 annual resident permit available, otherwise use of the ramp costs $8 per day for residents.

Village of Flower Hill

This portion of the study area does not contain any facilities that provide vessel access to Hempstead Harbor.

Village of Roslyn

This portion of the study area does not contain any facilities that provide vessel access to Hempstead Harbor.

Village of Roslyn Harbor

This portion of the study area does not contain any facilities that provide vessel access to Hempstead Harbor.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

The **Gladsky Marine** facility contains a small private marina. As noted previously, the upland area of the property is used for boat maintenance, but does not include other boating amenities. The number of boat slips provided at this site was estimated at 12 or more in number at the time of this report, and the facility is the subject of a code compliance investigation by the Town of Oyster Bay.

Tappen Marina is a Town of Oyster Bay facility on the east shore of the harbor to the north of Bar Beach, just south of the Village of Sea Cliff. This public marina contains a total of 272 boat slips, which can accommodate vessels as large as forty feet in length and having up to a 6.5 feet of draft. The marina is open to both Town of Oyster Bay residents and non-residents. During recent peak boating seasons, the slips have been used at approximately 90 percent of capacity. Winter storage is available as well, but only in-water; however, not many boaters prefer this method and, therefore, the marina does not experience heavy storage demands. The fees for boat slips at the Tappen Marina are offered at seasonal rates based on the size of the boat. Slips are available either with or without electrical service to both residents and non-residents. Also, a disposal facility is provided on site to accept used motor oil, and a vessel waste pumpout facility is available for public use.

Village of Sea Cliff

The Town of Oyster Bay's **Tappen Beach Park** contains a boat launching ramp, which is located immediately to the north of Tappen Marina at the southernmost end of the Village. A $20 seasonal trailer sticker provides Town of Oyster Bay residents with access to this ramp, otherwise Town residents are charged a $10 per day use fee. For non-residents, there is a $40 daily charge for cars, trucks and trailers. Commercial vessels are charged $275, and senior citizens may obtain a free seasonal trailer sticker. Sunfish/sailfish racks also are available at Tappen Beach for seasonal fee.

The **Shore Road Boat Launching Ramp** is located at Rum Point, adjacent to the terminus of Laurel Avenue, near the north end of Shore Road Promenade. Only limited parking is available along Shore Road, so that cars must be parked at Tappen Beach, located to the south. Because of roadway geometry constraints at this location, this boat ramp receives limited use, mostly for hand-launched boats (e.g., canoes, kayaks, etc.)

Sea Cliff Village Beach is a key point of access to the harbor for small boats. This facility, which is available to Village residents, contains: a boat launching ramp; a sailing school, which operates during a limited period each year, and maintains dinghy storage racks on the western end of the site; and a recently established kayak club, which operates from the site during the summer.

Sea Cliff Yacht Club has approximately 135 senior members and six associate members (ages 21 to 31), predominantly from Glen Cove and the surrounding communities. Members moor their boats in the federal anchorage area situated immediately to the south of the mouth of Glen Cove Creek; the club maintains about 75 moorings in this area. Motor launch services to and from the mooring area are provided to members and transients. Fueling and vessel waste pumpout facilities are provided, but no vessel dockage is available at this location. The Yacht Club's property also includes a swimming pool and a beach. An important activity of this yacht club is its sailing school which primarily is attended by school-age children. There is a regular program of junior regattas each summer, with weekly competitions and the annual "Around the Sound" race (a major event typically involving hundreds of boats).

City of Glen Cove

Brewer's Yacht Yard is located at the western end of Glen Cove Creek's southern waterfront. The marina basin contains approximately 350 slips. None of these are dedicated for transients, although a reciprocal agreement exists with other marinas owned and operated by different Brewer marinas and yacht yards. The approximate capacity for winter storage at this site is 600 boats. Live-aboards are not permitted. Existing services include fresh water, electrical supply, 30- and 60- ton travelifts, a vessel waste pump-out facility, and a repair shop. Also available are marine supplies and ice, showers, restrooms, a picnic area, barbecue grills, a playground, swimming pool and phones. The marina recently completed improvements that include the installation of frost-free water hydrants, new electrical service posts, new bathroom facility, landscaping, the installation of a new fuel dock, and replacement of some of the docking structures.

The **Jude Thaddeus Glen Cove Marina** is a privately-owned marina located on the south side of Glen Cove Creek, just west of Morris Avenue. The marina has approximately 387 slips that are usually filled to capacity during the boating season. Winter storage is provided for approximately 600 boats in upland and in-water storage areas. Transients do not account for a significant source of business. Gas and diesel fueling are available on-site. Other amenities include marine and ice supplies, showers, restrooms, laundry facilities, a snack bar, public telephones, fresh water and electrical service, a 35-ton lift, and a repair service. The marina is open to the general public, with a maximum allowable length of about 90 feet.

The **Glen Cove Yacht Club** is a municipal yacht club with facilities consisting of a clubhouse, locker room, launch service during boating season, an asphalt parking area, dinghy racks, a fixed pier and floating docks, and a vessel waste pumpout facility (available to the public using tokens issued by the City Recreation Department). The club occupies roughly 0.41 acre of upland owned by the City of Glen Cove at the foot of McLoughlin Street, directly to the south of Morgan Memorial Park. The docking facility has a 20-minute tie-up limit for member vessels, but also is used by the Glen Cove Harbor Patrol, Nassau County Police Marine Unit, and special events. A self-regulating mooring area is available at this facility, immediately to the north of and outside the mouth of Glen Cove Creek. During recent years, club members have occupied 30 to 40 moorings in this area. The club is accessible to members only. Membership is open to City of Glen Cove residents, as well as individuals who reside outside the City. Glen Cove Yacht Club hosts the only Sea Scout Unit in Nassau County, which is co-sponsored by the City and the Lions Club. Also, the local Coast Guard Flotilla regularly meets at the club.

The **Hempstead Harbor Yacht Club** is a private yacht club maintained and operated by its members. Facilities consist of a boathouse, locker rooms, rest rooms, a bathing area, docking

facility for small craft, and a launch tender during boating season. A self-regulating mooring area is available for this facility, in the waters immediately to the north of the mouth of Glen Cove Creek, within which the club maintains about 40 moorings. Winter storage for approximately 40 boats is available in the Club's parking lot.

The **Garvies Point Boat Owners Association** is a private yacht club that is maintained by membership on one acre of land owned by the Nassau County Department of Parks and Recreation at the Garvies Point Preserve. Facilities consist of a small dock and boat storage area for dinghies and other small craft. The Association was established to provide access for boat owners to the special anchorage area.

The **Garvies Point Boat Ramp** is a City of Glen Cove facility located at the end of Garvies Point Road. It is designed for trailered boats, and access is limited to City residents.

3.3.1.4 Vacant, Deteriorated, and Underutilized Private Lands

The shorefront of Hempstead Harbor historically has been heavily used for industrial purposes. Although some of these uses still are in operation (Mobil-Exxon terminal in Glenwood Landing, and sand and gravel trans-shipment facilities in Port Washington and Glen Cove Creek), several facilities that previously were active have become idle or have fallen into disrepair. The parcels of vacant, deteriorated, and underutilized private land in the study area are shown on Map 3-3, and are described as follows. The redevelopment of these sites will play a pivotal role in the future of Hempstead Harbor and its surrounding communities.

Many of the vacant, deteriorated or underutilized properties along the harbor's waterfront are impacted by significant contamination due to past hazardous waste disposal practices which predated stringent environmental regulations that were enacted in the 1970s. Four sites (Shore Realty in Glenwood Landing, and Li Tungsten, Mattiace Petrochemical, and Captain's Cove in Glen Cove) are on both the Federal and State Superfund lists. Two additional sites (Crown Dykman and Powers Chemco in Glen Cove) are listed only under the State Superfund program. A number of additional properties (e.g., the Forest City Daly housing site in Roslyn, and the Harbor Fuel/Hin Fin and vacant Keyspan parcels in Glenwood Landing) either have undergone voluntary cleanup overseen by NYSDEC or are expected to be remediated under that program in the future.

A detailed description of the key parcels of vacant, deteriorated or abandoned land (as well as other important properties on the Hempstead Harbor waterfront) is provided in Chapter 4 of this report, which addresses the Quality Communities aspects of the project. Below is a summary of these properties.

Village of Sands Point

There are no vacant, deteriorated, or abandoned private lands in this portion of the Harbor Management Area.

The Payson property fronts on Long Island Sound, immediately to the west of East Creek, at Prospect Point, just outside the HMP study area boundary. Seven acres of this private vacant parcel are being offered for sale and potential future development.

Port Washington, Town of North Hempstead

The Harbor Links (former Morewood) property contains a vacant parcel of land, on the north side of the entrance roadway to site, which is jointly owned by the Town of North Hempstead and a private entity. The fate of this parcel has not been determined.

The waterfront area between Bar Beach and the Town of North Hempstead transfer station contains three small parcels of vacant, privately-owned land, identified as follows:

- 1.75 acres stretching along approximately 900 feet of shoreline, owned by Scotto Brothers Realty (Section 6, Block 53, Lot 1003); and

- 3.2 acres in two contiguous parcels, including underwater lands, stretching along approximately 200 feet of shoreline, owned by M&R Enterprises (Section 6, Block 53, Lots 1047 and 1049).

The Town has been negotiating with the respective owners to acquire these three parcels in order to complete the stretch of public land along this segment of the harbor shoreline, which will be developed into the Hempstead Harbor Shoreline Trail (see Section 3.3.1.5).

Village of Flower Hill

There are no vacant, deteriorated, or abandoned private lands in this portion of the study area.

Village of Roslyn

Forest City Daly Housing (FCDH) is planning to develop a senior residential facility with a waterfront park on an 11.077-acre parcel (known as Bryant Landing) in the Village of Roslyn located just north of the Roslyn Viaduct on the east shore of lower Hempstead Harbor. The project site previously had been occupied by various industrial uses, including an asphalt plant and Texaco gasoline and oil storage facilities, and has been vacant for approximately 15 years.

More recently, the area had been used illegally for dumping of general debris. As part of the site redevelopment, FCDH has undertaken the remediation of soil contamination that resulted from past uses, in accordance with the Voluntary Cleanup Program Remedial Work Plan that was negotiated with NYSDEC.

A vacant property is located on the west side of the harbor, just south of the Roslyn Viaduct. This parcel contains a warehouse building with a small office area. No active application is pending for redevelopment or reuse.

Village of Roslyn Harbor

There are no vacant, deteriorated, or abandoned private lands in this portion of the study area.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

The **Shore Realty** property currently is on both the State and Federal Superfund lists. This parcel occupies approximately 3.2 acres on the north side of the mouth of Motts Cove, in the Town of North Hempstead portion of Glenwood Landing. Between 1939 and 1972, the bulk storage of petroleum products occurred at this location. Mattiace Petrochemical Company leased the parcel from 1974 to 1980, and used it to store various solvents. Numerous spills are reported to have occurred during Mattiace's tenancy. Applied Environmental Services subsequently used the site to store and blend waste solvents. Shore Realty purchased the property in 1983 for the purpose of constructing a condominium development. However, soils and groundwater at this location were found to contain high concentrations of organic compounds, resulting in a Consent Order involving a large number of responsible parties. In 1986, a NYSDEC-funded project removed from the site 700,000 gallons of liquid hazardous waste that were being stored in five large tanks and numerous smaller tanks and containers. In 1995, a long-term remedial action commenced on the site, involving the operation of groundwater treatment and soil vapor extraction systems.

The **Harbor Fuel/Hin Fin** property comprises three separate tax parcels on the east shore of Hempstead Harbor, directly to the north of the Shore Realty site. The inland parcel, comprising about 1.5 acres, is privately owned and operated as a fuel distribution facility. The two waterfront parcels, each at approximately 1.25 acres, are owned by the Town of North Hempstead; the northerly one of these parcels has been leased to Harbor Fuel/Hin Fin for many years. In the late 1990s, a plan was presented to the Town by B&G Development consisting of a 60-unit condominium complex covering the entire four-acre site. Thereafter, a contract of sale was negotiated for the Town-owned portion of the site, with closing contingent upon rezoning to accommodate the condominium proposal and completion of the site plan and environmental review processes. As part of the development plan, the project sponsor would undertake

remediation of the entire property, and would include suitable public access to and along the waterfront. At that time, consideration was being given to using a vacant Harbor Fuel/Hin Fin property on the east side of Shore Road for subsurface sewage disposal, although further studies would be required to verify the feasibility of this approach. In the summer of 2002, the developer presented a revised plan which, although involving the same number of units, would place them in 65-foot tall buildings, as compared to the 35 feet specified in the original plan. In the amended plan, the developers also indicated their desire to pursue a sewer connection through Glenwood Landing and Sea Cliff to the Glen Cove wastewater treatment plant, which has generated significant concern among area residents, and would require further investigation. The proposed rezoning of the subject property was issued a Positive Declaration by the North Hempstead Town Board under the State Environmental Quality Review Act (SEQRA), and a public scoping session was conducted in June 2003. At the time of this HMP report, the Environmental Impact Statement was in the process of being prepared.

Scudders Lane road end lies between the Shore Realty and Hin Fin properties. For many years, this right-of-way has been an attractive location for the dumping of various types of debris, including derelict boats, an activity that probably has been encouraged and facilitated to a certain degree by the prolonged vacancy of the adjacent properties.

A **Keyspan Property**, comprising three contiguous tax parcels, is situated on the eastern shore of the harbor, in the Town of Oyster Bay portion of Glenwood Landing, between the Gladsky property to the south and Tappen Marina to the north. These three lots currently are vacant, and have a combined total land area of 7.9 acres. Previously the southern portion of the site was occupied by a storage facility for propane, which was used by KeySpan to augment gas supplies to customers during cold days. The propane storage tank farm (and the associated propane processing plant that was situated across Shore Road) has been decommissioned and all of the former underground storage tanks have been removed. In 2002, a remedial action by KeySpan was completed on this property under NYSDEC's Voluntary Cleanup Program, which entailed the removal and proper disposal of some contaminated soil and the placement of an impervious soil cap over a portion of the site. This action also entailed the removal of the woodland that had occupied the northern portion of the site, to the north of the former propane tank farm; the tidal pond on this lot was retained, and is protected along its upland edge by a stone wall. The cleanup on the southern half of the site (i.e., the former propane tank farm) allows the property to be used for "restricted" residential purposes. The northern half of the site (i.e., the former woodland area) has been remediated to a level necessary that allows recreational and open space uses. The new 79.9-megawatt gas turbine power plants constructed by Keyspan/LIPA are located on the east side of Shore Road, just outside the Harbor Management Area, on land that had contained the propane processing facilities.

<u>Village of Sea Cliff</u>

There are no vacant, deteriorated, or abandoned private lands in this portion of the study area.

City of Glen Cove

The Glen Cove Creek corridor historically was a regionally important focal point for marine-commercial industrial activities in the Hempstead Harbor area. Although the creek's shoreline still contains a concentration of marine-commercial uses, including a ferry terminal and several marinas and boat yards, many of the industrial uses have ceased to operate. Consequently, several vacant, deteriorated, and abandoned parcels occupy the waterfront of the creek, especially on the north side. Many of these properties are burdened with significant contamination, while other parcels are less impacted "brownfield" sites. Because of these circumstances, the City's waterfront on Glen Cove Creek was identified by New York State in Long Island Sound Coastal Management Program (draft 1995) as a waterfront redevelopment area, and subsequently was designated by the U.S. Environmental Protection Agency in 1997 for a Brownfields Pilot initiative. These programs has been instrumental in advancing the City's community-based efforts to revitalize 214 acres that have been targeted for assessment, cleanup and redevelopment. This long-term revitalization effort is ongoing, and is being overseen by the Glen Cove Community Development Agency, in cooperation with the City Department of Public Works.

The **Mattiace Petrochemical Company** property is an approximately 2.5-acre site that contains an inactive chemical distribution facility on the north side of Garvies Point Road. This property lies just outside the study area boundary, but is included in this discussion because it has been impacted by severe contamination (it is a federal Superfund site) and will play a key role in the redevelopment of the Glen Cove Creek corridor. Preliminary site assessments under the New York State Superfund program commenced in 1984. However, the property was seized by the State of New York in 1987, after many years of failed negotiation and litigation, and was placed on the Federal Superfund List two years later. The EPA eliminated immediate threats to nearby residents and the environment by securing the site and removing 100,000 gallons of flammable hazardous liquids in 1989. A remedial action completed in late 1996 included the removal of all site structures, underground storage tanks, piping and other buried structures. An integrated groundwater and soil vapor treatment facility commenced long-term operation in 1999. The primary threat to the Harbor from this site currently is contamination through stormwater runoff.

The **LI Tungsten** site is an approximately 26-acre, abandoned industrial facility comprising three separate parcels on Herb Hill Road, Dickson Road, and Garvies Point Road, including a waterfront parcel near the head of Glen Cove Creek. The site has a long history of industrial use, extending back at least as far as the late 1800s. Tungsten processing commenced on the

site in the early 1940s. The site was purchased by the Glen Cove Development Corporation (GCDC) in 1984 for private residential development. In 1989 and 1990, the GCDC undertook remediation ordered by the EPA, which resulted in the removal of the most serious chemical and radiological hazards at the site. However, significant contamination still remained on-site, and the property was added to the Federal Superfund list in 1992. The property went into receivership and was held in trust by the State of Maryland, until it was purchased by the City of Glen Cove Industrial Development Agency in 1999 for the purpose revitalizing the site with a mix of uses. Between 1996 and 1998, the EPA performed a second remedial action to address contaminants in chemical storage tanks on the site. The removal of contaminated ore residues and soils on the southern half of the Li Tungsten property was completed in early 2002. The contamination on the northern portion of the Li Tungsten property is being addressed during the Phase 2 remediation work. In addition, the EPA is cooperating with the U.S. Army Corps of Engineers to assess the extent of contamination still remaining in the creek.

