

## C. Water Resources

### 1. Existing Conditions

#### a) Hydrogeologic Conditions

The project study area is situated within Hydrogeologic Zone VIII: North Shore Shallow Flow System. The land constituting Zone VIII occupies a band of varying width along the North Shore of Long Island in both Nassau and Suffolk Counties. Groundwater in this zone flows towards the harbors, bays or to the Long Island Sound. Zone VIII has been restricted to those locales for which hydrologic data shows a horizontal or upward movement of groundwater. A significant portion of the precipitation in Zone VIII runs off to bays and to bay tributaries, and a major part of the shoreline is also characterized by a high water table. Based upon information taken from the Nassau County Groundwater Program publication, the water table elevation in the project area is approximately 10 feet.<sup>1</sup> Site specific monitoring well data taken between the years 2002 and 2005 indicate that the groundwater elevations vary across the site. These data indicate that existing groundwater elevations close to the Glen Cove Creek were between elevation 2.0 and 4.0 feet, while elevations of 10.0 and 11.0 feet were observed closer to Garvies Point Road. Groundwater was observed at higher elevations (25.5 to 34.5 feet) further away from the creek, up hill along Dickson Street. Refer to the *Existing Groundwater Elevations* exhibit and supporting data located in the **Groundwater Appendix**. The flow from the North Shore Shallow Flow System of Hydrogeologic Zone VIII discharges primarily to streams and marine surface waters, and hence has a greater effect on these systems than on the deep flow drinking water supply.

Groundwater contamination exists within the project site. Groundwater at the Li Tungsten, Captains Cove, Anglers Club, Gladsky, Sewage Pumping Station and Doxey parcels is contaminated by volatile organic compounds and dissolved metals.

In addition, the adjacent Mattiace and Crown Dykman properties are also sources of groundwater contamination that is affecting the downgradient properties including Doxey, the Pumping Station, Angler's Club and Gladsky.<sup>2</sup> A more extensive discussion of groundwater quality is contained in **Section III.B**

#### b) Special Groundwater Protection Area

The project area is not located within a Special Groundwater Protection Area ("SPGA"). Special Groundwater Protection Area's are geographic recharge watershed areas within a designated sole source area, contained within counties having a population of one million or more, which are particularly important for the maintenance of large volumes of high

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<sup>1</sup>Figure 4-3. *Nassau County Groundwater Program 2000-2003 With Historic Information*. Nassau County Department of Public Works, Nassau County, NY 2005.

<sup>2</sup> Draft Environmental Condition Report, Glen Isle Waterfront Project. PWGS. February 2009.

quality groundwater for long periods of time. To preserve the quality of underground aquifers and thereby allow for their continued availability as sources of high quality drinking water, the Nassau County Board of Health controls the amount and types of wastewater discharged into these aquifers from SGPAs. There are nine areas designated SGPAs on Long Island. The two closest to the project area are the Town of Oyster Bay SPGA and the North Hills SGPA (see **Exhibit III.C-1**, *Special Groundwater Protection Areas*).

As the project area is not located within the boundaries of a SGPA, further analysis relating to SGPAs are not warranted.

c) Surface Water Conditions (Including Wetlands)

The majority of the study area, as well as a significant portion of Glen Cove Creek, exhibits characteristics typical of intense commercial and industrial use occurring over extended historical time periods. The past and present uses of the project site, along with site contamination and remediation activities, have been described in detail in **Section II.B** of this Draft Environmental Impact Statement (“DEIS”).

Blocks A-C of the project site have been re-colonized by native and invasive pioneer plants since the cessation of environmental remediation activities. These early successional habitats have only developed in the past few years following extensive remediation to remove contaminants resulting from the site’s previous industrial uses. In Block B, there are two large areas of standing water found in shallow depressions resulting from the extensive grading and excavation associated with the environmental remediation of the site. These shallow ponds are bordered by native and invasive hydrophytic plants including broad-leaved cattail (*Typha latifolia*) and common reed (*Phragmites australis*). In addition, two smaller areas of standing water are located at the northern edge of Block B bordering Garvies Point Road. In total, the project site contains approximately 3.9 acres of open, standing water with surrounding hydrophytic vegetation. (See **Section III.D** for detailed information).

**INSERT SEPARATE GRAPHIC  
EXHIBIT III.C-1  
Special Groundwater Protection Areas**

Historical dredging and shoreline hardening structures in the area have resulted in the elimination of all natural shoreline areas with the exception of the tidal wetlands located at Captain's Cove and at the Garvies Point beach. These areas contain remnants of the natural shoreline assemblages formerly common within the Hempstead Harbor estuary (see **Exhibit III.C-2, Federally Regulated Wetlands**).

(1) Glen Cove Creek

Glen Cove Creek consists of a 1.1 mile long navigational channel extending from the head of Musketa Cove to Charles Street. The navigational channel represents extensive man-made alterations begun in 1925 by the United States Army Corps of Engineers ("USACOE") to the tidal estuary.

(a) Marine Facilities

The southern portion of the creek is occupied with a mixture of marina and industrial related uses. There are three marinas within Glen Cove Creek: Jude Thaddeus Glen Cove Marina, Brewer Yacht Yard, and Sea Cliff Yacht Club. Collectively, these marinas offer approximately 735 boat slips, two fueling facilities, and two pump-out stations. The Glen Cove Marina offers 380-385 slips (transient available) and fuel. Brewer Yacht Yard facilities include 320-350 slips (30 transient), fuel, and a pump-out station. Sea Cliff Yacht Club is a private club with a single fixed dock (no slips), 20-75 moorings, and a pump-out station.

Two additional marinas are located within portions of Hempstead Harbor located proximal to Glen Cove Creek. The Hempstead Harbour Club, a small private sailing club, is located just to the north of the mouth of Glen Cove Creek and is immediately adjacent to the project site. The Harry Tappen Boat Basin is located in Hempstead Harbor approximately 1.5 miles south of Glen Cove Creek. Harry Tappen Boat Basin is operated by the Town of Oyster Bay for its residents, although seasonal passes are available for non-residents if space is available. Harry Tappen Boat Basin offers 272 slips (no transients), fuel, a pump-out station, and boat ramps.

(b) Water Quality

Glen Cove Creek has a surface water rating of SB-Saline Surface Waters. Due to contamination by heavy metals and organics as well as high levels of enterobacteria levels, the New York State Department of Environmental Conservation ("NYSDEC") has determined that the best usage of class SB waters are as primary and secondary contact recreation and fishing, which falls within NYSDEC Classification C (waters supporting fisheries, suitable for non-contact activities). This contamination is a result of many

factors including, but not limited to, historic heavy loads of pollutants from industrial uses proximate to the creek and stormwater runoff.

In 1994, the USACOE conducted a study of Glen Cove Creek to identify areas of shoaling. Both the USACOE and the City of Glen Cove conducted sampling of the sediments of Glen Cove Creek to determine their physical and chemical characteristics. Analytical results indicated that some of the Creek's sediments were classified as hazardous. Sediments in the western section of the creek were free of contamination. Sediments in the middle and eastern portions of the creek contained low levels of polycyclic aromatic hydrocarbons ("PAHs") that were likely a result of stormwater runoff from asphalt paved roadways. In addition, discovery of radioactive material at the eastern portion of the creek resulted in dredging operations by the USACOE to be placed on temporarily hold. As a result of the radioactive waste findings, EPA created another operational unit (OU IV), and went through the administrative process of preparing, approving and implementing the appropriate plans to dredge the radioactive materials from the creek. This project was conducted from November 2006 through February 2007, with a short hiatus from December 23, 2006 – January 1, 2007. More information about the dredging project can be found in **Section III.B.**

Water quality within Glen Cove Creek has been monitored by the Hempstead Harbor Protection Committee (HHPC)'s Citizens Water-Monitoring Program since 1992. Under this program, water quality parameters including dissolved oxygen, temperature, salinity, pathogens, and others were sampled weekly between June and October from 1995-2007.

The average dissolved oxygen concentration of bottom waters within Glen Cove Creek near the Glen Cove Sewage Treatment Plant outfall has ranged between 5.28 and 7.35 ppm (parts per million) since 1999 (HHPC, 2008). Dissolved oxygen concentrations of greater than 5.0 ppm are considered healthy for aquatic organisms. Hypoxic (less than 3.0 ppm) and anoxic (less than 1.0 ppm) conditions indicate impaired water quality and may be lethal to marine organisms (HHPC, 2008). In 2008, dissolved oxygen concentrations ranged between 2.13 (on September 17 near the Mill Pond Weir) and 11.95 ppm (on July 30 at the Sewage Treatment Plant outfall) (Coalition to Save Hempstead Harbor, 2008). Hypoxic events were observed on three summer days in Hempstead Harbor (one in Glen Cove Creek) in 2007 (HHPC, 2008). No anoxic events were observed in Hempstead Harbor or Glen Cove Creek in 2007. Hypoxic events were observed within Hempstead Harbor between July 27 and August 31, 2006 with no hypoxic incidences in Glen Cover Creek near the Sewage Treatment Plant (HHPC, 2007a).

Near the Glen Cove Sewage Treatment Plant Outfall, salinity ranged from 16.07-27.09 ppt (parts per thousand) at the water surface and from 23.26 to 27.31 ppt at the bottom of the creek (HHPC, 2008). The salinity in Long Island Sound typically ranges from 21 to 28 ppt (HHPC, 2008). Estuaries adjacent to the Sound will have lower salinities depending on the proximity to sources of freshwater including rivers and stream, surface runoff, and sewage treatment plants. Within Glen Cove Creek, the salinity is expected to be lower than adjacent portions of Hempstead Harbor due to the presence of both Mill Creek and the Glen Cove Sewage Treatment Plant. The lower salinities observed in surface waters of Glen Cove Creek compared to bottom waters are expected as the fresh water from Mill Creek and the sewage treatment plant will float above the more dense saltwater from Hempstead Harbor.