The **Captain's Cove** site is located on the north side of Glen Cove Creek, near the mouth of the creek, west of the Li Tungsten property. The Captain's Cove site comprises approximately 25 acres and is located at the terminus of Garvies Point Road, on land that was formerly used as a landfill by the City of Glen Cove for the disposal of construction and demolition debris, hazardous waste, and solid waste. Village Green Realty purchased the site in 1981 from the City, and proposed a 238-unit condominium development. Construction of this project began in 1984-85, but was halted after routine test results indicated the presence of various contaminants above safe limits. Subsequently, Village Green Realty went into bankruptcy, and the property was held in trust by the State of Maryland. In 1996, the USEPA agreed to remediate the site as part of the Li Tungsten clean up project, instead of listing the Captain's Cove parcel as a separate, new site. The remedy includes a deed restriction which will limit future uses. In 1999, the City of Glen Cove Industrial Development Agency acquired the property, with the goal of eventually implementing a mixed use development on this site, in conjunction with the redevelopment of the nearby Li Tungsten property. That same year, the City demolished the empty condominium shells, which stood as an eyesore on the waterfront for more than a decade. It was discovered that the site also was used as a disposal area for tungsten ore by the operations of the Li Tungsten facility, which entailed the deposit of radiological wastes. The removal of these wastes to a disposal facility has been completed.

The **Former Gladsky Site** occupies approximately one acre of land on the north side of Glen Cove Creek. This parcel currently is vacant. Previously, the site had been used for a marine salvage facility, until the Gladsky operation was relocated to Glenwood Landing in 2001.

The privately-owned **Doxey** parcel currently is used for a salvage operation. This property is a significant eyesore, and the City is working with the owners to relocate their facility, in order to free the site for redevelopment as part of the Glen Cove Creek Revitalization Plan.

The **Sea Isle Marina Properties, LLC** site occupies a low-lying peninsula extending into the mouth of Glen Cove Creek from its southerly shore. This property occupies a total of six acres, including a significant area of underwater lands. A series of unfulfilled development plans has been proposed for the site by various owners over the years, the most recent being a condominium complex of 36 units, with a 22-unit reduced density alternative, as presented in a Draft Environmental Impact Statement dated October 2001. The controversy regarding this parcel is connected to the history of the site. The Sea Isle peninsula originally was part of a sand bar that extended from the north side of the mouth of Glen Cove Creek. However, the U.S. Army Corps of Engineers straightened the federal channel in the creek in the 1930s in order to provide a more direct and safer route for vessel access. As a result, the original peninsula was severed to create a small island just south of the creek's new mouth. In the early 1960s, the water area between this island and the shoreline on the mainland to the south was filled to create access to a restaurant on the site. Eventually, this use was abandoned, and the property became overgrown. All subsequent attempts to develop the site have been impeded by significant environmental constraints - including an extensive area of tidal wetlands and 100-year floodplain - and uncertainty regarding the true ownership of the filled area that originally was underwater land.

3.3.1.5 Recreational and Open Space Lands

The Harbor Management Area contains a broad array of recreational and open space lands, both public and private. These lands serve both passive and active recreational needs, and include both facilities that are water-dependent (e.g., marinas, fishing piers, swimming areas, boat launching ramps, etc.) and those which do not require a location on the waterfront (picnic areas, ball fields, playgrounds, golf courses, etc.), as well as properties that are undeveloped but which serve open space purposes (e.g., wildlife habitat, visual relief from the built environment, informal pedestrian access, etc.).

Public facilities (e.g., marinas and boat ramps) that provide access to Hempstead Harbor for recreational boats are discussed in Section 3.3.1.3, above. All other recreational and open space facilities within the study area are described as follows (see Map 3-3 for the location of these sites):

<u>Village of Sands Point</u>

A **Private Bird Sanctuary** property is located at the northwestern tip of the study area, along East Creek near Prospect Point. This preserve consists of roughly 33 acres and is covered by thick natural plant growth. This vegetation hinders access to the shoreline, either from the landside or the waterside.

Sands Point Nature Preserve is a 216-acre passive-use outdoor recreational area, which highlights the native natural environment of Long Island. The Preserve, a Nassau County facility, consists of glacial boulders, sandy cliffs, woodlands with six nature trails, and a one-mile shoreline along the Long Island Sound. Also on the premises is Castlegould, a large castle that was built in 1902 by railroad heir Howard Gould, and then taken over by Daniel Guggenheim; as well as Falaise, a Normandy style manor house built by Harry F. Guggenheim in 1923. The property eventually was sold to the federal government to preserve natural resources and local historic heritage. Nassau County acquired much of the land in 1971 to create a preserve, historic site, and museum.

The **Village Club of Sands Point** covers over 200 acres which were purchased by the Village in 1994 for use by local residents. There are approximately 500 members. The property had originally been the estate if Isaac Guggenheim, and was then used by the IBM Corporation as an executive training center and country club for its New York area employees. The facility has undergone extensive renovations in recent years, converting the golf course from nine-holes to eighteen-holes. In addition to the golf course, there are also fourteen tennis courts, a standard competition-size pool and a new modern playground near the waterfront. Some sunbathing occurs on the Club's 1,900 feet of shoreline. But as a significant portion of the Village is on the waterfront, many residents in Sands Point have their own private beaches, and are therefore drawn to the Club for other recreational and social reasons. Also, a one-and-a-half acre pond has been created to hold the 3.5 million gallons of water used for the irrigation system.

Port Washington, Town of North Hempstead

Bar Beach Park is located on West Shore Drive in Port Washington. The Park consists of a bathing beach, picnic areas, a concessions stand, basketball courts, horseshoe pits, a fishing area and a pier, a boat ramp, and a playground. A vessel pump-out facility is available as well. The park often houses special events for the community on its grounds. The park is open from Memorial Day weekend to Labor Day weekend. Hours of operation are from 9 a.m. to darkness, with lifeguards on duty from 10 a.m. to 6 p.m. A parking fee is collected at this beach.

Hempstead Harbor Park is a Nassau County facility located directly to the north of Bar Beach. There is a diverse selection of recreational opportunities on this 60-acre beachfront property. These include basketball, shuffleboard, handball/paddleball, volleyball, badmitton, softball, and a playground for small children. There is also a picnic area with tables and grills, as well as a games area, an aerodrome for radio-controlled model airplanes and a drop-line fishing pier. There is an elevated and fully paved promenade that runs along the 2,400-foot beach and

connects with the fishing pier, with sitting areas that overlook the harbor. Parking is available for 1,000 cars and a fee is charged.

Notwithstanding the presence of the various amenities outlined above, Hempstead Harbor Park is considered by many to be a significantly underutilized resource, and presents the opportunity for enhanced public access to the harborfront. However, any redevelopment or expansion of facilities should be undertaken with public input to ensure the requisite public support.

The **Harbor Links Golf Course** is owned by the Town of North Hempstead and operated by Arnold Palmer Golf Management. The Town reclaimed more than 400 acres of an abandoned sand mine and turned it into an environmental showcase and an ecological model for recreational facilities around the country, first opening in 1998. A Natural Resource Management Plan (NRMP) was designed for the property, which addresses the following issues: wildlife conservation and habitat enhancement; water quality monitoring and management; integrated pest management; water conservation; energy efficiency and waste management. A great deal of investment was made in the restoration of wetlands grasses and special insect tolerant grasses to reduce the need for pesticides. As such, Harbor Links recently received the prestigious designation of being certified as an Audubon International Signature Sanctuary.

The **Hempstead Harbor Shoreline Trail** is an ongoing project being undertaken by the Town of North Hempstead which, when completed, will provide continuous access along approximately 7,000 linear feet of frontage on the harbor's western shoreline, extending between the Town's Bar Beach facility at its northern end and the Village of Flower Hill at its southern end. This passive parkland, which is targeted to hiking, bird-watching and educational opportunities, encompasses the land to the east of Shore Road which, with the exception of three small parcels shown as vacant private land on Map 3-2 (Land Use), is under public ownership. The Town recently purchased the 4.2-acre Island Tennis property (also known as Harbor Tennis Center and Roslyn Racquet Club) in the central portion of the trail, and is seeking to acquire the remaining three parcels.

The design of the shoreline trail includes five key elements: passive recreation, environmental education, shoreline access, habitat enhancement, and stormwater management. Access will be formalized at three locations: the Bar Beach parking lot at the northern end, Harbor Park Drive North in the middle reach, and Flower Hill at the southern end. Bicycling on the trail is deemed to be inconsistent with the habitat preservation and enhancement objectives of the project and, therefore, will be discouraged.

Phase I of the trailway was completed in 2001. It stretches southward from Bar Beach Lagoon (i.e., the cove area to the immediate south of Bar Beach) and terminates at the Scotto Brothers Realty parcel (Section 6, Block 53, Lot 1003 - see Section 3.3.1.4). The extension of the trailway is currently being evaluated by the Town.

The rehabilitation of Bar Beach Lagoon is being performed under a wetland restoration initiative by the U.S. Army Corps of Engineers. This project entails the removal of rubble and a band of encroaching *Phragmites*, shoreline grading and stabilization, and planting of intertidal marsh grass (*Spartina alterniflora*). The elimination of invasive plant species and replacement with native vegetation also is a priority for habitat enhancement in the upland zones of the trail. Other work that is planned as part of this long-term, multi-phase project includes:

- acquisition of the three parcels of land along this section of shoreline that remain in private ownership (as identified in Section 3.3.1.4) or negotiation of suitable easements across these properties or, if access to these parcels cannot be obtained, investigation of a trailway route using only public waterfront lands and the Shore Road right-of-way;
- construction of a six-foot wide trail along the entire length of the park, using a soft surface composed of blended gravel or recycled concrete, with suitable crossings over wetlands, streams, and drainage swales;
- installation of overlooks, rest stops, and appropriate signage; and
- restoration of the barren concrete spoil area in the central portion of the trail.

Village of Flower Hill

The Town of North Hempstead recently granted the Village of Flower Hill a small parcel of land on the harbor shoreline, just north of the Roslyn Viaduct, which provides the opportunity for passive recreational access directly to the harbor, with a northward connection to the Hempstead Harbor Shoreline Trail. There are no other recreational facilities or open space lands in the Flower Hill portion of the study area.

Village of Roslyn

Roslyn Grist Mill, an historic landmark dating back to circa 1735, is currently closed pending restoration. The mill is located at the mouth of the creek (Roslyn Creek) which discharges to the head of Hempstead Harbor. The Grist Mill is owned by the Nassau County Department of Parks, Recreation and Museums. Restoration plans for this facility include installing textured plywood to replace the decaying concrete sheathing that was placed on the buildings walls, constructing a new foundation and raising the entire structure about four feet so that it is level with the adjacent roadway, creating pedestrian access to the area north of the mill, and restoring the mill to its original appearance, which will include a working water wheel and grindstones.

The **Roslyn Pond Park** system is a public passive park, owned by the Town of North Hempstead, which spans between Main Street and Broadway at the southern tip of the Harbor Management Area. The park provides passive recreational facilities, including a series of walkways, and contains a system of four freshwater ponds (Silver Lake, Roslyn Pond, and a smaller un-named pond), all of which are interconnected by a series of streams. This drainage system ultimately discharges into the head of Hempstead Harbor, via the outflow at Roslyn Grist Mill. Roslyn Pond Park currently is the target of a restoration project, whose main goal is to enhance water quality and aquatic habitat quality. The work will include upland drainage improvements, habitat restoration and erosion control. There also is discussion of creating a promenade to link the park system to a proposed senior housing development at Bryant Landing which will include a public waterfront park.

Several roadways in the Village of Roslyn offer residents informal access to the waterfront. These include: Lumber Road on the west side of the harbor, extending northward from Old Northern Boulevard; and Skillman Road, Landing Road, and Roosevelt Avenue on the east side of the harbor, all of which extend westward from Broadway in the vicinity of the Roslyn Viaduct.

Village of Roslyn Harbor

Cedarmere, which is listed on the National and State Registers of Historic Places, was the home of the 19th century American poet and newspaper editor, William Cullen Bryant between 1843 and 1878. This 200-acre estate, occupying the southern portion of Roslyn Harbor's waterfront, currently is owned by the Nassau County Department of Parks, Recreation and Museums. The estate includes the main house, restored gardens, a Gothic revival mill, and a pond spanned by a stone bridge. Activities on the grounds include tours, nature walks, poetry and music programs, and art lessons. The facility has plans to construct an observation deck that will overlook Hempstead Harbor.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

The North Hempstead portion of Glenwood Landing currently does not contain recreational facilities. However, discussions regarding the redevelopment of certain parcels of vacant industrial land in this area (i.e., the Hin Fin and Shore Realty properties, on the north and south sides of Motts Cove) have generally included the facilities for public access, targeted to creating recreational opportunities in the future. In addition, Motts Cove is a popular location for bird-watching, although no formal park facilities are presently available in this area.

The Oyster Bay portion of the Glenwood Landing waterfront contains two public recreational properties, described as follows.

Powerhouse Park (also known as Glenwood Landing Park) is a small parklet that is situated immediately north of Keyspan's Glenwood Landing Power Station and south of the Mobil-Exxon petroleum dock. This passive park facility is undergoing improvements to encourage public access, including the installation of a new steel sheet-pile bulkhead, railings, brick pavers, benches, and landscaping. The Powerhouse Park property historically has provided a scenic vantage point for viewing the harbor and Bar Beach, and has served to soften the industrial character of the area, a role that will be re-emphasized when the planned improvements have been completed.

Harry Tappen Beach Park is a 25-acre facility which spans between the Town of Oyster Bay portion of Glenwood Landing and the Village of Sea Cliff. The Tappen Beach facility occupies approximately 2,000 feet of shoreline on the harbor, and includes both active and passive recreational facilities. The park's public amenities include: a public marina (see Section 3.3.1.2 for further discussion); an approximately 500-foot long bathing beach; playgrounds; boat launching ramp; boat storage racks; outdoor freshwater swimming pool; picnic area; fishing pier; outdoor roller hockey rink; and vehicle and trailer parking area.

In addition to these recreational amenities, other support facilities including a free-of-charge vessel pump-out station, public restrooms, showers, a gas dock, boat-washing area, drinking water fountain, public telephone, vending machines, sun shelter, 4,000 linear feet of jogging/walking paths, and lifeguard and first aid stations for both the pool and harbor swimming areas. In addition, the park offers a spectacular view of Hempstead Harbor and the opening to Long Island Sound. The Town and Village of Sea Cliff have considered establishing "overlook shelters" both at the fishing pier and the north groin to take further advantage of the views. A parking fee is charged at Tappen Beach, with seasonal passes available to Oyster Bay residents and daily admission applying to others. Senior citizens may obtain free passes with their senior citizen's ID cards (as may disabled persons).

North Shore Country Club encompasses a land area of 158 acres, with 83.5 acres in the unincorporated community of Glenwood Landing in the Town of Oyster Bay and 74.4 acres in the Village of Sea Cliff. The Country Club property contains a number of buildings, including the main clubhouse, and eight small cottages (approximately half of which are year-round residences), an 18-hole golf course, outdoor swimming pool, and several tennis courts. This private membership club is closed in February and has limited activity in November, December, January, and March. During its months of operation, the facility is open six days a week and is closed Mondays, except for occasional special outings. The country club has been in operation

since 1896 and prior to its opening the land contained an estate. The club presently has 190 members.

It is noted that the entire Glenwood Landing waterfront area is identified in the 2002 New York State *Open Space Conservation Plan* as a priority project for a waterfront greenway. The Regional Advisory Committee for Region 1 (covering Nassau and Suffolk Counties) recommended the acquisition of parcels (or establishment of easements) necessary to create a continuous two-mile long waterfront greenway between Roslyn Harbor and Sea Cliff, which potentially could extend as far north as Glen Cove.

Village of Sea Cliff

The portion of the study area lying within the Village of Sea Cliff contains a diverse inventory of recreational lands, which are described as follows:

Sea Cliff Village Beach is a 1.2-acre site located on The Boulevard (Front Street), east of the former Sea Cliff Dock Property. This facility is owned and operated by the Village of Sea Cliff and is open to Village residents. The Village Beach contains a swimming float, a boat launching ramp, a small equipment storage building (used by the Sea Cliff Sailing School), barbecue grills and picnic tables, one outdoor shower, a children's play area, a one-story bathhouse and a wide stretch of beach. The bathhouse has controlled access with a handicap ramp, and contains public restrooms (without showers), a first aid station and a concession area. During the summer season, the beach is utilized during the day for active recreation and in the evenings for occasional events such as concerts. There is controlled parking available at the eastern end of the site, adjacent to the boat launch ramp, and across the street, along the south side of the Boulevard. During certain times of the year, traffic flow along the Boulevard is restricted to one-way travel.

Sea Cliff Park, also known as Dock Hill or Cliffside Park, is the former Sea Cliff Dock site. This 0.2-acre property provides excellent views of Hempstead Harbor. It contains a small lawn area with benches and a wooden railing along the waterfront. The perimeter of this park is supported by a wooden bulkhead that extends along the shorefront of the 18 Trails Property. Maintenance of this park is the responsibility of the Nassau County Department of Recreation and Parks. This park is a popular site for fishing and scenic viewing. No on-site parking is available, and vehicles must be parked along the south side of the Boulevard, adjacent to the property.

The **Cliff Way Conservation Area** is a 0.6-acre property owned by the Village of Sea Cliff. This property primarily comprises an undeveloped, heavily wooded, steep slope that extends up from the Boulevard to Cliff Way. It contains a stairway that provides access to the Village

Beach from Cliff Way and a secondary parking area for the Village beach facility. A lookout platform, which provides views of Hempstead Harbor, is located on the north side of Cliff Way, at the top end of the property.

Sea Cliff Memorial Park is an approximately one-acre, Village-owned property comprised of a steep wooded hillside and a formally developed park area. The upper portion of the park is located along Prospect Avenue at Twelfth Avenue, and contains a war memorial and flagpole, a circular slate walkway and benches that provide excellent views of the harbor from atop the hillside. This park is landscaped with a lawn, trees and shrubs and provides a pleasant environment for passive recreation. The edge of the wooded hilltop is bounded by a split rail fence.

The **18 Trails Conservation Area**, also known as Pinnacle Point Park, is a 1.8-acre property owned by the Village of Sea Cliff. This parcel is the former location of the inclined railway that ran from the Sea Cliff Dock up to the top of the bluff (previously known as Circle Avenue) and was acquired by the Village from the Sea Cliff Grove and Metropolitan Camp Ground Association, who formerly owned the Sea Cliff Dock and operated the railway. The 18 Trails conservation area is undeveloped, steeply sloped and heavily wooded. Access to the Hempstead Harbor shorefront is provided from this site via a stairway (known as the 14th Avenue or Tilley steps) located near the southern property line. This site has no formal access from top to bottom. Fencing has been installed at the upper end to prevent incursion onto the sensitive slope area. A line of railroad ties has been placed further down the slope, which has abated some of the active gullying. An area of bulkheading stretches along the base of this property, which extends north to connect with the bulkheading at Sea Cliff Village Park. The area behind the bulkhead provides a formal walkway for shorefront users.

In 1970, the Village of Sea Cliff received a grant from the New York State Office of General Services for approximately 8.2 acres of underwater lands located seaward of the 18 Trails Conservation Area. These submerged lands are situated contiguous to the twelve acres of underwater lands that were granted to the Village in 1938, and extend an average of 500 feet out from the mean high water line. The southern boundary for this land grant runs as a contiguous to, and as a seaward extension of, the southern property boundary for the 18 Trails site.

Shore Road Promenade is situated along the western side of Shore Road in the Village of Sea Cliff. The promenade consists primarily of a concrete walkway that extends south from Rum Point to the north end of the Town of Oyster Bay's Tappen Beach facility, and provides pedestrian access between these two sites. The promenade also provides a continuous link between Tappen Beach and the Sea Cliff Village shoreline that extends north of Rum Point, along the toe of the bluff. Thus, at extreme low tide, pedestrians can walk along the shoreline between Tappen Beach and the Village Beach in the mouth of Glen Cove Creek.

Rum Point is a small parcel of waterfront property located at the southern terminus of the bluff in Sea Cliff, west of Prospect Avenue. This site is owned by the Town of Oyster Bay. The upper portion of the property contains a small lawn area with benches for scenic viewing. The perimeter of the site slopes to the shore and is hardened with stone rubble for erosion protection. Pedestrian access is the primary means of entry to this park. Limited vehicular parking is available along Shore Road for park users.

Scudder's Pond is a freshwater body located on the North Shore Country Club property, on the eastern side of Shore Road/Prospect Avenue. The pond is owned by the country club, but the Town of Oyster Bay and Village of Sea Cliff have surface rights which allow the site to be available to the public during winter months for ice skating (at one's own risk). This also is a popular location for bird-watching. In recent years, the pond has suffered from significant algal blooms. The Village of Sea Cliff has been engaged in discussions with the country club regarding the maintenance of the pond, and the Village is considering an offer by the country club to donate the pond to the Village.

Fishing is popular in the Village of Sea Cliff. Several locations are available to the public for this use, including Sea Cliff Beach, Sea Cliff Park, the shoreline near Rum Point, Tappan Beach, and at various private residential properties along the shorefront.

City of Glen Cove

The City of Glen Cove has extensive parkland and open space on the waterfront, including three public beaches owned by the City, parks and preserves, and community association facilities; as well as informal points of public access to the harbor, primarily via road ends. Shore-based fishing is permitted from the shore at City beaches, as long as it occurs at least 300 feet from designated bathing areas.

Morgan Memorial Park is located about one-half mile to the north of the mouth of Glen Cove Creek. This property originally was leased for $1 to residents of Glen Cove and Locust Valley by J.P. Morgan, in memory of his wife. Because of this arrangement, the park is open to residents of both the City of Glen Cove and the community of Locust Valley. The site includes a bathing area that extends along approximately 200 feet of shoreline on Hempstead Harbor, as well as a gazebo and concert stage, concession stand, fishing pier (where Glen Cove Yacht Club is located), a picnic area, playground equipment, and a basketball court. Paths in the park allow for walks along bluffs that overlook the Sound.

Crescent Beach is located just to the south of the terminus of Crescent Beach Road. This small parcel has a beachfront of approximately 130 feet on the open waters of Long Island Sound at the mouth of Hempstead Harbor. No other facilities are provided at this location.

Pryibil Beach is an eight-acre property, originally part of the Paul Pryibil Estate ("Bogheid"), which is located at the end of a small barrier spit in the northeast corner of the Village on East Island. The park includes frontage on both Long Island Sound and Dosoris Pond, with about 260 feet of the Sound shoreline used as a public bathing beach. Pryibil Beach also contains a small float, but diving is not permitted. Other amenities include a fishing pier, volleyball courts, basketball court, playground, barbecue grills, concession stand, and an adjacent fishing pier.

Within Glen Cove City limits, there are approximately 266 acres of nature preserve, which include the following two properties owned by Nassau County:

- The **Garvies Point Preserve** covers about 62 acres just to the north of the mouth of Glen Cove Creek. The site contains five miles of marked nature trails, fresh water ponds and swamps, a coastal salt marsh and an approximately 2,000-foot stretch of shoreline on Hempstead Harbor. It also has a center for research on Long Island Native American archaeology, and is a valued resource in the study of Long Island's geology.

- The **Welwyn Nature Preserve** consists of 204 acres at the mouth of West Pond, at the north end of the City. Once the home of Harold Irving Pratt, the site now houses the Nassau County Holocaust Memorial Museum. There are nature trails that are open daily to the public. The property contains about one-quarter mile of frontage on Long Island Sound, and a slightly greater length of shoreline on West Pond.

The **Glen Cove Municipal Golf Course** is located on the south side of Dosoris Pond, in the northeast corner of the City. This 18-hole course is open to both City residents and non-residents, and provides beautiful views overlooking the pond in the foreground and Long Island Sound in the distance. The golf course has a pro shop, a driving range and a restaurant, the Soundview Café. The site is also home to Nick, a professionally trained Border Collie, whose job it is to chase geese from the golf course. Nick has been trained not to bark, so as not to disturb golfers, and he does not harm the geese in any way. **Stanco Park**, which offers tennis courts and a playground, is located adjacent to the golf course.

The first section of the **Waterfront Esplanade** was officially opened in September 2003, marking another milestone in the ongoing redevelopment of the Glen Cove Creek waterfront.

This passive recreational facility includes a pedestrian pathway, gazebo, benches, and a water fountain along the Captains Cove section of the north shore of the creek. The esplanade also is home to a replication of the three-masted barkentine *Regina Maris*, which was constructed using materials and salvaged artifacts from the original ship, including the three masts, captain's wheel, the bow, figurehead and mast rigging.

A number of semi-private, community beaches exist in the City of Glen Cove, which are restricted to the residents of specific geographic districts. These include East Island Beach, Red Spring Colony Beach, Shorecrest Beach, and the North Country Colony Beach, described as follows:

- The **East Island Beach Association** is responsible for maintaining a semi-private beach located on East Island, at the northern tip of the study area. Facilities consist of a bathing area and a swim float.

- The **Red Spring Colony Beach Association** maintains a semi-private beach at Red Spring Point. Facilities consist of a bathing area and a swim float.

- The **North Country Colony Beach Association** maintains a semi-private beach on a small parcel of land that is leased from the City at the southern end of Crescent Beach. Facilities consist of a clubhouse, a bathing area and a swim float.

- The **Shorecrest Beach Association** maintains a semi-private beach located on Landing Road, adjacent to Morgan Park. This site contains no facilities.

There are several street ends in the City of Glen Cove that offer the public informal access to the water; these include Garvies Point Road (which also is the site of the City boat ramp), Crescent Road and McLoughlin Street. Also, on East Island, there are three street ends that provide residents of that area with waterfront access: Dock Place (at Shell Drive), Soundbeach Drive and Southland Drive. These three street ends are maintained by the East Island Beach Association, and have been designed to offer a passive recreational opportunity, including such amenities as a small float, and chairs or benches to sit and enjoy the views of the Sound.

The **Glen Cove Anglers Club** is a private fishing club that utilizes an approximately one-acre parcel of City-owned land on the north shore of Glen Cove Creek. This parcel, lying between Captain's Cove and the former Gladsky site, contains dockage facilities, a small clubhouse, and upland storage for boats. The **Matinecock Rod and Gun Club** is located on Dosoris Lane.

3.3.1.6 Water-Enhanced Uses

A water-enhanced use is one that derives substantial benefit from a location on the water or at the shoreline, but does not require such a location in order to function. According to the accepted definition under the New York State Coastal Management Program, water-enhanced uses should provide some degree of open access to the water for aesthetic enjoyment, even if such access is limited to paying customers. Restaurants and inns often are cited as typical examples of water-enhanced uses.

Currently, there are a limited number of water-enhanced uses within the Harbor Management Area, including the following:

- **Swan Club** – This facility is located at the southwest corner of the intersection of Scudder's Lane and Motts Cove Road, and provides catering services for special events and business functions.

- **Steamboat Landing Restaurant** - This restaurant, drinking establishment and catering facility is situated on the south side of Glen Cove Creek, in the City of Glen Cove. The outdoor seating that is available in fair weather provides a popular location for dining and socializing in a nautical atmosphere, which affords views of the creek, including the Glen Cove Marina immediately to the west. Dockage is available for patrons.

- **Soundview Café** - This restaurant, situated on the Glen Cove Municipal Golf Course property, is located on the south side of Dosoris Pond, in the northeast corner of the City.

There are a number of water-enhanced recreational facilities in the study area, such as golf courses, playgrounds, and picnic areas, which are discussed in Section 3.3.1.5. Current plans for the revitalization of the north side of Glen Cove Creek includes additional water-enhanced development, including a maritime museum and hotel/conference center.

3.3.1.7 Other Uses

The second most common land use in the study area (after open space/public recreation), in terms of percentage of land cover and linear frontage on the harbor, is residential. Private homes are not water-dependent, and generally are not considered to be water-enhanced because access is strictly controlled and limited by the owners or occupants. Residential waterfront property is concentrated in the following locations in the study area (see Map 3-2):

- Sands Point, where single-family home sites cover the entire frontage of the shoreline that lies outside the Village's three large open space/public recreation parcels (i.e., the private bird sanctuary, Sands Point Nature Preserve, and Village Club of Sands Point);

- the Beacon Hill Bungalow Colony, at the northern end of Port Washington (just south of the Village of Sands Point and north of the sand and gravel operations), which originally was developed as a workers' community for the sand mining industry, later became an affluent summer community, and subsequently was converted for year-round occupancy;

- Roslyn Harbor, where the majority of the harbor frontage is occupied by single-family home sites;

- Sea Cliff, where single family home sites occupy a large portion of the Village's bluff-top frontage on the harbor; and

- Glen Cove, where the majority of the City's waterfront property to the north of Morgan Park comprises single-family home sites.

There also are a few residential structures on the north side of Shore Road, in the City of Glen Cove, mixed in among the marinas on the south side of Glen Cove Creek.

The Harbor Management Area contains a variety of other land uses that are neither water dependent nor water-enhanced. These include: the Town of North Hempstead's solid waste transfer station, on the west shore of the lower harbor; City of Glen Cove municipal facilities, on the south side of Glen Cove Creek; a Nassau County Public Works facility, also on the south side of the creek; and various commercial establishments (e.g., A-1 Carting and Tank Specialists) on the south side of the creek, near its eastern end.

The **Webb Institute of Naval Architecture** is located on 26 acres at the mouth of the harbor, immediately to the west of the Welwyn Preserve in the northern portion of the City of Glen Cove. This school focuses on civil, electrical and mechanical engineering. It was founded by William H. Webb, one of the foremost shipbuilders in America in the second half of the 19th Century. The school offers one major, Naval Architecture and Marine Engineering, and currently has 85 students. Every student receives a four-year, full-tuition scholarship, as arranged by the endowment left by Mr. Webb.

3.3.2 Zoning

The zoning in the study area is illustrated in Map 3-4, and is summarized in Table 1 and in the narrative discussion below. Similar zoning classifications in different municipalities have been grouped together for simplicity. This includes the grouping of residential districts into three categories: R1 = minimum lot size greater than one acre (i.e., two acres or greater); R2 = minimum lot size greater than one-half acre, but less than or equal to one acre; and R3 = minimum lot size less than or equal to one-half acre.

It should be understood that although the development pattern in the HMP study area (as illustrated in Map 3-2) generally follows the zoning, this is not always the case. In particular, parcels of land that have a park or recreational use typically have residential zoning. Among the eight local municipalities, only the Village of Roslyn has an open space-recreation zoning classification at the present time.

Village of Sands Point

Large-lot zoning is in place throughout the Village of Sands Point. The Village Club and Sands Point Preserve are zoned for minimum five-acre lots, while all areas of existing private land are zoned for minimum two-acre lots.

Port Washington, Town of North Hempstead

This section of the study area has small-lot residential zoning (minimum 8,500 square feet) at Beacon Hill, while the Hempstead Harbor County Park property and the shoreline frontage stretching southward to the Flower Hill Village line is zoned for minimum half-acre lots. The Harbor Links (former Morewood) property is within a Planned Unit Development (PUD) district, which allows a variety of uses, including senior residential community, commercial recreation, nature preserve, neighborhood commercial, and golf and related recreation.

In 2003, the Town of North Hempstead adopted a new Planned Waterfront Residential Community (PWRC) overlay district. This district was designed largely to address issues in the Beacon Hill Colony, particularly with respect to sanitary waste disposal. Specifically, the PWRC requires that:

> "No dwelling unit shall be constructed, altered, or expanded unless it is connected to a septic system or sanitary sewer with adequate capacity, as approved by the Department of Health and the Building Department";

"For alterations or new construction which increases the preexisting gross floor area of a Planned Waterfront Residential Community, an analysis of the capacity and utilization of the sewage disposal system shall be included with the application for alteration or new construction unless the development is connected to a municipal sewer system. Such analysis shall be prepared by a qualified licensed professional and shall include the number and type of fixtures and the effluent flow per fixture"; and

"No alteration shall be approved without adequate sewage disposal availability."

Village of Flower Hill

The small segment of shoreline in the Village of Flower Hill situated within the study area is zoned for minimum 7,500-square foot residential lots.

Village of Roslyn

The Village of Roslyn has the most complex pattern of zoning districts in the study area, which is consistent with the variegated pattern of existing land use in this area. Roslyn Pond Park is zoned for open space and recreation, the only such zoning district in the study area. The southern end of the park adjoins parcels that are zoned for small-lot single-family residential use. The northern end of the park adjoins the Village's commercial district, which extends across Old Northern Boulevard and northward on both Main Street and Broadway. An industrial district is present below the Roslyn Viaduct on the west side of the harbor. A mixed-use district occurs beneath the Viaduct on the east side of the harbor, which is separated from the harbor shoreline by the moderate-density residential district that applies to the Forest City Daly property.

Village of Roslyn Harbor

One-acre single-family residential zoning applies to the extreme southern end of the shorefront in the Village of Roslyn Harbor, while the majority of the shoreline lies within a two-acre district.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

The north side of Motts Cove, in the Town of North Hempstead portion of Glenwood Landing, contains small areas of residential and business zoning. The remainder of the North Hempstead shoreline in this community is industrially-zoned.

The Town of Oyster Bay completed a "Redevelopment and Revitalization Plan" for the portion of the Glenwood Landing waterfront under its jurisdiction. The final recommendations of that

plan were released in report dated October 2002. Based on these recommendations, in January 2004 the Oyster Bay Town Board adopted a series of zoning amendments, including a new waterfront zoning district that was applied to the area in the Town of Oyster Bay to the west of Shore Road (which previously was zoned for industrial use), and upzoning of the portion of the North Shore Country Club property within the Town from 10,000-square foot minimum residential lot size, to match the 20,000-square foot zoning in the adjoining area of the country club within the Village of Sea Cliff.

Village of Sea Cliff

The shoreline in the Village of Sea Cliff lies within three different residential districts: minimum 20,000-square foot lots on the portion of the North Shore Country Club in this community, and minimum 7,500-square foot and 13,000-square foot lots in the remaining area.

City of Glen Cove

The City of Glen Cove also has a fairly complex zoning pattern. The entire northern shorefront and western end of the southern shorefront in Glen Cove Creek are zoned Marine Waterfront. The eastern end of the creek's southern waterfront is zoned industrial. A narrow business district lies along the west side of Glen Cove Avenue. Small-lot residential zoning occurs on the south side of Morris Avenue, with a narrow industrial district lying between this residential zone and Shore Road. The remainder of the City's waterfront in the study area is zoned in various residential districts, covering a range of minimum lot sizes, with the lowest density limit covering the Welwyn Preserve and Dosoris Island, and the highest density allowance pertaining to East Island and the shorefront immediately north of Morgan Park.

3.3.3 Upland Ecological Resources

3.3.3.1 Upland Habitats

The upland portions of the study area have been substantially modified by development and other human activities. In certain areas, including locations of the most intense industrial and commercial uses, there is very little vegetation, and what is present has been highly modified. Native vegetative communities have been retained at the large estate properties that remain intact in the study area, including the Sands Point Preserve, Cedarmere (the William Cullen Bryant Preserve, in Roslyn Harbor), Garvies Point Preserve and the Welwyn Preserve (Glen Cove). Some of the more salient ecological features of each of these four sites is highlighted below.

The upland portion of the 204-acre Welwyn Preserve, outside freshwater wetland areas, consists largely of a tulip-beech climax woodland, with some eastern hemlock and black birch. Red maple swamps are extensive on the site, with a spicebush-rose understory (Sama, 1977). Other native species that are present include yellow birch, white pine, white oak, and sassafras. Other species on the site that probably have been planted include river birch and Austrian black pine. There also is an extensive shore zone fronting on Long Island Sound, where shrub species such as beach plum and wrinkled rose can be found.