The Hempstead Harbor Protection Committee has also surveyed levels of fecal coliform and enterococci bacteria which are indicators of fecal contamination of surface waters and potential adverse impacts to human health. In 2007, fecal coliform and enterococci levels in Glen Cove Creek at the Glen Cove Sewage Treatment Plant outfall ranged between 7-3800 CFU/100ml and 2-1000 CFU/100ml, respectively (HHPC, 2008). Fecal coliform and enterococci levels at the eastern end of Glen Cove Creek near the Mill Pond Weir ranged between 52-6001 CFU/100ml and 56-6001 CFU/100ml, respectively (Coalition to Save Hempstead Harbor, 2008). In 2006, fecal coliform and enterococci levels in Glen Cove Creek at the Glen Cove Sewage Treatment Plant outfall ranged between 0.1-600 CFU/100ml and 1-4700 CFU/100ml, respectively (HHPC, 2007a). Fecal coliform and enterococci levels at the eastern end of Glen Cove Creek near the Mill Pond Weir ranged between 0.1-4700 CFU/100ml and 1-3400 CFU/100ml, respectively (HHPC, 2007a). New York State beach closure standards are 1000 CFU/100ml for fecal coliform (or a running seasonal average of 200 CFU/100ml) and 104 CFU/100ml for enterococci (or a running seasonal average of 35 CFU/100ml). The high levels of fecal coliform and enterococci bacteria observed in Glen Cove Creek are likely due to the large number of outfall pipes which discharge to the Creek from its northern and southern shorelines (HHPC, 2007b).

(2) Mill Pond

Another significant source of surface water in the surrounding area is Mill Pond, a large man-made pond created by the founders of Glen Cove to provide a source of water power for the saw and grist mills. At one time, Mill Pond served as a natural siltation "basin" that controlled sediments that would otherwise have entered the creek. Drainage patterns in Mill Pond were altered by a re-engineering project in the 1950s and years of sedimentation and, as a result, Mill Pond ceased to function as a sedimentation basin. However, in the mid-1990's, a restoration project was completed which restored the pond's sedimentation

trapping capabilities. Additional restoration was included as part of the Glen Cove Road Extension project.

(3) Garvies Point Beach Area

An open, sandy beach is located at the terminus of Garvies Point Road. The beach is sparsely vegetated with only a narrow band of pioneer and weedy plant species located in the upper portion of the beach landward of the high water line. Below the high water line, the vegetation consists of patches of smooth cord grass (*Spartina alterniflora*) interspersed within large areas of open shoals and mudflats. The tidal wetlands at Garvies Point Beach are classified as Coastal Shoals, Bars and Flats (SM) by the NYSDEC. Approximately 380 linear feet of shoals, mudflats and intertidal wetlands are present at Garvies Point Beach.

Intertidal sediments at Garvies Point Beach consist of sand with abundant gravel and shells, as characterized by Land Use Ecological Services during invertebrate sampling on May 12, 2009. Anaerobic conditions were observed within 1-2" of the sediment surface at three sampling locations at Garvies Point Beach, as expected in permanently inundated wetland sediments.

(4) Captain's Cove Area

The area known locally as the Captain's Cove has intertidal and high marsh habitats, dominated by smooth cord grass (*Spartina alterniflora*), common reed (*Phragmites australis*), and marsh elder (*Iva frutescens*), and open areas of shoals and mudflats. The steeply sloped transition zone located landward of the intertidal and high marshes in Captain's Cove contains a variety of invasive pioneer species such as common reed (*Phragmites australis*), tree of heaven (*Ailanthus altissima*), mugwort (*Artemisia vulgaris*), and honey locust (*Gleditsia triacanthas*). Much of this transition slope contains large amounts of concrete and debris previously deposited to harden and stabilize the slope.

Intertidal sediments at Captain's Cove were characterized by Land Use Ecological Services on May 12, 2009 during invertebrate sampling. Sediments consist of silty sands with anaerobic conditions within 1-2" of the surface. Adjacent to Captain's Cove, in the area of the proposed large vessel marina, the sediments were coarser and consisted of sands with some gravel and shells and anaerobic conditions within 5" of the sediment surface.

The tidal wetlands within Captain's Cove are classified as: (1) Intertidal Marsh (IM) and (2) Coastal Shoals, Bars and Flats (SM) by the NYSDEC. In total, approximately 1,030 linear feet of intertidal wetlands and shoals/mudflats are present in Captain's Cove.

Intertidal marshes (IM) provide important ecological benefits. These marshes are highly productive and export photosynthetic products and decomposition

materials to adjacent waters. Intertidal marshes provide protection to adjacent upland areas from storms and flooding and are important for cleansing excess nutrients, trapping silt and organic materials, and providing habitat for wildlife.

The coastal shoals, bars, and flats (SM) located in Captain's Cove also provide important ecological benefits as they provide habitat for an abundance of benthic invertebrates which serve as food resources for finfish and resident and migratory shorebirds. These shoals and mudflats also provide protection from floods, hurricanes, and storms to both the adjacent vegetated wetlands and uplands.

Both the Captain's Cove and Garvies Point Beach areas contain high quality wetlands as defined by Article 25 (Tidal Wetlands Act) of the New York State Environmental Conservation Law. Further surface water conditions relating to wetlands and ecology within the area are discussed in **Section III.D, Ecology**, of this document.

**INSERT EXHIBIT  
III.C-2  
Federally Regulated Wetlands**

**INSERT EXHIBIT  
III.C-3  
NYS Freshwater Wetlands**

**INSERT EXHIBIT  
III.C-4  
NYS Tidal Wetlands**

## d) Floodplain Conditions

The Federal Emergency Management Agency (“FEMA”) is an agency of the United States government dedicated to swift response in the event of disasters, both natural and man-made. FEMA has responsibilities in what it defines as four domains of emergency management:

- **Mitigation:** Reducing the severity or likelihood of the hazard;
- **Preparedness:** Ensuring you have the capability to respond to the hazard;
- **Response:** Immediate actions taken to save lives, property, the environment, and the economy; and
- **Recovery:** Subsequent actions taken to restore property, jobs, and services.

FEMA manages the National Flood Insurance Program (“NFIP”) and prepares Flood Insurance Rate Maps (“FIRMs”) that depict the extent of Special Flood Hazard Areas (“SFHAs”) and other thematic features related to flood risk assessment. SFHAs are areas subject to inundation by a flood having a one percent or greater probability of being equaled or exceeded during any given year (which is also known as a 100-year flood event). This 100-year flood, which is referred to as the base flood, is the national standard on which the floodplain management and insurance requirements of the NFIP are based.

Areas located generally to the north of Glen Cove Creek and to the south of Garvies Point and Herb Hill Roads are situated in this designated floodplain. Areas located to the south of Herb Hill Road, extending westerly, are within Zone AE (where base flood elevations are determined) which has a base flood elevation of 14 feet above mean seal level (“msl”). Small areas immediately to the north of Garvies Point Road and Herb Hill Road are located within designated Zone X (areas of 500-year flood; areas of 100-year flood with average depths less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood). The remainder of the project area north of Herb Hill Road is not situated within a designated flood zone (see **Exhibit III.C-5, Flood Zones**).

**INSERT EXHIBIT  
III.C-5  
FEMA Flood Map**

e) Stormwater Conditions

The Glen Isle project site is located on the north side of Glen Cove Creek between Hempstead Harbor, Garvies Point Road and Herb Hill Road/Charles Street and extends northward along Dickson Street to Janet Lane and The Place. This overall 56-acre tract includes areas of former development with varying levels of impervious urban-type coverage. (See **Section III.A** for specific descriptions of existing site topography and conditions.)

Garvies Point Preserve, located immediately north of Garvies Point Road, consists mainly of forested areas with significant sloping topography. Stormwater runoff generated within the Preserve is directed towards Garvies Point Road and flows overland across the Glen Isle project site and into the creek and harbor without any treatment.

Under existing conditions, stormwater is handled by four existing drainage pipe systems located within Garvies Point Road. Three (3) of these discharge (outfall) pipes drain directly into Glen Cove Creek without any treatment and one (1) discharges directly to Hempstead Harbor, just south of the existing boat ramp, also without any treatment.

The existing conditions analysis also includes off-site areas which drain onto or through the Glen Isle project site including the Garvies Point Preserve, industrial development on the north side of Garvies Point Road and the industrial/commercial development located on the north side of Herb Hill Road. (See *Existing Drainage Area Map* located in the Appendix. This map also indicates the location of the existing outfalls.)

2. Potential Impacts

This section assesses water resources related to the proposed development, projecting what areas surrounding the project would look like in the future with the development of the project occurring.

As described above, the site currently contains limited areas of land that could be considered as in “a natural state.” At completion, approximately 19.4 acres, or 35 percent, of the site will contain accessible open space which would include grass and vegetated areas, walks, paths, educational and recreational areas. The remainder of the site would include structures, parking areas, roadways and paths. In total, the proposed action would include approximately 35 acres of impervious surfaces, or approximately 63 percent of the site. The remainder would consist of vegetated or natural areas. In addition to the more formal parks and planting, this would also include 5.8 acres of woodlands behind the workforce housing units, and approximately 0.7 acres of restored dune at Garvies Point Beach. The overall grading and disturbance associated with project construction is illustrated on Sheets C-8 through C-10 of the Master Site Plan Drawings accompanying this DEIS.

## a) Hydrogeologic Conditions

The development plan is designed to conform to applicable district regulations regarding hydrogeologic resources. This is intended to avoid any negative impacts to the natural environment.

The study area is situated within Hydrogeologic Zone VIII (see **III.C.1.a**), which is the North Shore Shallow Flow Zone. Water flow within this hydrogeologic zone has a greater effect on marine surface waters than on the deep-flow drinking water supply.

## b) Surface Water (including Wetlands)

The proposed development, in accordance with the MW-3 district regulations, will result in positive impacts to surface water. Brownfield properties, which were occupied by industrial uses that were documented polluters, would be redeveloped with a mixed-use development that includes residential, commercial, retail, office, hospitality, and recreational uses that do not involve hazardous materials. This redevelopment will result in the remediation of surface and subsurface contamination that affects Glen Cove Creek and will eliminate the potential for new industrial uses that could adversely affect the creek in the future.

## (1) Glen Cove Creek

As detailed fully in **Section III.D**, the project will result in several positive environmental impacts on Glen Cove Creek. This includes the net creation of approximately ½ acre of tidal wetlands located landward of the proposed low-sill bulkhead (see **Exhibits III.C-6 and 7**), and the creation of new open water habitat at the proposed turning basin. In addition, the proposed action will include the restoration of degraded wetland areas in Captains' Cove through the excavation of concrete and asphalt debris, removal of invasive *Phragmites australis*, and re-planting of native plants.