The 62 acres in Garvies Point Preserve range through a variety of upland habitats, including forests, shrub thickets, meadows and a shorefront on the harbor. The site includes vegetative communities in various stages of succession. Woodlands contain 48 species of trees, as well as numerous shrubs, vines, and wild flowers.

The 216-acre Sands Point Preserve also features a variety of natural habitats, including woodland, field, freshwater pond, and a mile-long stretch of beach, which provide habitat for a diverse array of wildlife. The 200-acre Cedarmere estate also has a broad range of upland habitat types, including native red cedar woodlands which inspired the name; although the flora was significantly modified by Bryant to include numerous exotic trees, as well as extensive flower and vegetable gardens, which transformed the estate into a horticultural showplace.

3.3.3.2 Freshwater Wetlands

Freshwater wetlands provide a multitude of benefits including: flood and storm water control, wildlife habitat, protection of subsurface drinking water supplies, recreational opportunities, pollution abatement, soil erosion control, education and scientific research, open space and aesthetic appreciation. NYSDEC evaluates each freshwater wetland system and assigns a class rank based on the wetland's ability to perform various functions and provide the benefits listed above. Freshwater wetlands are ranked from Class I through Class IV, with Class I having the highest rank.

All land use activities in freshwater wetlands are subject to regulation by NYSDEC under ECL Article 24. Prior to 1984, NYSDEC regulated only significant freshwater wetlands larger than 12.4 acres. With the passage of "Interim Permit" procedures in February 1984, NYSDEC assumed regulatory authority over smaller-sized wetlands of unusual local importance. Special procedures have been established for adding wetlands to the official NYSDEC map.

NYSDEC does not map freshwater wetlands into distinct subgroups based upon hydrographic features and vegetative cover types as is done for tidal wetlands. However, Article 24 of the ECL does list vegetative cover types as indicators of freshwater wetlands. In order for

NYSDEC to map an area as a freshwater wetland, the area must have hydraulic conditions and soil properties that support these species throughout the majority of the growing season.

NYSDEC-designated freshwater wetlands in the study area are illustrated in Map 3-5, and include:

- Upper portion of East Creek at Prospect Point in the Village of Sands Point - This area is part of the privately-owned Bird Sanctuary.

- Isolated, scattered areas on the Harbor Links (former Morewood) property - These wetland areas are vegetated primarily with *Phragmites*.

- Scudders Pond and adjacent areas - Scudders Pond is an approximately 1.8-acre brackish-to-freshwater impoundment, which is fed by several smaller spring-fed ponds and a freshwater wetland complex draining into Scudders Pond from the east. The wetland vegetation surrounding Scudders Pond is dominated by *Phragmites*, while the vegetation within other portions of the system is more diverse. This wetland system lies mostly on the North Shore Country Club property, and straddles the Glenwood Landing-Sea Cliff boundary on the east side of the harbor.

- Mill (or Pratt) Pond at the head of Glen Cove Creek - This small pond lies on public land, surrounded by Glen Cove Avenue, Charles Street, and Herb Hill Road, at the site of the earliest mills in Glen Cove. Sediment and pollutant loads carried in stormwater discharges had seriously degraded the quality of the pond. Using matching funds through the New York State Clean Water/Clean Air Bond Act, the City recently completed a restoration project to improve stormwater treatment capabilities, habitat quality, and aesthetic condition. This project included the construction of man-made wetland and sediment retention basin, dredging of the pond, removal of invasive plant species, planting of native vegetation, and installation of a perimeter walkway.

- Pratt Pond and stream, on the Welwyn Preserve - This freshwater wetland system occupies a large portion of the Preserve, extending southward from West Pond (a tidal embayment). Vegetative communities include red maple swamps and areas of skunk cabbage, but give way to *Phragmites*-dominated areas to the north.

The Roslyn Pond Complex, located in Roslyn Pond Park at the southern end of the study area, is a relatively large freshwater body that is not included on the NYSDEC regulatory map. This system, which includes three freshwater ponds (Roslyn Pond, Silver Pond, and a smaller unnamed pond) that are interconnected by northward-flowing channels and smaller ponds,

discharges to the head of Hempstead Harbor via the outflow from Roslyn Mill Pond. The Roslyn Pond Complex has been highly manipulated, with concrete-stabilized pond shores, structural channels, and turf grasses in the adjacent area. The pond system receives runoff from a large developed watershed area (969 acres) and supports a large population of resident waterfowl. These conditions result in elevated contaminant levels in the ponds and, consequently, contribute to degraded water quality in the lower harbor. The Town of North Hempstead, which owns the park, is undertaking a project to identify and implement measures (including upland drainage improvements, and in-park erosion control and stormwater treatment) to improve the quality of the water discharged from the pond system to the harbor.

3.3.4 Scenic Resources

The scenic quality of Hempstead Harbor is highly variable, ranging from vacant, deteriorated industrial sites in some locations, to many aesthetically pleasing natural areas scattered along the waterfront. Overall, the inherent beauty of the harbor gradually is being restored, as the most degraded areas are revitalized. The key vantage points for viewing the harbor coincide with the many parks and other public lands along its shores, which include, but are not necessarily limited to:

- Sands Point Nature Preserve
- Village Club of Sands Point
- Hempstead Harbor Beach County Park
- Bar Beach Park
- Hempstead Harbor Shoreline Trail
- Roslyn Grist Mill
- Cedarmere
- Powerhouse Park
- Harry Tappen Beach Park
- Shore Road Promenade
- Rum Point
- City of Glen Cove Waterfront Promenade
- 18 Trails Conservation Area
- Sea Cliff Park
- Sea Cliff Memorial Park
- Cliff Way Conservation Area
- Sea Cliff Village Beach
- Morgan Memorial Park
- Garvies Point Preserve
- Crescent Beach
- Welwyn Nature Preserve

- Pryibil Beach

For the most part, views of the harbor from the parkland and open space parcels listed above (and from various road ends) are positive. One of the most significant factors detracting from the aesthetic appeal of the harbor is the massive Keyspan power plant, which looms over Bar Beach, and also is a key element of the landscape visible from Hempstead Harbor Park and Tappen Beach, as well as from much of the harbor itself.

Because of the narrow width of Hempstead Harbor, particularly to the south of Bar Beach, but also as far north as the Glen Cove Creek area, the opposite shore is readily visible to waterfront viewers. Therefore, development and other activities in the harbor's waterfront area can have a significant effect on the viewshed for the waterfront community situated on the other side of the harbor.

The Glen Cove Creek area has its own aesthetic character. Although still impacted to a large degree by deteriorated properties, the ongoing revitalization effort is improving this condition by eliminating the most discordant visual features, and the creek is being redeveloped to provide the interesting setting associated with a working harbor.

Views of the surrounding uplands from the harbor also are generally pleasing, but are impacted by the same problems highlighted above.

3.3.5 Infrastructure

3.3.5.1 Shoreline Protection

As land along the harborfront has been developed, many naturally vegetated reaches of the shoreline have been replaced with man-made, protective structures. These structures are mostly in the form of bulkheads and retaining walls made of timber, steel, or concrete. Rock and concrete rubble revetments are also fairly common. While these devices serve to ensure a secure shoreline along the length of the structure, they can compromise the stability of the shoreline on either side of the wall, often accelerating the erosion rate at these areas.

Overall, of the 19.5 miles of shoreline within the Harbor Management Area, approximately 7.6 miles (38 percent) is "hardened", or outfitted with some man-made shoreline stabilization structure (refer to Map 3-6). Hardened shoreline is most prevalent in areas that support the most intensive uses, including: the segment of the western shore that contains the aggregate trans-shipment facilities; the Glenwood Landing waterfront; and both sides of Glen Cove Creek. Additional areas of almost continuous shoreline stabilization include: both sides of Roslyn Creek

in the lower end of the Harbor; the bluff face in the Village of Sea Cliff; and the Long Island Sound frontage of East Island, at the northern end of the City of Glen Cove. The lower harbor, south of Bar Beach, contains approximately one-fifth of the total length of hardened shoreline in the harbor. Glen Cove Creek contains approximately one-fourth of the harbor's hardened shoreline.

The remaining 11.9 miles or 62 percent of shoreline in Hempstead Harbor is "natural", meaning that it is not artificially hardened. This includes: most of the western shoreline of the harbor, except for the segments at the aggregate trans-shipment facilities and in Roslyn Creek; and scattered sections of the harbor's eastern shoreline, especially in waterfront parks, preserves, and beaches.

In addition to structures that have been placed along the shoreline to provide armoring against the erosive force of waves and currents, Hempstead Harbor contains a number of structures that are oriented generally perpendicular to the shoreline. These include:

- The Glen Cove Breakwater, located at Morgan Park on the north side of Glen Cove Creek, was constructed by the U.S. Army Corps of Engineers in the 1800s. This structure provides protection from waves entering the mouth of Hempstead Harbor as a result of northerly winds. The calm waters on the lee side of the breakwater create a protected harbor for vessels near the mouth of Glen Cove Creek.

- The shoreline of Hempstead Harbor, especially to the north of Bar Beach, contains numerous groins. These structures usually are composed of rock or concrete rubble, but can also be constructed of timber or other materials. Groins are installed perpendicular to the shoreline for the purpose of trapping sediment be carried parallel to the shoreline in the littoral drift.

A series of groins (termed a "groin field") typically is constructed along a stretch of shoreline targeted for protection, resulting in shoreline sediment being trapped in the individual groin "compartments". This can be effective in maintaining a wide beach along the section of shoreline within the groin field. However, shoreline erosion often occurs down-drift of the last groin. This situation is believed to be contributing to the erosion occurring at Rum Point, which is located immediately down-drift from a series of groins that stretch along most of the shoreline of the Village of Sea Cliff.

Besides the Sea Cliff shoreline, groins are most prevalent: in the Village of Sands Point, especially at the Sands Point Preserve and the Village Club; and in front of the individual residential lots in the City of Glen Cove between the breakwater and Red Spring Point (at the terminus of Soundside, or Southside, Lane).

3.3.5.2 Roadway System

The Hempstead Harbor area is served by an extensive roadway system. The main east-west thoroughfare in the study area is Northern Boulevard (State Route 25A), which crosses the southern end of the harbor via the Roslyn Viaduct. West Shore Road follows the harbor's shoreline to a point just south of the Village of Sands Point, where this roadway veers sharply westward to continue as Beacon Hill Road leading into the center of Port Washington. From there, Middle Neck Road/Port Washington Boulevard (State Route 101) provides the main access route northward into the Village of Sands Point. Route 101 continues southward from downtown Port Washington; south of Northern Boulevard this roadway becomes Searingtown Road, which has interchanges at both the Long Island Expressway (LIE) and Northern State Parkway (NSP). East Shore Road also continues southward, and becomes Main Street and then Roslyn Road, which intersects with the LIE service roads and has an interchange at NSP.

The north-south roadway connection is less direct on the eastern shore of the harbor. Broadway is a one-way southbound roadway that intersects with Main Street at the southern tip of Roslyn Pond Park. To the north of Route 25A, Broadway becomes Bryant Avenue. From that point, a traveler must turn onto Glenwood Road, Scudders Lane, and then Shore Road to continue northward. Shore Road extends along the waterfront into the Village of Sea Cliff, where it leads into Prospect Avenue. Two sharp S-turns at Cliff Way brings one from the bluff top on which Prospect Avenue is situated down to the shoreline of Glen Cove Creek. Continuing eastward on Shore Road and then turning northward on Glen Cove Avenue leads to downtown Glen Cove. Glen Cove Avenue connects southward to Glen Cove Road, which has interchanges at both the LIE and NSP. Access between the heart of Glen Cove and the LIE and NSP, to and from points further to the east, can be gained along Cedar Swamp Road (State Route 107), which trends in a southeast direction from the center of the City.

Depending on the jurisdiction of a given roadway in the study area, responsibility for maintenance, repair and improvements may lie with any of ten governmental entities: the State of New York, Nassau County, Towns of Oyster Bay or North Hempstead, City of Glen Cove, or one of the five incorporated villages. Northern Boulevard, including the Roslyn Viaduct, is under the jurisdiction of the New York State Department of Transportation (NYSDOT), as are the other primary arterial roadways in the region, including the LIE, NSP, and Routes 101 and 107. Nassau County has jurisdiction of West Shore Road and Shore Road. With the exception of a few private residential and institutional roads, the remaining local roads are maintained by the respective incorporated villages, the Towns of North Hempstead and Oyster Bay, and the City of Glen Cove. These streets comprise the majority of the roadway network in and adjacent to the study area.

Roadway jurisdiction covers the full range of activities related to roadway operation, including maintenance of the road surface and shoulder area, snow removal, street sweeping, drainage system maintenance (e.g., clean-out of catch basins, sumps and drainage lines), and major capital projects for roadway improvements. Street sweeping and drainage system clean-outs are particularly important to ensuring that stormwater drainage is adequately mitigated before being discharged to the harbor. However, because of tight budgets at all levels of government, these activities can be deferred until significant problems arise (e.g., roadway flooding caused by clogged drainage lines). Although there are some individual differences, stormwater maintenance practices are generally similar. Typically, there is no formal schedule for street sweeping or emptying stormwater drainage structures. Sweeping occurs as frequently as a daily or weekly basis where needed, and this can increase during winter months when there is an increase in the sanding of streets. The drainage structures are emptied on an as-needed basis. When there is a heavy rain or a storm prediction, the local municipalities try to address the problem by servicing the drainage catch basins to prevent potential flooding. There are also bi- or semi-annual maintenance inspections of the grates and drainage basins. For example, the City of Glen Cove undertakes a full maintenance check of the storm drainage structures once in the fall, before the winter weather begins and once in the spring to remove the excess materials from months of winter maintenance.

One major roadway construction project is planned within the study area. The Roslyn Viaduct is scheduled to undergo replacement, due to its advanced age (more than 50 years) and outdated design, and concerns about long-term structural integrity. NYSDOT, which has jurisdiction over this steel structure, has worked with local officials and residents to develop a consensus conceptual design for the project. The project is now in the detailed design phase, which will produce engineering drawings and specifications that will be used to proceed with construction. NYSDOT anticipates that construction will commence in 2004 or 2005, and will run approximately three years, and estimates that the total cost of the project will be in the $60 to $80 million range. The project plans call for four travel lanes to remain open on the Viaduct at all times during construction.

3.3.5.3 Potable Water

The boundaries of water districts in the study area are delineated in Map 3-7. The facilities and services these districts provide for their customers in the study area are summarized below.

Village of Sands Point

The Sands Point Water Department (SPWD) presently serves approximately 2,800 people through 1,490 connections. The District receives its water from four wells, with a fifth scheduled to be added in 2002. These wells are drilled to various depths, and tap the Upper

Glacial, Magothy and Port Washington aquifers. Two 500-gallon per minute wells are located on the Village Club property, two 650-gallon per minute wells are located on the property behind the Village Hall on Tibbits Lane, and the fifth well is located at the SPWD office on Governors Lane. The District utilizes three elevated storage tanks with a total combined capacity of 650,000 gallons. Construction of a new one million-gallon elevated storage tank is scheduled to begin, to replace an existing 100,000-gallon tank, in order to better handle the water demands of summer months. The SPWD treats its water with sodium hydroxide to lessen acidity and reduce corrosivity before it enters the distribution system. Sodium hypochlorite is also added to the water to maintain disinfection.

Port Washington, Town of North Hempstead

The Port Washington Water District (PWWD) has a total of thirteen wells located at nine stations, which tap various aquifers and range from 90 feet to 600 feet in depth. The system has a 22.25 million-gallon storage capacity with 1.25 million gallons in two elevated storage tanks and twenty-one million gallons in two concrete storage reservoirs. The PWWD is completely metered and serves roughly 32,000 residents. The facility uses an active cross contamination control program that is in compliance with the state sanitary code. In 2001, a total of 1,541,558,000 gallons were pumped from the ground.

PWWD water is treated in several ways. Sodium hypochlorite solution is added to provide disinfection, while sodium hydroxide is added to maintain proper pH and reduce corrosivity. Organic chemical removal facilities using granulated activated carbon adsorption are in use at some of the well stations, while the two wells at Christopher Morley Park are treated to remove volatile organic compounds using packed tower aeration (stripping towers).

The PWWD promotes water conservation measures. In 1996, the District adopted a Water Conservation Plan, containing regulations for air conditioners, swimming pools, irrigation, car washing, ane plumbing fixtures. Between 1999 and 2001, the District purchased and distributed roughly 700 water conservation kits, which included items such as low-volume aerators for sinks and shower heads, toilet tank bags, and color tablets for leak detection in toilet tanks.

Village of Flower Hill

The Village of Flower Hill receives it water supply from three different sources: approximately 30 percent of the residents are served by the Port Washington Water District, 30 percent by the Roslyn Water District, and 40 percent by the Manhasset/Lakeville Water District. The portion of the Village situated in the study area (i.e., along the shoreline, to the east of West Shore Road) is connected to the Roslyn Water District, which is discussed below.

Village of Roslyn

The Village of Roslyn receives its water from the Roslyn Water District (RWD). The District has 5,776 service connections that supply approximately 17,000 people. The District obtains its water from seven individual wells that are drilled into the Magothy aquifer and from one well field that contains eight wells connected to a common suction pump.

Of the seven individual wells, two are located in the Incorporated Village of Roslyn Estates and five are located in the Incorporated Village of East Hills (outside of the HMP study area). The eight common suction wells are located on a well field in the Incorporated Village of Roslyn. These are artesian wells, seven of which are in the Magothy aquifer and one in the Lloyd aquifer. All of these wells are connected to a single turbine pump, delivering the water straight into the distribution system at 1,100 gallons per minute. The distribution system consists of three storage tanks that vary in capacity from one million to three million gallons, with a total storage capacity of six million gallons.