In the Garvies Point Beach area, the removal of an existing bulkhead and proposed grading and planting activities will result in increased beach area, thereby creating areas for passive beach recreation and additional habitat for shorebirds and songbirds.

## (a) Marine Facilities

In order to create the various water-dependent uses, dredging of some areas of Glen Cove Creek will be required as part of the project. While the Army Corps of Engineers recently dredged portions of the creek, the dredging was limited to the existing creek. The additional areas to be dredged as part of this project are typically upland areas, with the exception of the large vessel marina, which is to be partially located in the tidal wetlands area, west of the proposed Glen Cove Ferry project.

The volume of spoil to be removed from each of these areas has been estimated based upon approximate and interpolated creek elevations. In the area of the large vessel marina, approximately 20,000 cubic yards of spoil material will need to be removed in order to provide a minimum water depth of eight (8) feet as measured from mean low water (MLW) elevation. Approximately 11,000 cubic yards of spoil material will need to be removed to create the relocated Anglers Club marina and to provide a minimum water depth of six (6) feet as measured from MLW elevation. In the area of the permanent/transient marina, approximately 25,500 cubic yards of spoil material will need to be removed in order to provide a minimum water depth of six (6) feet as measured from MLW elevation. For Angler's Club and the permanent/transient marina, the volume calculations include both underwater (dredge) volumes and upland (excavation) volumes. In order to provide a minimum water depth of six (6) feet in the area of the turning basin, as measured from the MLW elevation, approximately 31,000 cubic yards of spoil material will need to be removed.

Construction of the large vessel marina, the reconstructed Angler's Club, and the smaller vessel marina in the east, and dredging associated with each of these facilities has the potential to result in adverse impacts to the marine habitat of Glen Cove Creek. These impacts include permanent degradation of the benthic habitats due to dredging and boat activity, potential disturbance of contaminated sediments during dredging and marina construction, temporary increases in turbidity during dredging and marina construction, potential discharge of pollutants and resulting decreases in water quality both during construction and marina operation.

Potential impacts due to dredging, including potential disturbance of contaminated sediments, temporary increases in turbidity, and potential discharge of pollutants will be mitigated by incorporating the best management practices from the In-Water and Riparian Management of Sediment and Dredge Material, NYSDEC Technical & Operational Guidance Series, November 2004. These measures are detailed in Section III.C.3.

(2) Tidal Weir and Turning Basin

The Proposed Action includes many improvements to the shoreline of Glen Cove Creek aimed at increasing public access, facilitating shoreline-dependent uses, and increasing tidal wetlands areas. These improvements include the dredging of several areas of the creek, installation of new bulkhead and wetland areas; creation of the large vessel marina, new Angler's Club marina, and permanent/transient vessel marina; creation of the new Ferry Terminal (by the City); and the dredging of the Turning Basin and the installation of its esplanade and tidal weir.

These water-dependent uses are consistent with the goals enumerated in the *Third Amended Urban Renewal Plan for the Garvies Point Urban Renewal Area* (GPURA), and thus enhance the aesthetic appeal of the Proposed Action and will provide an impetus for the further redevelopment of adjacent properties.

The proposed tidal weir will serve to maintain water in the Turning Basin for both recreational and aesthetic purposes (see *Conceptual Site Plan* in **Section II.**) and is necessary for the aesthetic appeal of the proposed shoreline improvements in the east end of Glen Cove Creek (see **Exhibit III.C-8, Tidal Weir Section View**).

The area of the Turning Basin would be dredged to approximately elevation -9' (NGVD 1929), which will provide 6 feet of water depth during low tides [Mean Low Water is approximately elevation -3.0' (NGVD 1929)]. Mean High Water is approximately elevation 4.4'. With the esplanade at the Turning Basin proposed at elevation 10.0', the elevation of the water within creek would be approximately 5.6' lower than the esplanade at mean high water. The elevation at the top of the tidal weir will be set at 3.8' to allow flood waters to enter the upper portion of Glen Cove Creek during most high tides. During low tide, the elevation of water within would be approximately 6.2' lower than the esplanade. Appropriate waterproofing within and upstream of the Turning Basin would be employed in order to maintain the water level within the Turning Basin during low tides.

On the ebb tide, water will flow back over the tidal weir in a controlled manner until the height of water downstream of the weir falls below the height of the weir. Based on an average tidal range, it is expected that waters from Glen Cove Creek will overtop the tidal weir ~8% of the time. During the remaining 92% of the tidal cycle the waters of Glen Cove Creek will be below the top of the weir. Construction and initial monitoring and maintenance of the tidal weir will be the responsibility of the developer, with eventual responsibility resting with the Property Owners' Association upon project completion.

In addition to the recreational amenity that the Turning Basin would offer the community, the Turning Basin would create additional areas of tidal wetland habitats and would provide environmental benefits such as additional areas of habitat for finfish and marine invertebrates. Excavation of the Turning Basin would result in ~49,600 sq. ft. of additional tidal wetlands. Passage between the open waters of Glen Cove Creek and the Turning Basin for finfish would be possible during 8% of the tidal cycle.

Dredging of the Turning Basin to 6 feet below mean low water would also offer an additional opportunity for water quality treatment of the runoff generated by the upstream watershed. Mill Pond is at the downstream end of a very large watershed (8,000± acres). Much of the runoff from this watershed is generated by older developed areas which may not have implemented water quality treatment measures prior to discharging their runoff into the downstream water course. Therefore, Mill Pond acts as the sedimentation basin for this watershed. This

project does not propose any improvement to Mill Pond. During larger storm events, runoff flows from Mill Pond into Glen Cove Creek does not have time for silts and sediments to filter out of the runoff before discharging into Glen Cove Creek. The deep Turning Basin would allow for a second level of water quality treatment before the runoff enters the creek. Due to the reduced tidal range and circulation upstream of the proposed weir, it is likely that suspended sediments will settle within the Turning Basin instead of being transported to downstream portions of Glen Cove Creek. Maintenance of the Turning Basin and weir including dredging of accumulated sediments would eventually rest with the Property Owners' Association. The proposed dredging of the Turning Basin, installation of the tidal weir, and maintenance dredging of the Turning Basin gate would require authorizations from the NYSDEC (Articles 15, 25), USACOE (Section 10 Rivers & Harbors Act, Section 404 Clean Water Act), and NYSDOS (Coastal Consistency).

Weirs and other tidal impoundments generally have the potential to cause significant changes in wetland vegetation communities, the spatial patterns of vegetation, and benthic macrofaunal communities due to the hydrological changes resulting from impoundments. Currently, the portion of Glen Cove Creek located upstream of the proposed weir features hardened shorelines and contains no natural wetland communities. Accordingly, no adverse impacts to wetland vegetation will occur as a result of the proposed weir.

Due to the restricted access to the upper reach of the Creek and reduced tidal circulation resulting from the weir, it is expected that the use of the upper reach by fish and crustaceans will be somewhat reduced (Herke, 1992). However, this potential impact is offset by the creation of 49,600 sq. ft. of open water habitat from the excavation of the Turning Basin. This impact could be further mitigated by the establishment of high marsh and intertidal marsh vegetation upstream of the weir.

A potential adverse impact associated with the proposed tidal weir is reduced circulation and mixing in the portion of Glen Cove Creek located upstream of the weir. Reduced circulation may result from saline stratification of the upstream portion of the creek as salt water overtopping the weir during high tides gradually settles under the freshwater flowing from Mill Pond and towards the bottom of the channel. Stratification of the salt water from lower reaches of Glen Cove Creek and freshwater from Mill Pond can result in a stagnant bottom layer of water that is prone to hypoxic or anoxic conditions (Burrows and Ali, 2001). Stratification and decreased circulation can result in increased water temperature, increased salinity, decreased oxygen concentrations and sediment redox potential, and increased mobilization of contaminants and nutrients (USEPA, 1998). The reduced tidal range upstream of the proposed weir will reduce the tidal re-suspension of sediments and, therefore, may result in decreased turbidity upstream and downstream of the weir (Radford 1994). The proposed weir will be

designed to avoid saline stratification and resulting adverse biogeochemical effects by allowing tidal flushing twice daily during normal high tides.

In addition, water quality upstream of the proposed weir will be monitored to evaluate if water stratification and hypoxic/anoxic conditions are developing behind the weir. If low water quality conditions present a problem for the ecological health and recreational/aesthetic benefits of the Turning Basin, a floating boom/skirt baffle will be installed on the upstream side of the weir to facilitate the mixing of fresh and salt waters and the expulsion of salt water from the bottom layer of the channel (Burrows and Ali, 2001). Initial monitoring of the water quality conditions behind the weir and the potential installation of a floating boom/skirt baffle will be the responsibility of the developer. Water quality monitoring protocols will be submitted to the USACOE, NYSDEC, and NYSDOS as part of the application procedures to obtain regulatory approval for the proposed weir.

**INSERT EXHIBIT  
III.C-6  
Wetlands Area to Be Removed/Relocated**

**INSERT EXHIBIT  
III.C-7  
Relocated Wetland Area**

**INSERT EXHIBIT  
III.C-8  
Tidal Weir Section View**

c) Floodplain Under the Proposed Action Condition

Since the project is located with an AE designated flood zone (a SFHA 100-year flood identified by FEMA as elevation 14.0 – NGVD 1929 ), all construction would be required to meet minimum flood elevations to protect the health and safety of residents, workers and others, as well as the environment. The proposed project will meet these requirements (finished floors of all new buildings to be set a minimum of 1.0 feet above the 100-year storm elevation (elevation 15.0 – NGVD 1929)). Therefore, no significant floodplain impacts are anticipated. Surrounding open space and esplanade areas adjacent to the Creek and Harbor will be set at elevations which are slightly lower than the SFHA 100-year flood elevation of 14.0 in order to meet transitional grades in Captain’s Cove, along the Beach and along Hempstead Harbor Club / Garvies Point Preserve. Signage would be posted in these areas notifying the public that these areas of the site are located within the flood hazard area of Glen Cove Creek and Hempstead Harbor.

As part of the development of the project, the developer will obtain a Letter of Map Revision Based on Fill (LOMR-F) from FEMA to remove the proposed buildings from the Special Flood Hazard Area.