The water is treated before it enters the distribution system. Sodium hydroxide is added for pH adjustment and corrosion control, and sodium hypochlorite is used for disinfection. In 2001, the District wells pumped a total of 1,366,205,000 gallons of water. Of this amount, the Glenwood Water District purchased 62,800,000 gallons and the Port Washington District purchased 11,000,000 gallons. Metered sales to consumers living within the District comprise a total of 1,275,923,000 gallons. There is an unaccounted for total of 90,282,000 gallons, which is water that is used for such purposes as fire fighting, flushing hydrants, service line breaks and main breaks (6.6 percent of the total water produced).

The RWD has instituted a water conservation program. There are regulations for lawn irrigation systems, requiring all systems to have time-clock controllers as well as a rain or soil moisture sensor. Lawns may be sprinkled only between the hours of 4 p.m. and 10 p.m., for a three-hour maximum. The District also has imposed a mandatory odd-even day watering restrictions, depending on the address of each property.

Village of Roslyn Harbor

The Village of Roslyn Harbor receives it water supply from four different sources: approximately 50 percent of the residents are served by the Roslyn Water District, 25 percent by the Glenwood Water District, 20 percent by the Jericho Water District, and 5 percent by the Sea Cliff Water District. The portion of the Village of Roslyn Harbor within the study area situated south of Bryant Avenue is connected to the Roslyn Water District, which is discussed above. The portion of the Village situated to the north of Bryant Avenue is connected to the Glenwood Water District, which is discussed below.

Glenwood Landing, Town of North Hempstead/Town of Oyster Bay

The Glenwood Water District (GWD) supplies water to the Town of North Hempstead portion of Glenwood Landing within the study area. The GWD purchases water from the Roslyn Water District through two six-inch metered interconnections. The GWD owns and maintains the system piping located within the District boundaries, delivering water to approximately 194 service connections. The GWD has submitted an application and is currently working for reinstatement of their waiver from mandatory disinfections, so that routine chlorination can eventually be discontinued.

The Town of Oyster Bay portion of Glenwood Landing in the study area is situated within the service area of the Sea Cliff Water Company, which is discussed below.

Village of Sea Cliff

The Sea Cliff Water District serves roughly 15,000 customers who reside in the Village of Sea Cliff, and parts of Old Brookville, Roslyn Harbor, Glen Head, Glenwood Landing and Glen Cove. The system is supplied by two wells, the Sea Cliff well and the Glen Head well. The Sea Cliff well obtains its water from the Lloyd aquifer, and supplied an average of 134,000 gallons per day in 2001. The Glen Head well obtains its water from the Magothy aquifer and supplied an average of 1.2 million gallons per day in 2001. About six percent of the total water was accounted for by such activities as fire fighting and system flushing. All of the water is treated with chlorine for disinfection, sodium hydroxide, and a phosphate compound to reduce corrosion prior to being pumped to the distribution system. The facility is continually undergoing capital improvements to ensure water quality. Work includes improvements to treatment, supply, mains, meters and services.

City of Glen Cove

The City of Glen Cove owns and operates its own public water supply and distribution system, using potable water derived from the Magothy aquifer. There are a total of five wells, two at the Duck Pond Road Well Site, and one each at the other well sites (Kelly Street, Seaman Road and Nancy Court/Roxbury). The Kelly Street well site is run on a seasonal basis, from April to November. These five wells service close to 28,000 residents and have a capacity of approximately nine million gallons per day. The system can be interconnected with the water distribution system of adjacent communities in the event of an emergency that would result in a significant water deficit. NYSDEC has imposed a water cap, providing values for maximum withdrawal from supply wells within the City. This cap is placed at 1.666 billion gallons per year, with an average of 1.582 billion gallons for five consecutive years.

The Water Department treats the water supply before it enters the distribution system. A small amount of chlorine is added for disinfection and sodium hydroxide is added to increase its pH and reduce corrosivity. Source water from the Kelly Street well is treated by air stripping to remove various volatile organic chemicals. Source water from the two Duck Pond wells are treated by granular activated carbon filters to remove various organic chemicals and pesticides. In 2001, the City installed granular activated carbon vessels at the Seaman Road Well Site (which included a protective steel pre-engineered structure) and conducted well rehabilitation.

3.3.5.4 Domestic Wastewater Disposal

Sanitary wastewater generated in much of the study area is handled in individual, subsurface sewage disposal systems (SSDSs). Municipal sewage collection, treatment and disposal service is provided in the southern portion of the Port Washington area, the Village of Roslyn, most of the City of Glen Cove, small areas at the northernmost end and northeast corner of the Village of Sea Cliff. The portion of the study area that is served by municipal sanitary sewers is delineated in Map 3-8.

On-Site Sewage Disposal

SSDSs are the sole means of sewage disposal in the portions of the study area lying within the Villages of Sands Point and Roslyn Harbor, and the unincorporated community of Glenwood Landing. The entire Village of Sea Cliff, except for the northernmost area along Glen Cove Creek, also is served by SSDSs. The area on the western shore of the harbor in the unincorporated area of Port Washington to the north of Hempstead Harbor Industrial Park also is unsewered (the shoreline area to the south, to the Roslyn Village line, lies within the Port Washington Sewage Collection and Disposal District).

For the most part, individual SSDSs are located on-site, although the sanitary wastewater generated in a limited number of locations is piped off-site for subsurface disposal at another location (e.g., the five cottages along the south side of Scudders Pond). The Beacon Hill Colony is served by a communal SSDS which recently was replaced, after studies showed that connection to municipal sewers would be prohibitively expensive. Additionally, off-site subsurface disposal has been discussed in connection with the redevelopment of the Harbor Fuel/Hin Fin parcel in the Town of North Hempstead portion of Glenwood Landing.

When properly designed, sited, and constructed, SSDSs can provide adequate treatment to reduce the concentration of some deleterious substances to acceptable levels. Treatment occurs primarily through the settling of solid materials in a septic tank, and the passage of the effluent from the septic tank through leaching structures into the underlying substrate. The most efficient

filtration occurs in sandy soils, although pure sands may not provide adequate treatment because the effluent can pass too rapidly through the substrate.

SSDSs sited in wet soils (as often occurs in proximity to the shoreline) or in soils containing clay layers (as is common in the terminal moraine that spans along the entire north shore of Long Island) generally provide less effective treatment than SSDSs installed in more suitable soils with greater depths to groundwater. Consequently, coastal areas, like the study area covered under this plan, tend to experience a relatively high rate of SSDS malfunction and, consequently, can be a disproportionately large source of contaminant loadings to shallow groundwater and adjacent surface waters.

SSDSs in long established communities can include some older systems that lack septic tanks, with wastewater from the building being piped directly into leaching pools (i.e., cesspools). Cesspools provide a lower level of treatment than standard septic systems, and tend to fail at a higher rate since solids are not removed prior to injection into the leaching structure.

The Beacon Hill Bungalow Colony is a 41-unit community on the west shore of the harbor, in the unincorporated area of Port Washington, just south of the Village of Sands Point. Sanitary waste generated in Beacon Hill is handled in a private communal, on-site system. Operational problems with this system prompted an upgrade which was completed in 1999, under the oversight of the Nassau County Department of Health.

Port Washington, Town of North Hempstead

The southerly portion of the harbor's western shore in the unincorporated area of Port Washington, including Hempstead Harbor Industrial Park and extending south to the Roslyn Village line, lies within the Port Washington Sewage Collection and Disposal District. This district originally was created in 1915 as a Special Improvement District for the purpose of providing sanitary sewer service to the developed areas of Port Washington. In 1992, a $32 million expansion and improvement program increased the capacity of the treatment plant from 3.2 to 4.0 million gallons of sewage per day and a sand filter was constructed as a form of tertiary treatment to provide a higher quality effluent. The District currently operates and maintains fifteen sewage pumping stations throughout the community, as well as approximately eighty miles of sewer lines, with an estimated connected population of over 30,000 residents.

Village of Roslyn

The Nassau County Department of Public Works maintains a sewage pump station in a brick building directly south of the Roslyn Viaduct, on the east side of Hempstead Harbor. This facility, which serves 99 percent of the properties in the Village of Roslyn, pumps into the

Nassau County sanitary sewer system, which eventually connects to the Cedar Creek Wastewater Treatment Plant in Wantagh, on the south shore of Long Island. Treated effluent from this plant is discharged to the Atlantic Ocean.

The existing pump station replaced the Village's prior sewage treatment facility on the same site. The Village treatment plant originally was constructed in the mid to late 1930s, and had its effluent outfall in lower Hempstead Harbor. Operational problems plagued this plant, which contributed significantly to the impairment of water quality conditions in Hempstead Harbor, and prompted the institution of a moratorium on new connections to the system.

Between 1985 and 1987, the Village wastewater treatment plant was shut down and the Village collection system was diverted into the newly-constructed pump station. The Village's current sanitary wastewater system has a maximum design capacity of one million gpd, but operates at an average flow of 490,000 gpd. There have been no reported flow capacity problems in the eight-mile stretch of piping that comprises the system. The moratorium was lifted when the pump station became operational, and new connections are now allowed. Other major upgrades to the Village sewage system include lining of the primary main that leads to the pump station in the 1990s, and an on-going video inspection and capital improvements/maintenance program more recently. Upgrades and repairs are performed as needed.

City of Glen Cove

The City of Glen Cove operates a sewage treatment plant on a property located on the south side of Glen Cove Creek, at the western end of Morris Avenue. The original plant at this location was completed in the 1930s. Construction of a completely new sewage treatment facility commenced in 1979 on a parcel adjacent to that earlier plant (which subsequently was demolished). A cogeneration incinerator constructed in conjunction with the second sewage treatment plant was demolished in the mid-1990s.

The Glen Cove Sewage Treatment Plant has a current design capacity of eight million gallons per day and operates at approximately 50 percent of that capacity. The plant receives sanitary wastes generated in most of the City, including essentially all of the non-residential uses and approximately 95 percent of the residences (roughly 8,000 homes). In addition, the Treatment Plant also serves a small area along The Boulevard at the northern end of the Village of Sea Cliff, including the Village Beach and approximately nine neighboring homes, as well as approximately four commercial properties in the northeast corner of the Village of Sea Cliff.

The system's collection pipe is roughly 400,000 linear feet in total length, with the outfall pipe located roughly in the middle of Glen Cove Creek, near the plant. The plant is designed to accomplish secondary sewage treatment with additional oxidation of ammonia to nitrate after

accelerated bacterial decomposition of organic wastes. The aeration and filtration process is also accompanied by the dewatering of sludge.

Each year, the City has an on-going program that is continually looking to make improvements at the facility. Projects include odor control improvements, upgrades to aged equipment, and work on the primary and secondary feed pumps. Recently, the facility completed a Biological Nutrient Reduction (BNR) retrofit, which increases the removal of nitrogen from the effluent before it is discharged to the creek. This project has upgraded the plant to tertiary treatment, but reduces the daily capacity of the plant to 5.5 million gallons per day. An ultraviolet disinfection system also is planned, which will allow elimination of chlorine usage at the facility.

There have been no incidents of system failures in recent years that have caused the bypass of inadequately treated wastes from the sewage treatment plant into the creek. In 1998, the facility had a consent agreement with the NYSDEC, but that agreement is in the process of being lifted as the upgraded plant is issued a new SPDES permit.

The only areas in the City of Glen Cove that are not served by the City's sanitary sewerage system are the area north of Lattingtown Road, and the Red Spring district and several small areas west of Crescent Beach Road in the northwest quadrant of the Village (see Map 3-8). Sewage disposal occurs via on-site systems in these areas. The City offers a maximum of one septic system pumpout per year for each home, a service which is provided without cost to the homeowner by a contractor retained by the City for this purpose.

3.3.5.5 Vessel Waste Disposal

Shore-based vessel waste disposal facilities are provided at the following locations:

- A Town of North Hempstead pump-out trailer is stationed during the boating season at the Bar Beach boat ramp, on the west side of the harbor just south of the Bar Beach peninsula. Boaters need to call ahead to have the trailer moved to the dock for usage.

- The Town of Oyster Bay offers a free-of-charge pump-out facility at Harry Tappen Marina, on the east side of the harbor just north of the Bar Beach peninsula.

- Brewer's Yacht Yard and Sea Cliff Yacht Club provide privately-operated, shore-based vessel waste pumpout facilities in the Glen Cove Creek area.

- A pumpout facility was installed at Glen Cove Yacht Club in 1997, and is available to the public using tokens issued by the City Recreation Department.

In addition to the facilities enumerated above, the Towns of Oyster Bay and North Hempstead both operate vessel waste pumpout boats.

- In 1999, The Town of Oyster Bay purchased a vessel waste pump-out boat, using partial funding secured through a grant under the Clean Vessel Assistance Program. Since its acquisition, operation of the pump-out boat was alternated between the Oyster Bay/Cold Spring Harbor Complex and Hempstead Harbor. However, the demand for this facility was sufficient to justify a second pump-out boat, which the Town recently acquired. One boat is stationed at the Tobay Marina on the south shore, and one boat is stationed at Roosevelt Park in Oyster Bay Harbor. The boat docked at Roosevelt Marina also services the Hempstead Harbor area. The crews work ten-hour shifts, for four days at a time. The boats monitor marine channel 9, and make announcements to boaters regarding when they are in the area and available for pump out services. The Town reports that resident boaters seem to be quite pleased with the services that are available, and the pumpout boats are kept very busy, particularly on weekends when recreational activities are at their peak.

- The Town of North Hempstead's pump-out boat, *Marine 9*, is available to service vessels five days a week from early June through the first week in September between 8:30 a.m. through 1:30 p.m., Wednesday through Sunday (hours may be adjusted based on need). The pump-out boat is available on weekends from September 9 through November 4. *Marine 9* accepts requests for service on marine channel 9 or by telephone to the Town Dock in Manhasset Bay).

3.3.6 Floodplain

The mean tidal range in Hempstead Harbor is approximately 7.4 feet and the normal velocity of flood and ebb current is generally weak. However, water elevations in the harbor can be drastically altered by storms, both tropical hurricanes and the extra-tropical cyclones locally known as "northeasters." The strong winds and low barometric pressures of such storms increase water height in Long Island Sound and cause flooding in the low-lying shore areas. The north shore of Long Island is either threatened by or experiences at least one storm each year, on average. Unusually severe storms are likely to occur about once in 30 years. The highest recorded water elevation in Hempstead Harbor was approximately 16 feet above mean low water (approximately 12 feet above mean sea level) during the great hurricane of September 21, 1938.

Portions of study area have been designated by the Federal Emergency Management Agency (FEMA) as being susceptible to potential flood damage resulting from the movement of adjacent

coastal waters onto the land surface during severe storm events. FEMA has prepared Flood Insurance Rate Maps (FIRMs) to delineate such flood-prone areas, and has classified flood zones into several general categories, based on the degree of susceptibility to potential flood damage. These flood zones define the limit of 100-year and 500-year flooding (where the 100-year flood has a probability of occurring once in every 100 years, or a one percent probability in any given year), as summarized below:

- **Zone VE**: encompasses the land area that would be inundated by water to a specified depth (termed the "base flood elevation") and would be subject to breaking waves of three feet or greater in height during the 100-year storm.

- **Zone AE**: encompasses the land area that would be inundated by still-water flooding to a specified depth above mean sea level (i.e., the base flood elevation, BFE) during the 100-year storm, but would not be subject to significant wave action.

- **Zone A**: encompasses the land area that would be inundated by still-water flooding during the 100-year storm, but for which BFE has not been determined.

- **Zone X-500**: encompasses the land area between the limits of 100-year flood and 500-year flood, and certain areas subject to 100-year flooding with average depth less than one foot, or where the contributing drainage area is less than one square mile.

- **Zone X**: encompasses the land area that is subject to minimal flooding only, situated outside the 500-year flood plain.

The flood plain within the study area is illustrated in Map 3-9, and summarized as follows:

- Zone VE is absent along the easterly shoreline between Red Spring Point (at the terminus of Soundside, or Southside, Lane) and the south end of Motts Cove, but otherwise occurs as a band of variable width along the shoreline throughout the study area. Zone VE extends further inland in areas where topographic relief is more gradual along the shoreline. The BFE in Zone VE varies from 19 feet along the northernmost reach of the Sands Point shoreline, to 15 feet along the west shore south of Bar Beach.

- Zone AE typically is found in the low-lying areas landward of Zone VE, and can extend considerable distances inland at some locations, including:

- along East Creek in Sands Point; at the termini of Elm Court, Shorewood Drive, and Old House Lane, in Sands Point;
- at Hempstead Harbor Park and Bar Beach;
- along both sides of the harbor to the south of the Roslyn Viaduct;
- onto the Forest City Daly property, on the easterly side of the harbor, just north of the Viaduct;
- across Bryant Avenue at the William Cullen Bryant Preserve;
- at Motts Cove and up along its headwaters;
- across shore Road at the Glenwood Road intersection;
- across Shore Road in the area between Tappen Marina and Laurel Avenue;
- into the Scudders Pond system, including the western end of Littleworth Lane;
- along Glen Cove Creek (extending across both Garvies Point Road to the north and Shore Road to the south, in some locations); and
- along the shores of West Pond and Dosoris Pond.

BFE in Zone AE ranges between 14 and 15 feet above mean sea level throughout the study area.

Zone A includes the area within and immediately surrounding Roslyn Pond, and an intermittent stream channel originating on the William Cullen Bryant Preserve, following Harbor Lane westward, crossing Bryant Avenue, and discharging to the lower harbor, in the central portion of Roslyn Harbor.

- Zone X-500 occurs at scattered locations upland of Zone AE.

- As shown in Map 3-9, most of the study lies in Zone X, outside the limits of the 500-year flood plain.