No significant floodplain impacts are anticipated with the Proposed Action.

d) Stormwater Under the Proposed Action Condition

Potential impacts to Glen Cove Creek from stormwater runoff due to construction and development of the proposed Glen Isle project were evaluated. Stormwater runoff generated by this development would either recharge into the ground or discharge into the creek or harbor. Urbanized development alters the hydrologic response of a watershed to rainfall events. The degree of change in response is dependent upon the location, level and type of development, characteristics of the watershed as well as the intensity and duration of the rainfall event.

Increased development changes the level of infiltration (recharge to groundwater) within a watershed. As it flows through a site, stormwater collects and transports soils, sediments and other pollutants. This polluted runoff, frequently referred to as one form of nonpoint source pollution (NPS) can impact surface water resources and associated wetlands. Proper management and control of stormwater can limit the level of contaminants which can enter the creek or harbor. Implementation and employment of “best management practices” or “BMP’s” at the pollutant’s source is typically the most effective way to control NPS pollution.

Federal, state, county and local regulations govern the discharge of stormwater runoff from proposed project sites. The Federal Clean Water Act established the National Pollutant Discharge Elimination System (NPDES) Stormwater Program and the Stormwater Phase II Rule which requires permits for stormwater discharges from

municipal separate storm sewer systems (MS4's) in urbanized areas, for construction activities disturbing one or more acres of land and for industrial activities. Most states are authorized to implement the NPDES Stormwater Program and administer their own stormwater permits and programs. The New York State Department of Environmental Conservation (NYSDEC) regulates this program as part of the State Pollutant Discharge Elimination System (SPDES).

In order to address the potential impact of stormwater runoff, the project must be designed in accordance with the NPDES Phase II Stormwater requirements. Existing stormwater runoff conditions must be evaluated (see previous description) and plans must be developed for management of stormwater runoff during construction and after development. The proposed stormwater management plan for this project includes mitigation measures which are integral to and part of the design and therefore are described below as part of the project.

(1) Proposed Stormwater Management Plan

As part of the final design and approval phase of the project, a Notice of Intent (N.O.I.) for construction and post-development activities would be prepared as part of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-02-01). This permit requires that a Stormwater Pollution Prevention Plan (SWPPP) be prepared to address potential sources of pollution through the development of a plan indicating appropriate measures and controls. At a minimum, the SWPPP would include:

- Description of Site Soils
- Description of Pollution Prevention Measures
- Description of Construction and Waste materials and control
- Description of the permanent and temporary controls as depicted on the Soil Erosion & Sediment Control (SESC) Plan to control runoff and sediment during all phases of the project
- Spill Prevention and Response Plan
- Identification of practices specified on the SESC plans
- Identification of temporary practices which will be converted to permanent controls at the completion of construction
- Construction Schedule
- Maintenance Schedule for the SESC devices during construction
- Temporary diversions will be identified on the SESC plans for exposed upstream areas
- Calculations for Soil Erosion practices where application
- Maintenance Schedule for the permanent stormwater management devices

Glen Cove Creek is included on the list of 303(d) impaired water segments which are subject to a special condition of the SPDES General Permit that requires the SWPPP to also include a water quality and quantity control plan.

Adherence to the provisions of the SPDES General Permit and the SWPPP is expected to effectively mitigate impact from construction or post-development stormwater discharges from the project.

(2) Regulations/Design Guidelines

(a) NYSDEC

NYSDEC requires that post-development stormwater runoff be managed in accordance with their standards and designed in accordance with the New York State Stormwater Management Design Manual (last revised April 2008). NYSDEC requires that post-development rates of runoff to non-tidal water bodies or stormwater systems must not exceed pre-development runoff rates and that water quality, channel protection, overbank flood (10-year, 24-hour storm) and extreme flood (100-year, 24-hour storm) meet their standards. However, the requirements for channel protection, overbank flood and extreme flood do not apply where a site discharges directly to tidal waters for fourth order (fourth downstream) or larger streams. Since stormwater from the Glen Isle project will discharge to Glen Cove Creek and Hempstead Harbor, tidal water bodies, only the Water Quality Volume Standard must be met for this project.

In accordance with the New York State Stormwater Management Design Manual, the Water Quality Volume ( $WQ_v$ ) is calculated utilizing the following formula:

$$WQ_v = [(P)(R_v)(A)] / 12 \text{ acre-feet}$$

Where:

$$R_v = 0.05 + 0.009(I)$$

I = Impervious Cover (Percent)

Minimum  $R_v = 0.2$

P = 90% Rainfall Event Number

A = Site area in acres

And P = 1.2 for this area of Long Island, New York

(b) Nassau County

As part of the Nassau County 239F Drainage Requirements, Nassau County requires that eight inches of rainfall generated by the contributory watershed, whether on-site or off-site, must be stored on site. The County recognizes that this requirement cannot always be attained by all projects and has provisions to allow a waiver for reduced storage capacity if certain criteria are met. The absolute minimum storage required by the County is storage of two inches of rainfall.

However, since the project does not abut a Nassau County roadway, stream or other facility and the proposed stormwater management system will not tie into or connect to a County facility, the County does not have jurisdiction with regards to stormwater management design of the project. Therefore, the project will be designed in accordance with the NYSDEC Design Standards.

(c) City of Glen Cove

The City of Glen Cove has specific drainage requirements per 245-22, Drainage, of the City Code which states:

“K. Stormwater and surface water facilities shall be so designed as to ensure no net increase in the rate of stormwater runoff from the site as a result of the development. Runoff from roof leaders, driveways, paved areas and inclined areas shall be directed to appropriate drainage control structures and not to City streets or other properties.”

Furthermore, the project will be designed to meet the City of Glen Cove’s requirements as outlined in 168-29, Plumbing, of the City Code, which states:

“D. Storm drainage.

- (1) An approved system of stormwater disposal shall be provided for the safe and efficient drainage of roofs and paved areas, yards and courts and other open areas on the premises.
- (2) The means for stormwater disposal shall be in accordance with all applicable laws, ordinances, rules and regulations.
- (3) No stormwater shall be drained into sewers intended for sewage only, nor be discharged onto public sidewalks.”

The stormwater management plan will employ various practices to meet NYSDEC water quality design standards for total suspended solids (TSS) , total nitrogen (TN), and total phosphorous (TP) removal. These practices include green roofs, roof gardens, swales, landscaped open spaces, basins, dry wells, infiltration trenches, infiltration basins and structural water quality treatment devices. The best management practices included in the stormwater management plan are described in detail above. These practices are expected to remove 80% of total suspended solids, 45-70%

of total nitrogen, and 40-75% of total phosphorus (**Table III.C-1**) based on NYSDEC approved removal ratings and USDOT published pollutant removal efficiencies for stormwater best management practices (USDOT, 2002).

Refer to the Appendix for conceptual stormwater management design including calculations and drainage area maps and to the Site Plans which accompany this DEIS. A flow diagram showing the general flow of the stormwater runoff through the conceptual stormwater management system is provided as **Exhibit III.C-9, Drainage Design Flow Charts**. This flow chart also provides the pollutant removal rates as approved and reported by various agencies. A perspective flow diagram showing the various components of the conceptual stormwater management plan and their pollutant removal effectiveness is also included in the Appendix (Exhibit STM-2).

Runoff from Garvies Point Preserve will be collected in an interceptor trench located near the toe of the existing slope, immediately adjacent to Garvies Point Road. This interceptor trench will consist of an infiltration trench with a perforated pipe at the base of the trench which will allow the treated runoff from the smaller storm events to infiltrate into the surrounding ground / soils while the treated runoff from the larger storm events will be conveyed into into a storm sewer conveyance system or “trunk” sewer located in Garvies Point Road. The infiltration trench will serve as the water quality treatment device for the upstream watershed, a good portion of which is forested hillside and considered “clean” and a portion of which includes the existing industrial sites located on the north side of Garvies Point Road.

Runoff from the roadways, both public and private, as well as adjacent areas which drain to the roadways, will be collected in storm sewer conveyance systems and treated to meet water quality standards before discharging to the “trunk” storm sewer and discharging to the adjacent tidal water bodies. These water quality treatment devices will consist of either StormFilters™ (a filter media device manufactured by Contech Stormwater Solutions, drywells, or infiltration basins comprised of a series of “Infiltrator” chambers (by StormTech).

Runoff from these areas is conveyed through the storm sewer collection system to a diversion structure/manhole where the water quality volume is diverted to the off-line water quality treatment device, where it is treated before discharging to the downstream trunk sewer. Larger storm events by-pass the water quality treatment device through the diverter structure and are conveyed directly to the trunk sewer.

**INSERT EXHIBIT  
III.C-9  
Drainage Design Flow Charts**

While NYSDEC regulations require that only water quality controls be incorporated into the design, several practices would be employed as part of the project in order to provide “green” techniques. These include collection of rainwater for irrigation use and groundwater recharge, as well as roof gardens on the larger residential buildings. Irrigation chambers would collect and contain the first one-inch (1”) of runoff generated by the contributing roof areas. Control devices within the irrigation chambers will allow storage of the first one inch (1”) of runoff while larger flows will be diverted downstream to an infiltration basin sized to store two-inches (2”) of runoff generated by the contributing roof areas. The infiltration chambers will consist of either “Infiltrator” units or RainStore<sup>3</sup> units surrounded by ¾” clean stone and will act as both a water quality treatment device as well as a runoff storage area. Runoff in excess of two inches (2”) will by-pass the storage/infiltration basin by implementation of a diverter structure/manhole. Runoff which can not be stored in the basins or does not infiltrate will be directed to the downstream storm sewer conveyance system through an overflow control pipe.

As part of the conceptual stormwater management design, site specific monitoring well data taken between the years 2002 and 2005 was reviewed in order to conceptually locate the proposed infiltration systems relative to the existing groundwater elevations. Refer to the *Existing Groundwater Elevations* exhibit and supporting data located in the **Groundwater Appendix**, which shows the monitoring well locations and proposed infiltration systems for the project. New geotechnical data will be obtained as part of the site plan design phase of the project to determine actual groundwater elevations and soil permeability rates at the proposed infiltration system locations.

Should geotechnical investigations reveal that the existing soils in specific areas are not permeable and/or groundwater elevations are too high and would preclude installation of the infiltration systems, these storage/infiltration systems will be relocated elsewhere on the site where the in-situ soils can support the infiltration design requirements. If the in-situ soils are not permeable or if groundwater elevations throughout the site are determined to be too high, the infiltration systems will be removed from the design and the stormwater runoff will be conveyed from the irrigation chambers to the trunk storm sewer and will ultimately discharge to the adjacent tidal water bodies.

The roof areas of the workforce units (F-Block and G-Block) will not be directed to irrigation chambers but will be directed into the adjacent storm and sewer systems. Runoff will be conveyed via storm sewer conveyance piping located in Dickson Street to an infiltration basin proposed for water

quality treatment located within the proposed waterfront park. Roof runoff from the smaller J-Block buildings will collect in the irrigation chambers and runoff in excess of the first one-inch (1") will overflow into the downstream trunk storm sewer before discharging to Glen Cove Creek.

Improvements to Mill Pond / Pratt Park are not part of the Glen Isle Waterfront Redevelopment project and therefore these areas of the City have not been incorporated into the conceptual stormwater management design for this project.

- e) Assessment of the potential loading of contaminants (e.g., nitrogen compounds) to the groundwater aquifer and Glen Cove Creek and proposed mitigation

The discharge of nitrogen compounds from non-point sources has been identified as a significant pollution source to groundwater supplies in Nassau County. Sources of nitrogen to groundwater supplies include wastewater, stormwater runoff, fertilizer application, boat- and marina-related pollution, and animal waste.<sup>2</sup> Excessive discharge of nitrogen compounds could contribute to algal blooms within Glen Cove Creek, which may result in decreased dissolved oxygen concentrations within the Creek.

The Proposed Action will be serviced by the County wastewater treatment plant on the south side of the creek. Accordingly, no nitrogen loading from sanitary systems will result from the Proposed Action. Boat- and marina-related discharges of nitrogen will be minimized through the implementation of 1) best management practices for marina operation prescribed by the Hempstead Harbor Protection Committee's Clean Marina Program and 2) a Stormwater Pollution Prevention Plan (SWPPP) to comply with NYSDEC SPEDES regulations. Discharge of nitrogen-contaminants resulting from pet waste will be minimized at the project site through the enforcement of the dog nuisance provision (§87-24.1) of the municipal code of the City of Glen Cove which requires that all pet waste be "immediately removed" and "disposed of in a sanitary manner".

Sources of nitrogen-contaminants associated with the Proposed Action include the stormwater generated by roofs and other impervious surfaces and the use of fertilizers to establish and maintained landscape vegetation. The maximum potential contribution of these nitrogen sources to groundwater has been quantified below.

#### *Stormwater Runoff*

Stormwater runoff from impervious surfaces, (e.g., roofs, roadways and parking areas, and pedestrian walkways) contains nitrogen from air-borne pollutants, garbage and refuse, fertilizers and pesticides, pet wastes, and contaminants from automobiles.<sup>3</sup> The

<sup>2</sup> Long Island Regional Planning Board, 1984. *Non-Point Source Management Handbook*. 118 pgs.

<sup>3</sup> Long Island Regional Planning Board, 1984. *Non-Point Source Management Handbook*. 118 pgs.

nitrogen concentration of stormwater runoff is estimated to be 1.5 mg of nitrogen per liter of stormwater ( $\text{mg N L}^{-1}$ ) for paved surfaces and 0.75  $\text{mg N L}^{-1}$  ppm for roofs.<sup>4</sup>

The Proposed Action will have 8.0 acres of non-vegetated roof surfaces and 27.3 acres of impervious surfaces associated with roadways, parking areas, and pedestrian walkways and promenades. Based on annual precipitation for the project site of 44.1 inches<sup>5</sup>, the non-vegetated roof surfaces are expected to generate, on average, 3,513 cubic feet of stormwater per day and the other impervious surfaces are expected to generate, on average, 11,990 cubic feet of stormwater per day. Assuming nitrogen concentrations of 1.5 ppm and 0.75 ppm for stormwater from paved surfaces and roofs, respectively, it is estimated that the potential nitrogen loading associated with these impervious surfaces could total 584g of nitrogen per day, on average (**Table III.C-1**).

The proposed stormwater collection and drainage system for the Proposed Action will collect and store the first 1" of precipitation received by roof surfaces to irrigate proposed landscape vegetation and green roofs. The second 1" of precipitation received by roof surfaces and the first 2" of precipitation received by all other impervious surfaces will be collected and discharged to infiltration basins to allow leaching into the ground. Ninety percent of rain events on Long Island result in 1.3" or less precipitation (NYSDEC, 2008). Accordingly, the 2" capacity of the proposed stormwater collection and drainage system will accommodate the large majority of precipitation events. Stormwater runoff in excess of 2" will by-pass the collection chambers and infiltration basins and flow into a storm sewer that will ultimately discharge to the adjacent tidal waters of Glen Cove Creek and Hempstead Harbor, in accordance with NYSDEC regulations.

Accordingly, depending on the magnitude of the precipitation event, the nitrogen contained within the stormwater runoff from the proposed impervious surfaces and roofs may be either discharged directly to Glen Cove Creek or Hempstead Harbor or will be leached into the ground where it may infiltrate to groundwater or be transported by sub-surface shallow flow to the surface waters of Glen Cove Creek or Hempstead Harbor. The estimated potential effectiveness of the proposed best management practices for reducing the quantity of nitrogen that is discharged to groundwater or the surface waters of Glen Cove Creek or Hempstead Harbor is discussed below.

### *Fertilizers*

Fertilizers are typically utilized to establish and maintain plantings and landscaping. However, excessive fertilization results in the transport of nutrients to groundwater and surface waters and may contribute to the contamination of drinking water supplies and eutrophication of aquatic and marine ecosystems. An average fertilization rate used for calculating the contribution of fertilizers to non-point source pollution is 3.0 lbs of nitrogen annually per 1,000 sq. ft. (Long Island Regional Planning Board, 1984; Cape

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<sup>4</sup> Cape Cod Commission-Water Resources Office. 1992. Nitrogen Loading. Technical Bulletin 91-001. 21 pgs.

<sup>5</sup> Dike J and C Tilburg. 2007. Climatic timescale temperature and precipitation increases on Long Island, New York. *Atmosphere-Ocean*. 45(2):93-105.

Cod Commission-Water Resources Office, 1992). In accordance with the recommendations of the *Nonpoint Source Management Handbook* (Long Island Regional Planning Board, 1984), the Proposed Action will utilize native and naturalized plants for all landscaped areas and green roof areas. The use of native and naturalized plants that are well-adapted to the climatic and edaphic conditions of Long Island will minimize the fertilization and irrigation requirements for the proposed green roofs and landscaped areas. Accordingly, the estimated 3.0 lbs of nitrogen annually per 1,000 sq. ft. included in the following calculations is considered the maximum potential nitrogen use for the project site.

Assuming a fertilizer application rate of 3.0 lbs N per 1,000 sq. ft., the installation of 14.4 acres of landscaped areas requiring annual fertilization (8.4 acres of on-grade lawn areas and 6.0 acres of green roofs ) would require 1,881.8 lbs of nitrogen to be utilized annually for the maintenance of the lawn areas and green roofs. Approximately 1,097.1 lbs of this nitrogen would be applied to lawn areas and the remaining 784.7 lbs would be applied to the green roofs. This equates to a nitrogen loading rate of 2,339 g of nitrogen per day. As stated above, this loading rate represents an upper limit of the potential fertilizer use under the Proposed Action. The nitrogen fertilizer applied to the landscaped areas would have the potential to infiltrate to groundwater or be transported by sub-surface shallow flow to the nearby surface waters of Glen Cove Creek and Hempstead Harbor.

However, under the Proposed Action, fertilization rates are expected to be minimized through the use of native and naturalized plants. It is expected that only the initial establishment of native trees will require the use of fertilizers and that maintenance of native trees and herbaceous vegetation will not require the use of fertilizers. The establishment of native trees and shrubs is expected to require a fertilization rate of 0.1 lb of nitrogen per 100 sq. ft. (Gillman and Rosen, 2000). The conceptual landscape plan currently contemplates the planting of approximately 1,300 native and naturalized trees and shrubs. Assuming that a 100 sq.ft. area would be fertilized for the establishment of each proposed tree, it is estimated that 132 lbs (59,874 g) of nitrogen would be used for the initial establishment of the site's landscaping and no fertilizers would be used thereafter. This is a more probable estimate of the potential nitrogen loading associated with fertilization use at the project site. Both the maximum and probable estimates of potential nitrogen loading associated with fertilizer use are presented in **Table III.C-1**.

#### *Mitigation*

Collectively, the potential nitrogen generated by stormwater and fertilizer from the developments associated with the Proposed Action has been estimated to range between a maximum of 2,923 g of nitrogen per day and a probable estimate of 584 g per day with a one-time use of 59,968 g during project construction. This nitrogen has the potential to 1) infiltrate to groundwater, 2) infiltrate into the ground and then be transported to adjacent surface waters by sub-surface shallow flow, or 3) discharge directly to the surface waters of Glen Cove Creek and Hempstead Harbor through the outfall from the storm sewer system.

The Proposed Action shall utilize infiltration chambers and trenches, drywells, and stormfilters to remove nitrogen compounds from stormwater runoff prior to entering surface waters or groundwater. These best management practices are presented in Exhibit III.C-9, *Drainage Design Flow Charts*, and **Table III.C-4** and it is estimated that these devices will remove 45-70% of the nitrogen compounds generated by the Proposed Action. The best management practices presented in Exhibit III.C-9 and Exhibit STM-2 in the **Stormwater Appendix** will collect the first two inches of stormwater runoff and infiltrate this runoff into the ground.

As stated previously, the estimated nitrogen generation of the Proposed Action is expected to range between 584 and 2,923 g of nitrogen per day or 470 and 2,352 lbs of nitrogen annually. Considering that ninety percent of rain events on Long Island result in 1.3” or less precipitation (NYSDEC, 2008), it was assumed that at least ninety percent of the nitrogen generated by the Proposed Action will be treated by the site’s best management practices (i.e. between 423 and 2,117 lb of nitrogen annually). These best management practices are expected to remove between 45-70% of runoff nitrogen (i.e. between 190 and 1,482 lb of nitrogen) annually. Accordingly, it is estimated that after treatment between 174 and 1,399 lbs of nitrogen annually may either 1) infiltrate to groundwater, 2) infiltrate into the ground and then be transported to adjacent surface waters by sub-surface shallow flow, or 3) discharge directly to the surface waters of Glen Cove Creek and Hempstead Harbor through the outfall from the storm sewer system.