3.3.7 Upland Soils

Soils exhibit a variety of specific characteristics based on the physical, chemical and biological properties of the soil and local climatic conditions. These factors in turn control the soil's properties, including percolation rate, porosity, drainage and runoff capacity, erosion and sedimentation potential, propensity toward frost heave, affinity toward compaction, weight-bearing capacity, susceptibility toward shrinking and swelling, plasticity, particle cohesion, and ability to support flora and fauna. A soil's properties all play a role in its suitability for different purposes, including for use as construction material, or for various land development activities (e.g., agriculture, wildlife habitat, construction of buildings, subsurface sanitary systems, drainage

control infrastructure, and public utilities, landfills, and roads, etc.). Many of the soils in the study area, especially those in low-lying areas, have limitations for land development related to slope, wetness, presence of clay layers, and other factors.

According to the *Soil Survey of Nassau County, New York* (1987), the soil-types present in the study area collectively belong to the Riverhead-Plymouth and Udipsamments-Beaches-Urban land soil associations. Soil associations typically include at least two specific soil types that have similar soil characteristics, topography and drainage.

The majority of the harbor's waterfront area contains Riverhead-Plymouth soils. These are dominantly moderately steep or steep, well drained or excessively drained, and moderately coarse-textured or coarse-textured soils. Udipsamments-Beaches-Urban land comprises a large portion of the western waterfront, coinciding approximately with the Town of North Hempstead's Port Washington frontage on the harbor, between the Villages of Sands Point and Flower Hill. These are dominantly nearly level or gently sloping, excessively drained to moderately well-drained, coarse-textured soils.

3.3.8 Groundwater

Long Island's groundwater reservoirs are federally-designated sole-source aquifers, which indicates that they are the sole source of drinking water for the region. Because of inputs of contaminants in water recharged to the aquifer system, the uppermost unit, the Upper Glacial Aquifer, generally is not usable directly for drinking water, but can be combined with cleaner sources. For most communities, the underlying layers of Cretaceous-age strata of the Magothy and Lloyd aquifers (and locally the Port Washington aquifer on the western side of the harbor), are the primary sources of a dependable water supply.

The entire study area is situated within Hydrogeologic Zone VIII, as delineated in the Long Island 208 Study. This area is defined as Long Island's north shore shallow flow system, in which the groundwater primarily moves laterally. There may even be some degree of upward flow as the groundwater discharges to the surface water bodies. Evidence of this shallow lateral flow toward the harbor can be seen as springs and groundwater seeps that occur throughout the study area (e.g., in Roslyn Pond Park, in the area around Scudders Pond, and at the bluff face in Sea Cliff). A significant proportion of the precipitation falling into Zone VIII runs off via overland flow into the harbor.

3.4 INVENTORY OF EXISTING WATER-SIDE CONDITIONS

3.4.1 Navigation

3.4.1.1 Physical Characteristic of the Harbor

Hempstead Harbor covers a total water area of approximately 7.4 square miles at mean high water, extending out to the study area boundary between Prospect Point and Matinecock Point. This is an estuarine embayment, in which saline waters from Long Island Sound are being mixed with freshwater discharged from the adjacent upland via stormwater flow and groundwater underflow. The tidal range in Hempstead Harbor is approximately 7.4 feet, on average, increasing to 8.7 feet during spring tide conditions.

Within the Village of Roslyn, the harbor comprises a shallow creek (Roslyn Creek) which is only about 100 to 200 feet across. Proceeding north of the Roslyn Viaduct, the harbor expands to approximately 1,000 feet in width; and beyond the Town of North Hempstead transfer station, the harbor is about 2,000 feet wide.

The harbor constricts significantly at Bar Beach, such that the width here is only about 600 feet, or less than one-third of the shore-to-shore distance in the main body of the lower harbor. Because of this unusual morphology, tidal currents are generally stronger along the Bar Beach area than they are elsewhere in the harbor, creating a naturally deep channel along the harbor's eastern shore at Glenwood Landing.

North of Bar Beach, Hempstead Harbor widens gradually to a line between Mott Point on the western shore and Red Spring Point on the eastern shore; further to the north, the harbor mouth widens more abruptly to connect to the open waters of Long Island Sound. Within its outer reach, water depths along the central axis of harbor are sufficient to accommodate all vessels that normally navigate in this area, ranging from 12 feet just north of Bar Beach and off the Sea Cliff shoreline, to about 30 feet in the harbor mouth.

As in all coastal water bodies, the bottom contours in Hempstead Harbor are controlled by the forces of erosion, transport, and deposition. In the historical past, the lower harbor was navigable down to the Roslyn waterfront, a condition that was instrumental in the original development of this community (see Section 3.2). However, over time this area has undergone significant shoaling, largely due to the delivery of substantial sediment loads from upland sources, but also because of the net up-harbor bottom transport direction that is typical of estuarine embayments like Hempstead Harbor. As a result, most of the lower harbor either is extremely shallow or is exposed as tidal flats, and is unnavigable during low tide. However, navigability improves as the seven-foot tide flows in.

3.4.1.2 Navigational Features

Within Hempstead Harbor, the federal government has designated two navigation channels that were to be maintained by dredging as necessary. An approximately one-mile long channel was established in Glen Cove Creek, extending westward to naturally deep waters in Mosquito Cove. The upper reach of this channel (extending east from near the southerly terminus of Dickson Lane) is 50 feet in width, while the remainder of the channel is 100 feet in width. The authorized channel depth is eight feet below mean low water.

A federally-designated channel is present along the entire north-south length of the lower harbor. This channel was originally authorized in 1910, but the authorization for maintenance dredging was allowed to expire in 1960 due to the lack of water-dependent activity in the portion of the harbor to the south of Bar Beach. This channel has a total length of 2.3 miles, starting approximately 2,000 feet north of the Bar Beach peninsula and extending to the terminal bulkhead at the Roslyn Grist Mill. The authorized width is 50 feet over most of this length, narrowing to 70 feet within Roslyn Creek. The authorized channel depth is 13 feet north of the Roslyn Viaduct, and six feet to the south of the Viaduct.

The Glen Cove breakwater extends from the shoreline in Morgan Park. This U.S. Army Corps of Engineers project was originally adopted in 1888, with the length set at 2,000 feet, but was reduced to the 1,564 feet of structure that was actually completed.

A series of markers delineate the navigation areas within Hempstead Harbor. The locations of these aids to navigation, as based on the National Ocean Survey (NOS) nautical chart for Hempstead Harbor (February 2002), are illustrated on Map 3-6. These markers include a permanent light at the end of the Glen Cove breakwater and a light on a fixed structure just north of Bar Beach, as well as various types of buoys along the margins of the channel in the upper harbor, at the perimeter of the mooring fields to the north and south of the mouth of Glen Cove Creek, and on the sides of the approach to Glen Cove Creek. The municipal harbor patrol agencies (i.e., the two Towns and the City of Glen Cove) have indicated that responsibility for the maintenance of the primary aids to navigation in the waters of the study area lies with the U.S. Coast Guard. The Town of Oyster Bay maintains the buoys that mark the approach channel to Tappen Marina. Anecdotal reports from local mariners indicate a number of problems; in particular, some of the navigational markers that previously were present in the harbor reportedly no longer are in place.

It is noted that channel in lower Hempstead Harbor historically had been delineated with buoys, as shown in earlier NOS nautical charts. More recent charts depict no navigational markers in the lower harbor; and, in fact, the significant shoaling that has occurred in this area is clearly evident, with continuous tidal flats and no discernable channel shown to the south of the Harbor Links (former Morewood) property and substantially shallower water depths throughout the entire area south of Bar Beach. In contrast, the 1981 NOS nautical chart shows a well-defined

channel as far south as the Roslyn Viaduct, as well as three separate spur channels connecting to the westerly shorefront.

3.4.1.3 Obstructions to Navigation

As discussed in Section 3.4.1.1, the lower harbor, south of Bar Beach, becomes essentially unnavigable during low tide; except for a residual tidal channel through the center, this area comprises expansive tidal flats and shallows that extend from both shores.

Rocky bottom creates hazardous conditions for navigation in the near-shore area of outer Hempstead Harbor, especially along the shoreline of the Village of Sands Point on the western side and the City of Glen Cove and Village of Sea Cliff on the eastern side. Other, man-made conditions that pose a navigational hazard in the lower harbor include apparently abandoned, derelict barges and personal watercraft operating illegally in this area.

3.4.1.4 Dredging

Dredging is undertaken to create or restore depths in vessel use areas. Prior to the 1970s, much of the dredging work conducted on Long Island was to create new navigation channels in order to provide or enhance access to maritime facilities along the shore. At that time, the dredged material often was disposed atop tidal marshes, taking advantage both of the convenient location of such sites and the production of additional areas of developable land on the waterfront. Starting in the 1970s, when New York State began implementing new environmental protection laws, most dredging projects in the region have been undertaken to maintain existing channels, and the dredged material has been disposed in a more environmentally friendly manner.

Dredging of federally-authorized channels is under the jurisdiction of the U.S. Army Corps of Engineers (USACE). Glen Cove Creek channel was approved in 1999 for maintenance dredging of approximately 40,000 cubic yards of sediment, to restore the eight-foot authorized depth along its entire one-mile length. This project, started the spring of 2001, is seen as being a crucial component of the overall revitalization plan for the creek. This is the first time the inner channel has been dredged since the 1930s. The outer channel has been dredged several times over the years, most recently in the mid-1990s. However, the project was halted by the USACE about mid-way through, when testing revealed that the dredged material contained elevated levels of radioactivity. Subsequent analysis revealed that this condition is due to the presence of residual nuggets of tungsten slag left behind from the operations of the Li Tungsten facility. The radioactive material must be removed for special handling and disposal before the matrix of dredged material can be disposed.

As discussed in Section 3.4.1.2, a federally-mapped channel is present in lower Hempstead Harbor. After it was authorized in 1910, this channel was maintained by dredging undertaken by the USACE, most recently in 1936. Thereafter, the USACE indicated that no further dredging would occur until deteriorated bulkheads along the shoreline of the lower harbor were repaired by local interests, since it was feared that these bulkheads would fail if bottom sediments in the harbor were disturbed by any additional dredging. This, combined with a decline in the use of the lower harbor for waterborne commerce, resulted in the authorization for further dredging being allowed to expire in 1960. Although the channel currently is not active and has not undergone maintenance dredging in more than 65 years, this federal project does not appear to have been officially de-authorized (which requires an act of Congress), according to information provided by the USACE.

Section 3.4.1.3 of this HMP report describes the continuing siltation that is occurring in the lower harbor, which has resulted in this area becoming essentially unnavigable during low tide. Recent interest has been expressed by certain parties, particularly in the Roslyn area, to pursue dredging in order to re-establish navigability, and possibly to augment tidal flushing in an effort to improve water quality, in lower Hempstead Harbor. However, because water-dependent uses currently are absent to the south of Glenwood Landing, one of the primary justifications for dredging the head of the harbor does not apply. Furthermore, the prospects for any maintenance dredging in the lower harbor would be confronted by substantial regulatory hurdles, which typically are imposed on this type of project by natural resource managers in the various agencies from which approvals would be needed, especially NYSDEC. Extremely high monetary costs also would be associated with such a project, especially considering the difficulty that is typically involved in disposing the type of fine-grained sediments that accumulate in inner harbors. Consequently, under current circumstances, re-establishment of the navigational channel via dredging in lower Hempstead Harbor does not appear to be feasible.

Private marina basins and similar facilities also typically require periodic maintenance dredging, which is the responsibility of the respective owners or operators. USACE records list numerous private dredging projects that have been conducted over the years to maintain various facilities, primarily in Glen Cove Creek. The Town of Oyster Bay periodically has undertaken dredging to maintain adequate depths in the Tappen Marina basin.

The Town of North Hempstead is undertaking an investigation to identify a program of improvements to mitigate water quality impacts to the pond system in Roslyn Pond Park and the receiving waters of lower Hempstead Harbor. One of the alternatives that will be considered as part of this study is the dredging of accumulated sediments from the pond bottoms. This would increase the storage capacity of the ponds, which would augment their ability to remove contaminants prior to discharging to the head of the harbor via Roslyn Creek.

3.4.2 In-Water Uses

Hempstead Harbor presently supports, and historically has accommodated, a wide variety of in-water uses. The current uses of the harbor range from relatively passive activities such as swimming and non-motorized vessel operations (e.g., canoe, kayaks, and small sailboats), to fairly intensive activities associated with deliveries to industrial facilities (e.g., petroleum and aggregate barges), with a vibrant recreational boating community. Fishing also is popular throughout the harbor.

The overall issue of water uses within the harbor pertains to real or perceived "competition" among the various uses that occur within these waters. In some cases, such competition is manifested as two or more uses vying for the same physical space, as when the operation of small boats is made difficult (or even unsafe) at times and locations where large vessels are in use. The distinction between two competing uses also sometimes can be described in terms of conflicts in water quality requirements. Some uses (e.g., shellfish harvesting, finfishing, swimming, and wildlife habitat) require a high level of water quality, while other uses (e.g., power vessel operation and land development) have the potential to degrade water quality.

Use conflicts can also arise when an in-water activity directly diminishes the ability of the harbor complex to serve other important functions. This can apply to the direct loss or impairment of ecological resources (especially wildlife habitat and wetlands), as can result from inadequately regulated boating or poorly designed land development or infrastructure improvement projects. The goals of this HMP reflect an effort to balance competing uses of the harbor complex for the mutual benefit of all.

Map 3-6 illustrates existing water uses in the harbor, which are described below.

3.4.2.1 Commercial Vessel Uses

As noted previously, Glen Cove Creek is one of ten maritime centers designated by NYSDOS in the Long Island Sound region of New York State, as based on the presence at that location of a concentrated number of water-dependent uses, including some commercial facilities. NYSDOS also recognized that important water-dependent commercial facilities are present in other portions of the harbor. This reliance on the water to support commercial activities is a key aspect of the historical heritage of the Hempstead Harbor area, contributing significantly and directly to the development of several of the harbor's communities, including Roslyn, Glenwood Landing, and Glen Cove.

Commercial vessel uses of Hempstead Harbor are still important to this day. However, whereas the lower harbor once supported a significant maritime trade centered at Roslyn, progressive

shoaling of the harbor bottom south of Bar Beach has made water-borne commerce impractical in this area. Consequently, commercial vessel uses currently occur only in the outer harbor, as supported by a naturally deep channel in the main body of the harbor and a federal navigation channel in Glen Cove Creek which is maintained by dredging.

Besides the navigational routes followed through the center of the harbor and into Glen Cove Creek, commercial vessels require passage to the shoreline at several locations, especially in Port Washington and Glenwood Landing. In the former location, incoming aggregate laden barges arrive at shoreside facilities to offload their cargo. Once unloaded, these barges are transferred to an informally designated special mooring area located in the central portion of the harbor to await transport to bulk aggregate suppliers (see Map 3-6). Problems with these moorings has resulted in two recent incidents where barges have broken free, causing significant damage to the Bar Beach fishing pier and an in-water navigational aid. The damage to the pier has since been repaired and the facility was restored to full use.

The Glenwood Landing waterfront is used for commercial vessel operations associated with two adjoining facilities, including the Exxon-Mobil terminal and the Gladsky marine salvage facility. The Keyspan (formerly Long Island Lighting Company, LILCO) power plant, fronting on the harbor directly to the east of Bar Beach, previously was fired by fuel oil which was delivered to the site via tanker or barge. However, water-borne shipments of petroleum were terminated when the facility was converted to gas-only operation in the 1980s.

The Exxon-Mobil terminal receives tanker shipments of petroleum products, including fuel oil and gasoline, at its docking structure located to the north of the Keyspan power plant. In general, fuel shipments have to be timed to coincide with high tide, when the water level is sufficiently deep to accommodate the draft of a tanker ship containing a large volume of fuel. This area has not required dredging in over 20 years and shipments have been successfully conveyed without any incidents of grounding. During off-loading of fuel oil, floating booms are deployed on the water surface around the vessel in order to prevent accidental spills from dispersing. However, the facility operator does not utilize booms when off-loading gasoline, since containment of spilled gasoline increases the danger of combustion and because gasoline rapidly dissipates into the air. Exxon-Mobil's fuel tankers are reported to originate from New York Harbor and generally are 350 feet long, with a maximum storage capacity of 42,000 barrels (a barrel is equal to 42 gallons.).

The Gladsky property in Glenwood Landing includes shoreside dockage for vessels used in the marine salvage operation, including various barges and tugs which travel to work locations throughout the New York region. Some of the materials recovered in these salvage operations are delivered to the upland portion of the site for repair or processing.

3.4.2.2 Recreational Vessel Uses

Hempstead Harbor is a popular location for recreational vessels. The harbor's narrow shape and north-south orientation provides effective protection except during strong northerly winds. The breakwater at Morgan Park provides additional sheltering in the mouth of Glen Cove Creek even against waves generated when the wind is from the north

By far, the highest concentration of recreational boating facilities in Hempstead Harbor occurs along the south side of Glen Cove Creek, where several private marinas are located. The mouth of Glen Cove Creek contains two large mooring areas, situated in Mosquito Cove on the lee side of the breakwater. These mooring areas, which flank the north and south sides of the channel leading into the creek, are occupied on a seasonal basis, primarily by the members of a number of nearby yacht clubs, but also include individual moorings that are accessed via dinghy from the shoreline (e.g., dinghy racks are present at the terminus of Garvies Point Road). The harbor's only other major docking/mooring facility for recreational vessels is the Town of Oyster Bay's Tappen Beach Marina, which is located on the east side of the harbor on the Glenwood Landing waterfront. Additionally, a small mooring field is located offshore from the Beacon Hill Colony, which is used by residents of that community. In all, during a typical recent boating season, the harbor has accommodated a combined total of approximately 1,300 recreational vessels in moorings and dockage, about 80 percent of which are accounted for by public and private marina slips.