<b>Table III.C-1: Estimates of Potential Nitrogen Generation for Proposed Action</b>					
Potential Nitrogen Source					
<i>a. Stormwater Runoff from Impervious Surfaces</i>					
	<i>Impervious Surface Type</i>	<i>Nitrogen Concentration of Runoff</i>	<i>Surface Area</i>	<i>Estimated Stormwater</i>	<i>Total Nitrogen</i>
	Paved Surfaces	1.5 mg per liter of stormwater	27.3 acres	11,973 cubic feet per day	<b>509 g N per day</b>
	Roof Surfaces	0.75 mg per liter of stormwater	8.0 acres	3,522 cubic feet per day	<b>75 g N per day</b>
					<b>584 g N per day</b>
<i>b. Fertilizers</i>					
<i>1. Estimate of Maximum Fertilizer Use</i>					
	<i>Surface Type</i>	<i>Nitrogen Application Rate</i>	<i>Surface Area</i>	<i>Maximum Nitrogen Applied-Annually (lbs)</i>	<i>Maximum Nitrogen Applied-Daily (g)</i>
	Landscaped Areas and Green Roofs	3.0 lbs per 1,000 sq. ft. annually	14.4 acres	1881.8 lbs N	<b>2,339 g N</b>
<i>2. Estimate of Probable Fertilizer Use</i>					
	<i>Surface Type</i>	<i>Nitrogen Application Rate</i>	<i># of Trees and Shrubs</i>	<i>Maximum Nitrogen Applied-Total (lbs)</i>	<i>Maximum Nitrogen Applied- Total (g)</i>
	Establishment of Trees and Shrubs	0.1 lbs per tree or per 100 sq. ft.	1,300	130 lbs	<b>58,968 g N</b>

The Proposed Action is located within Hydrogeologic Zone VIII (North Shore Shallow Flow Zone). Groundwater flow within this hydrogeologic zone is directed towards the nearby harbors and bays. Accordingly, the estimated nitrogen loading anticipated to

result from the Proposed Action is not expected to adversely impact deep aquifer drinking water supplies.

f) Relevant Laws and Regulations

Please also refer to **Table III.C-3** for a list of permits/approvals required.

Federal Laws and Management Policies

*1918 Migratory Bird Treaty Act*

This Act protects migratory birds with treaties signed by the U.S. and Canada, Japan, Mexico, and the former Soviet Union. Under the Act and associated treaties, it is unlawful to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." (16 U.S.C. 703) The proposed project will have to comply with the Migratory Bird Act, although no permit or authorization is required.

*1972 Coastal Zone Management Act*

Congress enacted the Coastal Zone Management Act in 1972 to address development along the nation's coastlines. The Act is administered by the individual states. State participation is voluntary; however, once a state adopts a plan consistent with this Act, that state's coastal regulatory agency is responsible for making determinations on the consistency of Federal actions subject to the plan.

The Coastal Zone Management Act encourages the preservation, protection, development, restoration, or enhancement of valuable natural resources. These resources include wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as fauna using these habitats. State coastal zones include coastal waters and adjacent shorelands that extend inland to the extent necessary to control activities that have a direct, significant impact on coastal waters. In New York State, the NYS Department of State (NYSDOS) Division of Coastal Resources is responsible for administration of the Coastal Zone Management Act and the forty-four (44) coastal policies adopted for the New York Coastal Zone Management Program. NYSDOS must issue a General Concurrence for the proposed projects under the Coastal Zone Management Act.

*1973 Endangered Species Act*

The Endangered Species Act of 1973 was passed by Congress to provide strong protections for species listed as threatened or endangered under the Act. It is illegal to

harass, hunt, capture, kill, or possess plants or animals, or parts thereof, protected by the Act.

In addition, Section 7 of the Endangered Species Act mandates that all Federal agencies consider potential impacts of their actions on listed species. Consultation with the U.S. Fish and Wildlife Service (USFWS) is required for any actions that may impact a listed species, to ensure that the action will not jeopardize that species' habitat or existence. If it is determined that a Federal action is likely to result in a "take" of a listed species, the USFWS may describe conditions which must be met in order for that activity to proceed. A "take" is defined as harming or harassing a species resulting in interference of normal breeding, feeding, or sheltering behaviors. A formal consultation is not anticipated to be required for this project, and no permit is required under this Act.

#### *1977 Clean Water Act*

Congress passed what is known as the Clean Water Act (amended) in 1977 to set water quality standards and regulate discharge of pollutants into the waters of the United States. Under the Act, it is illegal to discharge any pollutant from a point source into navigable waters without a permit. The Act also funded construction of sewage treatment plants and recognized the need for planning to address the critical problems posed by nonpoint source pollution.

The proposed Glen Cove Creek Mixed-Use Waterfront Development project may require a permit from the USACOE under Section 404 of the Clean Water Act for grading activities occurring along Garvies Point Beach and Captain's Cove. Section 404 of the Clean Water Act requires approval prior to discharging dredged or fill material into the waters of the United States, including wetlands.

#### *1899 Rivers and Harbors Act*

The Rivers and Harbors Act of 1899 established permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. Section 10 of the Rivers and Harbors Act covers construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters. Activities requiring Section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the United States. The proposed Glen Cove Creek Mixed-Use Waterfront Development project will require a permit from the USACOE under Section 10 of the Rivers and Harbors Act of 1899.

#### *State and Local Laws and Management Policies*

##### *State Environmental Quality Review Act (SEQRA)*

In New York State, most projects or activities proposed by a state agency or unit of local government, and all discretionary approvals (permits) from a New York State agency or unit of local government, require an environmental impact assessment as prescribed by 6 NYCRR Part 617 State Environmental Quality Review (SEQR). SEQR requires the sponsoring or approving governmental body to identify and mitigate the significant environmental impacts of the activity it is proposing or permitting.

The Planning Board of the City of Glen Cove is the Lead Agency under SEQRA for the Glen Cove Creek Mixed-Use Waterfront Development project. The Planning Board issued a Positive Declaration for this project, requiring a full Environmental Impact Statement and coordinated review of the project.

*NYSDEC Tidal Wetlands Regulations (Article 25 of the Environmental Conservation Law)*

In 1977, Article 25 of the Environmental Conservation Law (ECL) was enacted to regulate activities on or adjacent to tidal wetlands in New York State. Article 25 regulates activities (1) within 300’ of a tidal wetland boundary, (2) seaward of the 10’ elevation contour on a gradual, natural slope, or (3) seaward of a bulkhead or seawall that has been in existence since prior to August 20, 1977, is greater than 100’ in length, and remains functional. Regulated activities include construction and reconstruction of structures and infrastructure, removal of vegetation, and dredging and placement of fill, among others.

There are various activities associated with the Glen Cove Creek Mixed-Use Waterfront Development project that will occur within or adjacent to regulated tidal wetlands, including dredging, reconstruction of existing bulkheads, construction of docks, and construction of observation platforms and boardwalks. As such, the project requires an Article 25 permit from NYSDEC. Part 661.5(b) classifies activities for wetlands and adjacent areas as outlined in **Table III.C-2** below.

**Table III.C-2  
Potential Activities Requiring an Article 25 Permit**

Use	Use Category
(17) Installing a floating dock(s) totaling 200 sq. ft. or greater	This use is presumptively incompatible in intertidal marsh areas, but generally compatible (permit required) in shoals & mudflats, littoral zone, and adjacent areas.
(24) Substantial restoration or reconstruction of existing functional structures, including bulkheads	This use is generally compatible (permit required) for all wetland types and adjacent areas.
(28) Maintenance Dredging	This use is generally compatible (permit required) for all wetland types and adjacent areas.
(29) Construction of bulkheads and shoreline stabilization structures	This use is presumptively incompatible in intertidal marsh areas, but generally compatible (permit required) in shoals & mudflats, littoral zone, and adjacent areas.
(47) Construction of commercial and	This use is generally compatible in adjacent

<p>industrial use facilities requiring water access and public and semi-public buildings requiring water access; and undertaking commercial and industrial use activities requiring water access</p>	<p>areas, with a permit required. In all tidal wetland classifications, this use is presumptively incompatible, with a permit required.</p>
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The proposed intertidal wetland salvage is an activity not listed in Part 661.5(b). The proposed salvage of wetland vegetation and soils will result in a more successful and biologically diverse wetland community within the proposed low sill bulkhead/wetland restoration area. It is the applicant’s opinion that the construction of a high-quality intertidal wetland as mitigation for the loss of wetlands associated with the construction of the large vessel marina is consistent with the goals of the Article 25. The stated goals of Article 25 are to ensure that activities and land uses undertaken within tidal wetlands are compatible with the “protection, preservation, and enhancement” of tidal wetlands and their ecological benefits. An alternative to the proposed wetland salvage would be to construct the low sill bulkhead/wetland restoration using only wetland vegetation supplied from nursery stock. In the applicant’s opinion, the exclusive use of nursery stock without salvaged organic matter and benthic invertebrates would delay the development of natural soil conditions within the restoration area and delay the colonization of the restoration area by benthic invertebrates. The whole sod salvage method proposed for wetland relocation has been previously approved by NYSDEC’s Region III office for past projects in freshwater wetland habitats (Arlington School District, Arlington, NY).

Construction of the large vessel marina, relocation of the Angler’s Club slips, and construction of the smaller vessel marina to the east will also require NYSDEC authorization pursuant to Article 25. In the applicant’s opinion, these proposed developments are consistent with land use guidelines put forth in 6 NYCRR Part 661 pursuant to Article 25. Part 661 states that the construction of catwalks and docks are generally compatible with Article 25; however, the construction of these structures requires an NYSDEC permit. Similarly, the construction of commercial use facilities requiring water access, the construction of public and semi-public buildings requiring water access, and undertaking commercial activities requiring water access are also generally compatible-permit required with Article 25, provided that these facilities are not located seaward of the wetland boundary. These regulations indicate the NYSDEC’s preference for the water-dependent land uses adjacent to regulated tidal wetlands; accordingly, it is the applicant’s opinion that the proposed water-dependent uses within the Proposed Action are consistent with Article 25. Please note that the proposed commercial use facilities requiring water access, although compatible with NYSDEC regulations, are out of Article 25 jurisdiction for this project.

*NYSDEC Protection of Waters (Article 15, Title 5 of ECL)*

Article 15, Protection of Waters, was enacted to preserve and protect water bodies of New York State. There are three types of activities regulated under Article 15, including disturbance of the bed or banks of a protected stream; construction and maintenance of

dams; and excavation or filling in navigable waters. Dredging for the large vessel marina, Angler's Club, and permanent/transient marina; excavation of the Turning Basin; and construction of the Turning Basin tidal weir will require an Article 15 permit from NYSDEC (**Table III.C-3**).

#### *Long Island Well Permit*

Under Part 602 of 6 NYCRR, a Long Island Well Permit is required from the NYSDEC for dewatering if the proposed dewatering exceeds 45 gallons per minute or 64,800 gallons per day. It is expected that all proposed buildings will require some dewatering for the installation of building footings and/or pile caps. In the event these activities exceed the 45 gallons per minute or 64,800 gallons per day threshold, a Long Island Well Permit will be required. In addition, a Long Island Well Permit will be obtained for any other dewatering associated with the installation of structures in areas where groundwater is close to the land surface if the proposed dewatering exceeds NYSDEC thresholds.

#### *Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern*

Part 182 of 6NYCRR is the Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern. This part states that all parties must avoid disrupting state listed threatened and endangered species. This regulation is not applicable to the proposed action as the project site does not provide permanent habitat for any endangered or threatened species. Accordingly, no environmental mitigation measures are needed to avoid impacts to endangered or threatened species.

g) Regulatory Approvals Required

Table III.C-3 provides a list of the permits required for this project, as well as contact information for each permitting agency.

**Table III.C-3  
Permits/permissions required and obtained from each of the above Federal and State agencies**

Agency	Contact	Permits/Permissions Required
US Army Corps of Engineers	Mr. George Neives NY District-Regulatory Branch 26 Federal Plaza, Room 1937 New York, NY 10278-0090	Section 10 of Rivers & Harbors Act Section 404 of the Clean Water Act
NYS Department of Environmental Conservation	Mr. Roger Evans Environmental Permits SUNY@ Stony Brook 50 Circle Road Stony Brook, NY 11790-3409	Article 15 (Protection of Waters) Article 25 (Tidal Wetlands) 401 Water Quality Certification Part 602 (Long Island Well Permit)
NYS Department of State	Jamie Ethier Division of Coastal Resources 99 Washington Ave., Suite 1010 Albany, NY 12231	Coastal Consistency Certification

Following consultation and coordination with regulatory agencies, the permits issued by each will contain special conditions to ensure compliance with their regulatory standards. For example, dredge and construction windows to protect environmental resources, survivability of restoration plantings, and guidelines for handling of dredge spoil will all be special conditions of the USACOE, NYSDEC, and NYSDOS approvals. See below for a status on the consultation and coordination with permitting agencies.

h) Public Water and Sewer

Preliminary estimates indicate that at full completion, the proposed development would increase water demand by approximately 662,000 gallons per day (“GPD”) and average daily sewage demand by approximately 507,000 GPD over the City’s existing levels. More detailed discussions of water use estimates and sanitary flow projections are included in **Section III.J Utilities**. The analysis indicated that the proposed development would not negatively impact sanitary disposal. The City has begun to study improving its water infrastructure to accommodate the increased water demand resulting from its desired future growth and various proposed developments in the City, including the proposed project. The Applicant will cooperate with the City in the City’s evaluation of viable options for a water source improvement plan that will address the City’s current and future needs.

i) Consultation and Coordination

*U.S. Army Corps of Engineers (USACOE)*

Consultation with the USACOE begins with submission of an application package for a project requiring either an individual permit or coverage under a Nationwide Permit. At this time, applications have not been submitted; however the Applicant is in the process of setting up a formal consultation with USACOE to discuss the proposed project in the context of their regulations.

Once a formal application is submitted, the consultation process with USACOE will begin. Applications are assigned an identification number upon receipt, and a Public Notice is issued to solicit comments from the public, special interest groups, other federal agencies, and state and local agencies. Public hearings are optional. Once the applicant has provided sufficient information to satisfy the application requirements, a permit or denial of the application is issued.

*NYSDEC*

Consultation with NYSDEC may begin with one or more pre-application meetings with the Regional Permit Administrator. For this project, the first pre-application meeting took place in 2005 to introduce NYSDEC to the project and solicit feedback on work proposed in Glen Cove Creek and adjacent to regulated tidal wetlands. In addition, Land Use Ecological Services met with NYSDEC freshwater wetland staff to discuss possible improvements to Mill Pond.

In 2008, consultation with NYSDEC resumed. A second pre-application meeting took place in January 2009 to review the current site plan included in this revised DEIS. NYSDEC confirmed their jurisdictional limits at the site according to Article 25 of the ECL. NYSDEC staff is currently reviewing the proposed bulkhead reconstruction; dredging; wetland salvage, creation, and restoration; and marina construction for compliance with their tidal wetland policies and procedures. This consultation is still ongoing.

3. Mitigation Measures

In the opinion of the Applicant, the proposed redevelopment of the project area would not result in any significant negative impacts to water resources in or around the area, as much of the area has already been impacted by years of neglect, and stormwater runoff within the project area currently flows directly into Glen Cove Creek without any filtration.

The study area is situated within Hydrogeologic Zone VIII, which is the North Shore Shallow Flow Zone. The 1998 DGEIS plan (which did not include residences) ensured

that the redevelopment of the north side of the creek did not adversely affect shallow flow by suggesting relevant structural and non-structural recommendations for Hydrogeologic Zone VIII. Such recommendations will also be adhered to as part of this proposed plan. Specifically:

- All redeveloped properties would be connected to the Glen Cove Wastewater Treatment Plant;
- Stormwater would be controlled to minimize the transport of sediments, nutrients, metals, organic chemicals and bacteria to surface and ground water;
- Stormwater would be managed so that chemicals do not enter Glen Cove Creek;
- Wetlands in the western portion of the creek would be preserved and new wetlands created at a low sill bulkhead along the eastern part of creek;
- Stormwater control measures (e.g. hay bales, silt fencing) would be implemented during construction to minimize the potential for silt to enter Glen Cove Creek. In addition, paving or planting soils as soon as possible after disturbance to minimize sedimentation would also be implemented;
- Runoff would be detained on individual sites through the use of drywells/catch basins so that on-site recharge can occur where possible; and
- Low maintenance landscaping would be utilized.

The project will be designed to conform with applicable regulations regarding hydrogeologic resources, to avoid any negative impacts to the natural environment, and applicable structural and non-structural recommendations per the *Long Island Comprehensive Waste Treatment Management Plan* and the *Nonpoint Source Management Handbook* would be adhered to as part of the construction specification.

Specifically:

- All redeveloped properties would be connected to the Glen Cove Wastewater Treatment Plant;
- Stormwater would be controlled to minimize the transport of sediments, nutrients, metals, organic chemicals and bacteria to surface and ground water;
- Stormwater quality would be improved prior to entering Glen Cove Creek through a new multi-layered filtration system, along with other stormwater measures including infiltration trenches, infiltration basins, dry wells, and structural water quality treatment devices that would be created as part of the development plan;
- Wetlands at the western portion of the creek in would be preserved; and enhanced with the removal of debris and invasive species, and the planting of native vegetation and new low sill bulkhead with wetlands plantings along the eastern part of the Creek.
- Stormwater control measures would be implemented as necessary during construction to minimize sediment transport into Glen Cove Creek. In addition, after construction is finished, paving and planting will be done as soon as possible to minimize sedimentation and stabilize the site;
- Runoff would be detained on individual sites where sub-surface contamination is not an issue as per DEC and EPA regulations, through the use of drywells/catch basins so that on-site recharge can occur where possible; and

- Low maintenance landscaping would be installed to minimize water usage and impacts from fertilizers.

In addition, development would be required to adhere to applicable regulations of the Nassau County Department of Health and the *Nonpoint Source Management Handbook*, prepared as part of the USEPA's 208 Plan Implementation Program.

The Handbook is divided into several elements: Land Use, Stormwater Runoff, On-Site Systems, Highway Deicing, Fertilizer, Animal Waste, Wells-Water Supply, Boat Pollution, Site Plan Review and Ordinances. The Handbook makes a variety of recommendations for counties, municipalities, engineers, etc., to use in controlling non-point sources of contamination, which would be applicable to development as per the Future Proposed Project Condition.

Relevant recommendations from this study and how these recommendations would be followed are detailed below.

(1) Land Use

- *Limit new development, particularly industrial uses, in the deep recharge and critical shallow recharge areas.*

The MW-3 zoning district permits a mix of residential, commercial, water-dependent, water-enhanced and other related uses. The historically permitted heavy industrial uses are no longer permitted or appropriate for this area, and the Proposed Action adheres to MW-3 zoning district regulations. Furthermore, a major component of this initiative is the remediation (which is currently underway) and redevelopment of brownfields properties that have resulted in surface and subsurface contamination.

- *Aggregate uses that would require similar sewage treatment at densities where sewage treatment will be economically feasible.*

The City of Glen Cove is served by a County-maintained wastewater treatment plant, and all development in this area will be connected to the sewage treatment plant. The project would advance this objective by providing relatively dense development in close proximity and connected to the County wastewater treatment plant.

- *Limit the removal of natural vegetation and the creation of lawn areas.*

The project consists primarily of the redevelopment of previously disturbed properties including numerous brownfields properties. Thus, the amount of natural vegetation is limited. However, the natural shorefront area, which contains wetlands, would be preserved and enhanced. Furthermore, the applicant will utilize low maintenance (i.e., low water use and less-fertilizer dependent)

vegetation. As such, redevelopment plans are consistent with this recommendation.

(2) Stormwater Runoff

- *Minimize grade changes and site clearing. Preserve swales in their natural state. Avoid disturbance of existing grades, vegetation or soils and the alteration of surface hydrology.*

There are few natural areas within the study area that have not been previously disturbed. The most significant “natural” area is the wetland at the western portion of the creek which would be preserved and enhanced to remove invasives. Thus, the redevelopment plan conforms to this recommendation (further stormwater improvements are discussed later in this chapter).