Boat ramps provide another means of vessel access to Hempstead Harbor, which are used by boaters who do not avail themselves of the aforementioned docking and mooring facilities. Public ramps are provided by the two Towns, on both sides of the harbor, at Bar Beach and Tappen Beach. A number of additional boat ramps are present along the harbor's shoreline, including public ramps at Shore Road (at the terminus of Laurel Avenue), Sea Cliff Village Beach, and the terminus of Garvies Point Road; and a private ramp at the Beacon Hill Colony.

3.4.2.3 Other In-Water Uses

Swimming is an important use in upper Hempstead Harbor. Public bathing beaches occur at Bar Beach (Town of North Hempstead) and Hempstead Harbor Beach (Nassau County) on the western shore; and Tappen Beach (Town of Oyster Bay), Sea Cliff Village Beach, Morgan (Park) Beach, Crescent Beach and Pryibil Beach (City of Glen Cove) on the eastern shore. Glen Cove also has several community association beaches, including East Island Beach Association, Red Spring Colony Beach Association, North Country Colony Beach Association, and Shorecrest Beach Association.

The public bathing beaches throughout Nassau County are monitored by the Nassau County Department of Health (NCDH) to ensure that water quality conditions conform to minimal standards for public health. The beaches in Hempstead Harbor historically had suffered from repeated closures related to poor water quality through the 1980s and into the early 1990s, especially at those facilities situated furthest from the mouth of the harbor. However, overall water quality conditions dramatically improved starting in the mid-1990s, with no closures occurring between 1994 and 1999, a minimal number of administrative closures in 2000 and 2001 due to heavy rainfalls, and no closures again in 2002 or 2003. The administrative closures are imposed by the NCDH as a precautionary measure when there is more than one-half inch of rainfall during any given rain event; this practice pertains to Sea Cliff Village Beach, Tappen Beach, Bar Beach, and Hempstead Harbor Beach.

A federal initiative is under way to change the beach closure standard from the current one based on the measurement of coliform bacteria as the indicator organism, to one based on enterococcus bacteria. States are being offered federal incentive monies to undertake this program amendment, which it is believed would provide a more accurate gauge of the potential presence of pathogens since enterococcus is more closely linked to human waste. Preliminary investigations suggest that this change, if implemented, would likely result in an increased number of beach closures because of the higher degree of sensitivity of the proposed new standard; and a suitable educational effort will be needed to ensure that the public understands that these circumstances would not be indicative of deteriorating water quality.

Recreational fishing occurs at many locations throughout Hempstead Harbor. Some of the more popular shore-based fishing sites include: Bar Beach fishing pier, drop-line fishing pier at Hempstead Harbor Beach Park, Powerhouse Park, Tappen Beach fishing pier, Sea Cliff Park, Rum Point, Morgan Park fishing pier, the Glen Cove breakwater, Pryibil Beach Pier, and other public shorefronts throughout the harbor. The most common varieties of fish caught in the harbor and the adjacent waters of Long Island Sound are striped bass, bluefish, snappers, blackfish, weakfish, flounder and fluke. Recreational shellfishing is not legal in Hempstead Harbor, as the entire area is uncertified for this activity (see further discussion regarding water quality classifications and use standards in Section 3.4.3.2).

Hempstead Harbor also is a popular area for waterfowl hunting, taking advantage of its status as a regionally significant waterfowl wintering area. The waterfowl hunting season varies with species, but generally occurs between the mid-fall and early winter.

The navigational charts show that a pipeline area beneath the harbor bottom extends between Bar Beach and Glenwood Landing.

3.4.3 Water Quality Conditions

3.4.3.1 Water Quality Improvement Plan

Water quality aspects of the Harbor Management Plan for Hempstead Harbor are addressed in an earlier investigation undertaken by the Hempstead Harbor Protection Committee, the results of which are summarized in the *Water Quality Improvement Plan for Hempstead Harbor* (Final Report, May 1998). This was a watershed-wide investigation directed at characterizing the sources of water quality impairments in the harbor and formulating a strategy for mitigation.

The primary factor affecting water quality in Hempstead Harbor is contaminant loadings derived from storm water runoff, although various other sources are also important (i.e., groundwater underflow, discharges from on-site wastewater disposal systems, sewage treatment plant effluent, vessel wastes, fecal wastes from waterfowl, hazardous substance spills, etc.). Stormwater is delivered to the harbor by two primary means. Unconcentrated sheet flow is shed from the upland as a non-point discharge; this condition pertains only to a small portion of the entire watershed, and generally applies only to lands immediately along the shoreline. The vast majority of the harbor's stormwater input occurs via various conveyances, such as channels, culverts, outfall pipes, chutes, flumes, and similar devices. The distribution of such stormwater discharges within the study area and adjacent portions of the harbor's watershed are illustrated in Map 3-10.

In order to quantify non-point pollutant loadings to the harbor, the *Water Quality Improvement Plan* undertook numerical modeling for a series of 12 sub-watersheds into which the harbor's entire 25-square mile upland watershed was divided. Based on these results, the sub-watersheds were ranked, with the top six areas (in order of decreasing overall contribution of non-point source pollution to the harbor) being as follows:

1. Sea Cliff sub-watershed - occupying almost all of the eastern harborfront to the south of Glen Cove Creek
2. Roslyn West sub-watershed - occupying the southwesterly frontage on the harbor, and the western side of the Roslyn Pond drainage system
3. Roslyn East sub-watershed - occupying the remainder of the eastern harborfront
4. Flower Hill sub-watershed - lying along the western harborfront just to the north of the Roslyn West sub-watershed
5. Glen Cove South sub-watershed - lying directly to the north of the Sea Cliff sub-watershed, and fronting on the south side of Glen Cove Creek
6. Old Brookville sub-watershed - the largest sub-watershed (comprising more than 54 percent of the total watershed), lying upland from the Sea Cliff sub-watershed, but also extending along the northern side of Glen Cove Creek

The recommendations developed under the *Water Quality Improvement Plan* includes:

- **public education initiatives**, such as a quarterly newsletter, informational brochures, development of a watershed management curriculum, and establishment of an annual "Save the Harbor Day" event;

- **source control measures**, including decreased pesticide and fertilizer use, water conservation, decreased use of roadway de-icing materials, institution of a septic management ordinance in communities that use this means of sewage disposal, closer scrutiny of development applications to ensure that adequate measures are implemented to control non-point source pollution, municipal good housing-keeping practices, enactment of a watershed-wide "pooper scooper" law, enactment and enforcement of a watershed-wide law banning the feeding of waterfowl, and increase in the inter-municipal consistency of various source control measures; and

- **delivery reduction measures**, including a focused effort to address problems in the top six priority sub-watersheds listed above, development of improved GIS-based maps of drainage systems, implementation of specific structural improvements to augment treatment capabilities of existing drainage systems and abate non-point source pollution in the six top-priority sub-watersheds, establishment of a watershed management district to address the mitigation of water quality impairments in the harbor.

The specific delivery reduction projects recommended by the *Water Quality Improvement Plan* include:

- Sea Cliff sub-watershed - improvements to drainage system at Scudders Pond, including a sediment trap on the drainage line from Littleworth Lane; upgrade of the collection system for Motts Cove;

- Roslyn West and East sub-watersheds - dredging of the Roslyn Pond system bank stabilization of the pond shorelines, aeration of the ponds, installation of vegetation to discourage use of ponds by waterfowl, and installation of a multi-baffled sedimentation chamber up-gradient of the pond system; installation of sediment traps at the end of Lumber Street (on the west side of the harbor, extending northward from Old Northern Boulevard) and Skillman Street (on the east side of the harbor, just south of the Viaduct);

- Glen Cove South and Old Brookville sub-watersheds - removal of existing storm drain inlets and replacement with sediment sump-type water quality inlets; and installation of various devices to treat stormwater generated in the redevelopment area on the north side of Glen Cove Creek; and upgrade of Cedar Swamp Creek drainage collection system, involving the replacement of 20 to 25 conventional storm inlets with water quality inlets or sediment catch basins; and

- All Sub-watersheds - inclusion of water quality mitigation practices in roadway projects, wherever practicable; videotaping of drainage collection systems in Roslyn, Roslyn Harbor, Sea Cliff and Glen Cove prior to initiation of work on system upgrades, in order to identify interconnections.

3.4.3.2 Water Quality Classification and Use Standards

The quality of marine and estuarine waters can be assessed on the basis of a variety of variables, including color, odor, floating and suspended solids, oil, toxic compounds, and other deleterious substances. Water quality classifications in New York State are currently based primarily on three indices: total coliform level, fecal coliform level, and dissolved oxygen concentration.

The primary objective of most on-going water quality monitoring programs in New York State is to prevent human health impacts from exposure to pathogenic bacteria and viruses (e.g., the hepatitis and Norwalk viruses, and the Salmonella bacteria), which can result from either direct contact with contaminated water or the consumption of tainted shellfish. However, the detection of these pathogens is generally a time consuming and tedious undertaking. Consequently, water quality testing entails the use of coliform bacteria, which are relatively easy to measure; these bacteria co-occur with the pathogens of primary concern and serve as indicators of the possible presence of those pathogens.

In order to be certified as a shellfish harvesting area, the median total coliform level for any series of samples must be 70 MPN/100 ml or less (where MPN/100 ml is the most probable number of organisms per 100 milliliters of sample). New York State (2 NYCRR Part 701.20) classifies these certified shellfishing waters as “SA”, which designates the highest level of water quality. An “SB” classification is assigned where the monthly median total coliform level is 70 to 2400 MPN/100 ml, where no more than 20 percent of the samples exceed 5000 MPN/100 ml, and where the monthly geometric mean value is 200 MPN/100 ml or less. The best intended use for SB waters is swimming.

According to the *New York State Water Quality 2000* report issued by NYSDEC's Division of Water pursuant to Section 305(b) of the Federal Clean Water Act Amendments of 1977 (PL 95-217), the waters of Hempstead Harbor are classified as SA, which pertains to saline waters that are suitable for shellfishing for market purposes, as well as for both primary and secondary recreation. This classification is a target designation based on the perceived best use of the harbor, rather than being based on actual water quality. Although water quality does appear to have improved following the close of the Roslyn Village Sewer Treatment facility in the late 1980s (as is evidenced by the reduction in the occurrence of beach closures since the early 1990s – see Section 3.4.2.3), shellfishing harvesting is still prohibited throughout the entire area of Hempstead Harbor, which has been the case since 1966.

Currently Hempstead Harbor is not subject to regular bacterial monitoring for the purpose of determining whether water quality conditions conform to New York State shellfishing standards. In fact, water quality degradation in this area is a regional problem, which has contributed to the closure of shellfish beds throughout the entire portion of Long Island Sound and its tributaries to the west of Matinecock Point (at the northwest corner of the study area for this HMP). This large area which is uncertified year-round for shellfish harvesting has been attributed primarily to the input of contaminants carried in urban runoff from adjacent uplands.

3.4.3.3 Water Quality Monitoring

A variety of organizations are involved in monitoring the water quality of Hempstead Harbor, including:

New York State Department of Environmental Conservation (NYSDEC) - NYSDEC's primary responsibility with respect to the monitoring of coastal water quality is to ensure that conditions in shellfish harvesting areas meet the minimum sanitary conditions necessary to satisfy SA standards. As noted above, all of Hempstead Harbor has a classification of SA, which is based upon the perceived best use of the harbor, rather than on actual water quality conditions. In the 1960s, the entire area of Hempstead Harbor was closed to shellfish harvesting due to the occurrence of measured coliform levels at that time that consistently failed to meet SA standards. Thereafter, NYSDEC terminated regular coliform testing in the harbor, and this area has remained uncertified year-round based on the lack of requisite data indicating conformance with shellfish harvesting standards.

NYSDEC operates a conditional shellfish harvesting program, which allows shellfish to be taken from certain areas that are usually classified as uncertified. During periods of little or no rainfall, when contaminant inputs derived from non-point source runoff are reduced, water quality can improve to the point where it meets the high standards for certified shellfishing areas. Most conditional programs are operated during the colder months of the year, usually from mid-

December through mid-April, when typically there is less rainfall and less outdoor activity that can contribute to contaminated runoff.

Conditional programs are operated by NYSDEC in cooperation with most towns in Nassau and Suffolk Counties. Each year NYSDEC requests each town to recommend two areas which local baymen have expressed interest in having designated as conditional harvesting areas. Before establishing the conditional programs each year, NYSDEC examines and evaluates the water quality of each requested area. The towns assist in collecting water samples which are examined in the NYSDEC's microbiology laboratory. The testing results are used to determine how much rainfall and runoff each area can receive and still have water quality consistently suitable for the harvest of shellfish.

Presently, conditional shellfish harvesting does not occur in Hempstead Harbor. However, if local baymen indicate an interest in seeking access to the shellfish beds in the harbor, a request can be submitted to NYSDEC seeking consideration for the establishment of a conditional program in these waters. In addition to the requisite evaluation of water quality conditions discussed above, it is important to recognize that the viability of such a program would depend on the level of interest expressed by local baymen, who generally will work only those areas that are expected to be productive, sheltered from the harsh winter weather, and in close proximity to locations where they can moor or launch their boats.

Nassau County Department of Health (NCDH) - The NCDH performs water quality testing at the five beaches along the Hempstead Harbor shoreline. The testing occurs bi-weekly between mid-April and mid-September of each year. In the past, sampling was conducted at 13 different stations around the Harbor. Budgetary constraints in the early 1990s, however, led to the elimination of the County's Bureau of Water Pollution Control and as such the water sampling program was significantly reduced. The NCDH also conducts coliform analysis of mid-harbor water samples that are collected by the *Coalition to Save Hempstead Harbor*.

Interstate Environmental Commission (IEC) - The IEC, formerly the Interstate Sanitation Commission, was created in the 1930s to monitor pollution in the waters shared by New York, New Jersey and Connecticut. The IEC has two monitoring sites within Hempstead Harbor (Stations HC and HD) and one site near the interface of the harbor and the Sound (Station HC1). During the summer season, data are usually collected on a weekly basis at the three stations. Data is collected by monitoring the following parameters: temperature, salinity, dissolved oxygen, and chlorophyll *a*. Unusual occurrences are logged as well, including such things as algal blooms, biological events or floatable debris. Effluent from the Glen Cove STP is monitored as well, for total suspended solids, biochemical oxygen demand, settleable solids, total coliform, pH, temperature and turbidity.

Coalition to Save Hempstead Harbor (CSHH) - The CSHH has been involved in overseeing a citizens' water quality monitoring program for the harbor over the past ten years. This ongoing program involves the collection of mid-harbor water samples for coliform testing by the NCDH; as well as the sampling and testing of a number of parameters including total and fecal coliforms, dissolved oxygen (DO), salinity, water temperature, pH, nitrite, nitrate, and ammonia. The participants of the program also keep a log of a number of observations pertaining to weather conditions, wind velocity and direction, water and air temperature, presence of floating debris, water turbidity/clarity, wildlife, and human activity. The CSHH also is involved in other environmental investigations such as fish surveys and its 1998 hard-shell clam survey.

During the summer of 1999, the Town of Oyster Bay received Environmental Protection Fund financing from New York State for the purchase and installation of a stationary water quality-monitoring probe, which was positioned near the middle of Hempstead Harbor. The probe collects data on an hourly basis for a number of parameters including DO, water temperature, pH, and depth and stores this data in its memory. The probe is maintained by the CSHH and is retrieved periodically so that stored data can be downloaded for evaluation and re-deployed for additional data gathering.

The Town of Oyster Bay also recently acquired a new water sampling boat, which is stationed at the Tappen Beach Marina and is used in the CSHH testing program. The boat collects samples at eight mid-harbor stations in the upper and lower harbor. Water samples are collected at least once a week and are analyzed for a standard set of parameters. The crew also removes debris that they encounter in the waters.

Results of water quality sampling by the CSHH have indicated periodic deficits in DO concentrations, which reflect regional conditions noted in western Long Island Sound. Periodic high levels of fecal and total coliforms have also been observed; however, significant improvements have occurred with respect to this parameter since the late 1980s and early 1990s. There has been a decrease in beach closures since the early 1990s, and a general trend toward improving water quality conditions has been noted.

United States Geological Survey (USGS) - The USGS has maintained a flow gauging station located on the Glen Cove Creek since 1996. The station is located within the Mill Pond Preserve and monitors a wide range of physical and chemical parameters.

3.4.4 Water-side Ecological Resources

3.4.4.1 Tidal Wetlands

Although the shoreline of the Hempstead Harbor area has been altered to a large degree by development, significant areas of tidal wetlands are found throughout these waters. Tidal wetlands in this area consist of the following four major types: intertidal marsh (IM), high marsh (HM), coastal shoals, bars, and mudflats (SM), and littoral zone (LZ), which are briefly described below:

- An IM classification is assigned to those wetland areas located between average high and low tide levels, and within which smooth cordgrass (Spartina alterniflora) is the predominant vegetative species. IM are the most biologically productive of all tidal wetland categories, and have high values for flood and sediment control. Even small patches of IM wetland are considered by NYSDEC to be of critical importance.

- HM areas normally occupy the uppermost tidal wetland zone, and are typically dominated by salt meadow cordgrass (Spartina patens) and salt grass (Distichlis spicata). The upper limit of this zone is often occupied by marsh elder (Iva frutescens) and groundsel bush (Baccharis halimifolia). The common reed (*Phragmites australis*) may also be present, especially in areas that have been disturbed by human activities. HM areas, while critically important for marine food production, are slightly less important in this regard than IM areas. HM areas are as important as IM areas for absorbing silt and organic material, and providing flood and storm control. Because they are located generally in such a way that they are the first tidal wetland area to receive run-off and other materials from the land, HM areas have an important role in cleansing ecosystems.

- SM wetlands are those areas lacking smooth cordgrass that area covered by water at high tide and are exposed or covered by less than one foot of water at low tide. Sediment texture can vary significantly in SM areas, from mud flats in protected embayments to sandy shoals in areas subject to wave and current action.

- LZ wetlands occur in tidal waters of average depth less than six feet that do not meet the requirements for classification under any of the other wetland categories. SM and LZ areas exhibit extreme variability in their contribution to biological productivity and other tidal wetland values, but are less valuable than IM or HM areas in this regard.

  SM and LZ wetlands include areas of extreme variability in their contributions to marine food production and other tidal wetland values, and each such area requires a specific assessment of tidal wetland values. Some SM and LZ areas have extremely high

biological productivity and are nearly or equally as important in this respect as IM and HM areas. Other SM and LZ areas are of little biological significance. Even in these relatively unproductive areas, however, values other than marine food production are often present, and these areas often have the potential to become more biologically productive in the future.

Tidal wetlands perform a variety of important and useful functions, including the following:

- Marine food production: tidal wetlands are among the most productive ecosystems in the world

- Wildlife habitat: tidal wetlands are important as breeding, nesting, and feeding grounds for a variety of invertebrates, fishes, birds, and mammals

- Flood and storm control: tidal wetlands serve as a natural buffer, absorbing wave damage and protecting beaches and developed upland from storm tides

- Recreation: tidal wetlands provide many opportunities for hunting, fishing, bird watching, and study of natural history and ecology

- Pollution control: tidal wetlands are capable of assimilating pollutants and chemically and biologically converting them into useful nutrients

- Sedimentation: tidal wetlands absorb silt and organic matter, which otherwise would obstruct channels and harbors.

Tidal wetlands are an important element of the designated Significant Coastal Fish and Wildlife Habitat in Hempstead Harbor.

NYSDEC regulates all activities undertaken within the boundaries of State-designated tidal wetlands and adjacent buffer areas, pursuant to Article 25 of the Environmental Conservation Law (ECL) of New York State. All activities undertaken within a tidal wetland or adjacent area, with the exception of most routine repairs to existing structures, require a NYSDEC permit in accordance with the regulations promulgated in 6 NYCRR Part 661 (Tidal Wetlands Land Use Regulations).

NYSDEC regulations have effectively halted the direct, physical loss of tidal wetlands to development. However, those regulations are not, of themselves, sufficient to prevent a variety of potential indirect impacts. Most importantly, NYSDEC's jurisdiction does not include projects situated greater than 300 feet from the wetland boundary. Consequently, contaminated storm

water runoff discharges from projects (especially during construction) can cause wetland impairments unless proper management techniques are applied. In addition, motorboat traffic in shallow waters can destroy wetland vegetation both by direct physical disturbance and through the indirect effects of wakes. Therefore, further measures, beyond the provisions of the State's tidal wetlands regulations, are needed to protect this important resource in the Hempstead Harbor Complex.

The distribution of tidal wetlands within Hempstead Harbor is illustrated in Map 3-5, as based on NYSDEC's regulatory maps under Part 661. Most of the areas of NYSDEC-mapped tidal marsh are concentrated in the lower harbor, below Bar Beach. This includes wide areas of IM on the western shore, to the north of Hempstead Harbor Industrial Park, and a generally narrower fringe of IM along most of the eastern shore between Motts Cove and the Forest City Daly bulkhead in Roslyn. Additional areas of IM in the harbor occur: in the private Bird Sanctuary, along the eastern side of East Creek, at Prospect Point in the Village of Sands Point; in Captain's Cove, on the north side of Glen Cove Creek; as a thin fringe at other scattered locations in Glen Cove Creek; and in West Pond, to the north of the Welwyn Preserve in Glen Cove. NYSDEC-mapped HM wetland areas occur in the upper portions of the marsh area along the eastern side of East Creek.

NYSDEC-mapped SM wetlands have a somewhat wider distribution than tidal marshes in Hempstead Harbor. The main concentration of SM areas is in the lower harbor, seaward of the marshes. SM areas also are present along the shoreline extending south from Prospect Point, along the Sea Cliff shoreline, at the mouth of Glen Cove Creek, along the shoreline of the Welwyn Preserve in Glen Cove and at the inlets to Dosoris Pond in Glen Cove.

The NYSDEC tidal wetland regulatory maps were created in the mid-1970s, and although updated mapping is underway based on analysis of recent aerial photography and field surveys by NYSDEC, the information on the current maps for Hempstead Harbor has not yet been revised. Therefore, the extent of tidal wetland areas depicted on Map 3-5 may not accurately reflect actual conditions at this time. In particular, based on recent bathymetric charts and anecdotal information from local mariners, it appears that the SM areas in the lower harbor may be significantly more extensive than shown due to shoaling that has occurred over the more than 25 years since the NYSDEC maps were created.

3.4.4.2 Marine Fauna

Despite its historical role as a center for industrial activities, and residual environmental problems related to that heritage, Hempstead Harbor supports a rich marine fauna, and is a New York State-designated Significant Coastal Fish and Wildlife Habitat (extending out to a line between Mott Point in the Village of Sands Point and the Morgan Park breakwater, and excluding the

innermost section comprising Roslyn Creek). The New York State Department of State describes Hempstead Harbor as being important to fish and wildlife throughout the year. Hempstead Harbor also is part of a federally designated habitat area, covering the western harbors of Long Island, recognized as being important for many species of fish and wildlife, and has been designated by the National Marine Fisheries Service as containing Essential Fish Habitat for 15 species of fish.

Important species of finfish that are known to be present in the harbor during at least part of their life cycle include:

- Striped Bass - This is a top-level predatory and popular game fish during the warner months. Spawning occurs in freshwater rivers, with the local population based mostly in the Hudson River.

- Bluefish - This also is a top-level predator which is popular with recreational fishermen. Both adults and juveniles (known as snappers) are common in local estuaries in the summer and early fall.

- Winter Flounder - This popular game fish is a bottom dweller, which is abundant in upper estuary areas during its early larval stages, and gradually moves into the lower estuary as it grows. The juveniles eventually leave the estuary to follow the adults. The entire population shifts shoreward after the autumnal cooling commences, with the greatest concentrations in estuaries occurring between December and March. Winter flounder move back offshore as the water temperature rises again in the spring.

- Summer Flounder - This popular game fish (also known as fluke) is a bottom dweller. Spawning occurs as the fish migrate offshore during the autumn, starting in mid-September in this region. After metamorphosing from the free-floating larval stage, the juveniles spend most of their time on the bottom. Juvenile summer flounders are capable swimmers that migrate toward the shore and enter the estuaries; they are well-adapted for estuarine life, since they are able to withstand a wide range of temperatures and salinities. Juveniles apparently remain in the estuaries until they are of sufficient size to join an offshore migration with the adult population of summer flounders.

- Blackfish - This species is found in local estuaries in the spring and summer, in association with rough bottom, shellfish and eelgrass beds, and man-made structures.

- Weakfish - Long Island is in the heart of this species' range along the East Coast. Adults primarily feed on shrimp, larger zooplankton, crabs and other crustaceans and small fish. Estuaries, such as Hempstead Harbor, provide spawning grounds, nursery

habitat and feeding areas. Larger fish appear in the area in mid-spring, becoming most abundant in the summer. In the fall, adults begin a migration to the continental shelf. Spring warming of coastal waters prompts adults to migrate back to coastal waters. This is a popular recreational fish, but populations have been in decline for many years due to overfishing and habitat degradation.

- Windowpane Flounder - All life stages of this species of flatfish occur in estuaries such as Hempstead Harbor. Eggs and larvae are free-floating. Juvenile and adult windowpanes are bottom-dwellers, preferring mud and fine-grained sand. With growth and maturity this species tends to move offshore into deeper waters.

- Scup - This species (also known as porgy) spawns in local estuaries between May through August, with a peak during June. The eggs are free-floating. Scup eggs are found locally from May through August, while larvae are most abundant nearshore from May through September. Juveniles and adults of this species are bottom dwellers. Juvenile scup are found in local estuaries during the spring and summer. Adults winter offshore between November and April.

The predatory species of finfish described briefly above are sustained by abundant populations of bait fish and invertebrates. Important baitfish species include American menhaden (bunker), Atlantic silversides, sand lance (sand eel), mummichog, striped killifish, and bay anchovy. A wide range of invertebrates is present in the harbor, including: coelenterates (jellyfish); ctenophores (comb jellies); horseshoe crabs; barnacles; annelids (segmented worms); bivalves (hard clams, soft clams, razor clams, blue mussels, ribbed mussels, oysters, and jingle shells); gastropods (snails); and crustaceans (lobsters, near the mouth of the harbor; and crabs and shrimp throughout).

3.4.4.3 Waterfowl

The New York State Department of State, in the Significant Coastal Fish and Wildlife Habitat documentation, describes the habitat as being an important waterfowl wintering area, between November and March. Large numbers of scaup, canvasbacks, and black ducks are reported to use this area, and lesser numbers of migratory Canada goose, common goldeneye, red-breasted merganser, mallard, oldsquaw, bufflehead and American wigeon.

Although waterfowl are an important constituent of the Hempstead Harbor ecosystem, and the harbor's waters serve as a significant wintering area for many northern species, the proliferation of certain species (especially Canada goose) as year-round residents has reached nuisance levels. Some areas around the Harbor are more prone to waterfowl congregation than others. These include Roslyn Pond Park, William Cullen Bryant Preserve, Engineers Country Club, and

the Hawkins property on Scudder's Lane in Roslyn Harbor (where there is a natural private pond). In those locations where waterfowl populations are especially dense, their fecal wastes can contribute significantly to the overall pathogen levels in the receiving waters. These populations are kept artificially high, and have been enticed to abandon their normal migration patterns and remain local throughout the year, by the availability of food supplies (especially bread products) delivered by humans.

The impact that waterfowl can have on water quality conditions is illustrated by an analysis of the nearby Huntington/Northport Bay Complex (Fanning, Phillips & Molnar, Storm Water Management/Tidal Water Quality Remedial Study for the Town of Huntington, August 1992). That study identifies waterfowl wastes as being the second most important source of coliform bacteria (after storm water runoff), accounting for more than one-third of the total coliform loadings in some portions of the Huntington/Northport Bay Complex. Although no similar study has been undertaken in Hempstead Harbor, it is likely that waterfowl also make a significant contribution to coliform concentrations here as well.

The control of waterfowl wastes, as a source of surface water contamination is a particularly difficult problem to address. Even though signs may be posted and laws passed to discourage the introduction of artificial food supplies to waterfowl habitats, this activity continues to be popular. In fact, waterfowl feeding is widely perceived as being an acceptable form of family recreation, and serves the useful purpose of providing many local children with one of their first direct contacts with wildlife. Consequently, prohibitions on waterfowl feeding often are not vigorously enforced. Furthermore, any future effort to moderate waterfowl populations must be undertaken in such a manner that is consistent with the somewhat conflicting goal of protecting the harbor complex's important natural resources (including those same waterfowl), thereby limiting the range of viable options.

3.4.4.4 Other Avian Fauna

Hempstead Harbor and its immediate shoreline also support a large community of other species of birds, besides waterfowl. These include wading birds (e.g., herons and egrets), gulls and terns, cormorants, and various others. Among the most common avian species that utilize the waters and wetlands of Hempstead Harbor for nesting and/or feeding are:

Wading Birds – great blue heron, great egret, snowy egret, and black-crowned night heron

Gulls and Terns – laughing gull, ring-billed gull, great black-backed gull, herring gull, common tern, least tern

Cormorants – double-crested cormorant

Other Birds – red-winged blackbird, osprey, belted kingfisher

Least tern and common tern are listed by New York State as threatened, and osprey is listed by the State as a special concern species. Piping plover and roseate tern, which are rare or occasional visitors to Hempstead Harbor, both are State-listed endangered species. Bald eagle, common loon, American bittern, and black skimmer, all of which are State-listed specials of special concern, also are rare or occasional visitors. An endangered classification pertains to any native species in imminent danger of extirpation or extinction in New York State. A threatened classification pertains to any native species likely to become an endangered species within the foreseeable future in New York State. A species of special concern is any native species for which a welfare concern or risk of endangerment has been documented in New York State. Roseate tern also is listed by the U.S. Department of the Interior as a federally threatened species; piping plover is federally threatened in the Atlantic coast region; and bald eagle is federally threatened throughout its range.

Special efforts have been taken to provide expanded and enhanced habitat for the State-listed special concern osprey. In undisturbed areas, this species typically nests in large, dead trees. There are reports that some osprey nesting has occurred in trees in both upper and lower Hempstead Harbor. However, since this type of habitat is scarce in the Hempstead Harbor area, the number of available nesting sites has been augmented by artificial nesting platforms mounted atop utility poles. A number of these nesting structures have been installed on Town of North Hempstead-owned land on the west side of the lower harbor. Additionally, ospreys have established a nest on the fixed navigation tower located immediately to the north of Bar Beach and on pilings or docking structures in the harbor. In total, it is estimated that Hempstead Harbor contains approximately eight to ten osprey nests.

3.4.5 Underwater Lands

3.4.5.1 Underwater Land Ownership

The ownership of lands underwater on Long Island is a conglomeration of federal, State, town, and private title. As discussed below the underwater lands in Hempstead Harbor are owned by the State of New York (north of Bar Beach) and the Town of North Hempstead (south of Bar Beach).

The State of New York holds title to the vast stretches of the foreshore (area located between the high and low water marks) and submerged lands of Long Island located along the Atlantic Ocean and Long Island Sound, as well as all underwater lands not otherwise conveyed away by patents or grants. New York State gained such title when it attained Statehood and succeeded the King of England in ownership to all lands within the State not already granted away, including

all rights and title to the navigable waters and the soil beneath them (Public Lands Law, Section 4; People v Trinity Church, 22 N.Y. 44, 1860; Langdon v. Mayor, 93 N.Y. 129, 1883). The uplands and submerged lands described and conveyed to Long Island townships through colonial patents remained vested in the towns, as confirmed by the first New York State Constitution and subsequent State Constitutions. The State holds title to the tidelands and submerged lands in its sovereign capacity in trust for the use and enjoyment of the public under the *Public Trust Doctrine*. Thus, the public in the State of New York has the absolute right, via this doctrine, to use the navigable waters, the foreshore area of the shoreline, and underwater lands.

Generally, but not always, the seaward boundary of a waterfront parcel runs with the mean high water line and progresses outward or recedes inland as the shoreline naturally accretes or erodes. The water-side boundary of some properties is defined by fixed metes and bounds, however, which do not shift with changes in the position of the shoreline; such parcels often end up including an underwater land portion if the shoreline erodes, or can be cut off from direct access to the water if the shoreline accretes. Artificial filling of publicly-owned underwater lands can complicate ownership issues, and such matters frequently are resolved through legal proceedings on a case-by-case basis.

According to the New York State Office of General Services, (W. Smead, NYSOGS, July 23, 1995), the underwater lands in Hempstead Harbor to the north of Bar Beach, including Glen Cove Creek, are owned by the State of New York. These State-owned underwater lands are managed and regulated by the OGS. NYSDEC regulates activities in tidal wetlands and structures on or over underwater lands that are owned by other entities.

The OGS oversees the issuance of grants, leases, easements and other lesser interests (licenses and permits) for State-owned underwater lands to allow upland property owners the right to utilize and occupy these lands, mostly for the purpose of accessing navigable waters. On State-owned underwater lands, the OGS regulates all commercial structures, regardless of size, but does not regulate structures that are less than 5,000 square feet in area and used for non-commercial purposes. The OGS also reviews NYSDEC and U.S. Army Corps of Engineers comments for proposed projects that affect State-owned underwater lands to ensure that the benefits to the public will not be deprived and that the environment will not be adversely impacted. Similar provisions hold for underwater lands under Town of North Hempstead ownership, with the Town Board managing and overseeing the use of these lands.

The Town of North Hempstead's claim to underwater lands in Hempstead Harbor is based on the Kieft Patent of 1644 and the Dongan Patent of 1686. The Kieft Patent granted title to lands known as Hempstead Bay (now known as Hempstead Harbor) with the ownership to begin at the head of the bay; however, this boundary was never precisely located. The subsequent Dongan Patent delineated the northerly boundary of the Town's grant at Bar Beach. Originally,

the grants were made to the Town of Hempstead, which then included the area that now comprises the Town of North Hempstead. However, these lands were transferred to the Town of North Hempstead when it was split off from the Town of Hempstead in 1784 by the State Legislature.

Until 1962, the State of New York had consistently exercised domain over the underwater lands throughout Hempstead Harbor, and the courts found that title of ownership by the Town of North Hempstead was not clear and free of doubt. Although the Town openly protested the State's granting away of underwater lands in the harbor, the State continued to maintain its ownership title and overruled the objections of the Town. This situation was rectified by the passage of Chapter 508 of the 1962 Laws of New York, which formally granted to the Town of North Hempstead all right, title and interest to all the underwater lands in Hempstead Harbor, including all coves, creeks, or other tributaries, located south of Bar Beach. Under this action, the State retained ownership of all underwater lands in the harbor located north of Bar Beach.

3.4.5.2 Underwater Land Grants and Leases

The underwater lands along the Hempstead Harbor shoreline that are owned by New York State and the Town of North Hempstead extend to the mean high water line. Owners of upland waterfront properties have the right, known as their riparian or littoral right, to access navigable waters located seaward of their properties. Riparian/littoral rights run with the upland property. It only applies to parcels that front on the shoreline of a surface water body. This right is limited to or guided by the use of the upland property and how this property is zoned, and it does not give the upland owner the right to fill or otherwise alter the shoreline.

A number of underwater land grants have been issued by the State to various owners of upland shorefront property along the Harbor over the years to enable them to construct docks and such. These grants were issued for the express purpose of beneficial enjoyment, and include:

- City of Glen Cove: Submerged Land License (L # 00263), to install & maintain a passenger ferry landing facility
- Town of Oyster Bay, Tappen Beach (9/1967)
- Sarah Pirie, Riparian Rights (5/1893)
- Theodore Sheridan, Riparian Rights (5/1893)
- Village of Sea Cliff, 18 Trails Park (5/1970)
- Village of Sea Cliff, Village Beach (3/1938)
- Matzok, Hurley & Leach, Riparian Rights (8/1962)