- *Provide temporary on-site areas to receive stormwater runoff flows that are generated by construction and other site development activities. Do not allow increased sediment resulting from the construction or operational phase of site development to leave the site or to be discharged into stream corridors, marine or freshwater wetlands. Minimize the amount of soil area exposed to rainfall and the period of exposure. Cover or plant exposed soils as soon as possible.*

A Stormwater Pollution Prevention Plan (“SWPPP”) will be prepared as part of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-02-01). The SWPPP will implement stormwater control measures to minimize the potential for sediment to enter Glen Cove Creek during construction and after the site is stabilized and operational. In addition, the SWPPP will outline paving or planting of exposed soils as soon as possible after disturbance to minimize sedimentation potential. Thus, the development plan conforms to this recommendation.

- *Detain runoff on-site and direct stormwater from road surfaces to sedimentation basins before discharge to a sump wherever topography limits or precludes the on-site recharge.*

Regulations require that stormwater be managed so that chemicals do not enter the creek. The development plan includes a detailed stormwater runoff plan, discussed in detail further along in this chapter. The primary objective of this plan is to address the quality of stormwater runoff directly into Glen Cove Creek, as compared to existing conditions and those anticipated under the No-Action Alternative.

(3) Highway Deicing

- *Evaluate various salt/sand ratios currently used for maintaining highways to determine which mixture offers the maximum safety for the public with the minimum impact on groundwater under most storm conditions. The use of straight salt should be considered.*

This recommendation relates to general highway maintenance and does not specifically relate to the Proposed Action.

(4) Fertilizer

- *Retain as much of the natural vegetation of the site as possible. Minimize grade changes and site clearing.*

There are few naturally vegetated areas within the study area that have not been previously disturbed. The most significant “natural” areas are Garvies Point Beach and the Captain’s Cove wetland at the western portion of the creek, both of which will be preserved and enhanced as part of this redevelopment plan.

- *Use native plants for the planting of areas that have been disturbed by grading. Consider the use of alternate types of groundcover and other plant materials to avoid or reduce lawn area and the consequent need for fertilizer applications, extensive watering and maintenance.*

Native species will be used in the wetland restoration of Captain’s Cove, and in the creation of wetlands in the low sill bulkhead areas. Upland, the plan calls for low maintenance plantings as part of individual site redevelopment.

Additionally, the Long Island Segment of the *Nationwide Urban Runoff Program* (“NURP”) evaluates the impacts of runoff and aims to minimize pollution contributions from stormwater runoff. Some of the major relevant findings of the NURP Study are as follows:

- In general, with the exception of lead and chloride, the concentrations of inorganic chemicals measured in stormwater runoff do not have the potential to adversely affect groundwater quality;
- Infiltration through the soil is generally an effective mechanism for reducing lead and probably chromium from runoff on Long Island. Although NURP findings concerning chromium are not conclusive, data from an industrial spill at Farmingdale indicate attenuation. Chloride is not attenuated. The effect of infiltration on nitrogen is undetermined;
- Coliform and fecal streptococcal indicator bacteria are removed from stormwater as it infiltrates through soil; and
- Any control of chemical constituents in runoff requires awareness of their year-round presence. The use of highway deicing salts in winter explains the high chloride concentrations found in runoff during that season.

The proposed project includes a comprehensive stormwater management system, which would improve the quality of stormwater runoff from the site, and advance the objectives of the NURP Study. While some components of the stormwater management plan could be considered mitigation measures implemented as part of the project, the design of the stormwater management system is integral to the overall design and therefore is fully described within the Proposed Action Condition of this chapter (IIIC.2.d). As indicated by the Hempstead Harbor Protection Committee's Non-Point Source Water Pollution Plan, non-point source pollutant loading can be reduced by proper stormwater management. Implementation of the development plan would necessitate the sufficient remediation of the various contaminated properties through the Brownfields Program. According to the City of Glen Cove Brownfield Showcase Communities Project, "remediation of the areas' brownfields will have a tremendous effect on the reduction of non-point source pollution, which has adversely affected the commercial and (where appropriate) recreational shellfish and fishing communities of Glen Cove and Long Island."

The redevelopment would also result in the remediation of surface and subsurface contamination that affects Glen Cove Creek, eliminate the potential for new industrial uses that could adversely affect the creek in the future, and preserve and enhance existing intertidal wetland areas while creating additional wetlands areas. Additionally, as the project is located within an AE designated 100-year flood zone, all construction would be required to meet minimum flood elevations to protect the health and safety of residents, workers, and others, as well as the environment.

Best management practices to be employed to minimize adverse environmental impacts from dredging and the creation of the various proposed water-dependent, water-enhanced and other related uses include:

- Implementation of a Stormwater Pollution Prevention Plan (SWPPP) to comply with NYSDEC regulations related to SPEDES Multi-Sector General Permit for Stormwater Discharges Associated with Construction Activities to prevent stormwater discharge, erosion, sediment transport, and pollutant discharge during grading, excavation, and construction associated with installation of structures associated with upland portions of the proposed marinas (office buildings, equipment storage facilities, parking areas, etc.).
- A Stormwater Pollution Prevention Plan will be implemented for all proposed marinas to comply with NYSDEC regulations related to the SPEDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities.
- The proposed marinas will adopt the best management practices prescribed by the Hempstead Harbor Protection Committee's Clean Marinas Program pertaining to:
  - Containment of oil, gas, hydro-carbon contaminants, boat sewage and pet waste, trash and litter, heavy metals and toxic chemicals, solvents and cleaning products, anti-freeze, detergent, suspended sediments, and fertilizers,
  - Procedures for boat cleaning, painting, fiberglass repair, maintenance, and pressure washing,
  - Hauling and storage of boats,

- Procedures for garbage storage, management, and disposal,
- Operation and maintenance of marina support buildings,
- Storage, handling, and recycling protocols for waste oils and fuels, batteries, maintenance liquids, and restaurant liquids,
- Procedures for emergency response, spill prevention, clean-up, and waste disposal

A stormwater management plan will be designed, as described herein, to address potential sources of pollution and indicating appropriate measures and controls.

Pollutant removal rates for the various stormwater management components include:

**Table III.C-4: Sediment, Nitrogen, and Phosphorus Removal Efficiencies for Proposed Best Management Practices**

<b>Best Management Practice (BMP)</b>	<b>TSS <sup>(1)</sup></b>	<b>TP <sup>(2)</sup></b>	<b>TN <sup>(2)</sup></b>
Interceptor/Infiltration Trench	80%	50-75%	45-70%
Drywell (Seepage Pit)	80%	50-75% *	45-70%*
Infiltration System (4)	80%	50-75%	45-70%
StormFilter	80%	39% <sup>(1)</sup>	5-30% <sup>(3)</sup>

<sup>(1)</sup> NYS DEC approved rating.

<sup>(2)</sup> USDOT FHA report entitled: Stormwater BMP in an Ultra –Urban Setting: Selecting and Monitoring (May 2002).

\* based upon treatment of one inch runoff volume per impervious acre

<sup>(3)</sup> 30% removal reported by Contech per case study of StormFilter system utilizing coarse perlite / coarse zeolite filter media.

<sup>(4)</sup> Infiltration Systems include StormTech 740 and Rainstore 3 Systems.

TSS – Total Suspended Solids

TP – Total Phosphorus

TN – Total Nitrogen

The Glen Isle Property Owner’s Association (POA) will be responsible for the on-going maintenance of the stormwater management system. A Stormwater Management Facilities Maintenance Manual will be prepared as part of the SWPPP which will outline specific maintenance requirements and schedules for the various components of the stormwater management system including jetting / vacuuming of silts, sediments and debris from the catch basins. Manholes, seepage pits, infiltration systems, irrigation chambers, StormFilters and conveyance systems on a regular basis and inspection of all facilities for deterioration, degradation, displacement, corrosion or other conditions after large storm events and / or on a regular basis. The Maintenance Manual will outline requirements for functional maintenance (preventative / routine maintenance and corrective / emergency maintenance) as well as aesthetic maintenance.

The proposed overall stormwater management design conforms to the NYSDEC standards as described above. Storm sewer conveyance systems have been designed to meet the City of Glen Cove's requirements, specifically runoff from roof leaders, driveways and paved areas will be directed to appropriate drainage control structures.

The Proposed Action will be serviced by the County wastewater treatment plant. Accordingly, no nitrogen loading from sanitary systems will result from the Proposed Action. Best management practices for marina operation prescribed by the Hempstead Harbor Protection Committee's Clean Marina Program will be implemented to minimize boat and marina related discharges of nitrogen. A NYSDEC SPEDES regulations compliant Stormwater Pollution Prevention Plan (SWPPP) will also minimize nitrogen discharges. Enforcement of the dog nuisance provision (§87-24.1) of the municipal code of the City of Glen Cove which requires that all pet waste be "immediately removed" and "disposed of in a sanitary manner" will minimize nitrogen-contaminants resulting from pet waste.

Preliminary discussions with representatives from the Applicant, Town of Oyster Bay, Hempstead Harbor Protection Committee, and Coalition to Save Hempstead Harbor were held during 2005 regarding the impact the then proposed project would have on the local ecology, in particular, what potential stormwater management approaches were being evaluated for the larger watershed in order to improve water quality in Glen Cove Creek and Hempstead Harbor. Discussions at these meetings focused on characterizing the existing water quality of the creek as well as determining the various factors that have led to the situation that exists in the creek today. Upon establishing a 'baseline' condition for the creek, the focus shifted to a discussion of best management practices that could improve the water quality of the creek through stormwater management controls. At the time, the project contemplated the expansion of the existing Mill Pond sedimentation basin so that it could accommodate greater volumes of runoff. Since that time, the design of the project's stormwater management system has evolved and this is no longer proposed. However, it should be noted that the City of Glen Cove is in the process of pursuing an expanded Mill Pond as part of the Esplanade Phase 2 improvement project.

The implementation of the proposed stormwater management system will improve stormwater quality and, in connection with the proposed wetland restoration, be expected to improve creek water quality. The proposed system has been designed to accommodate anticipated runoff from the project site.

The potential impacts due to dredging will be mitigated through the following actions:

- Prior to any dredging activities, sediment sampling will be conducted at each site proposed for dredging (large vessel marina, Angler's Club, transient marina, turning basin) to obtain a representative characterization of the sediments in each location.
  - The whole sediment chemistry analysis method will be used to assess levels of contaminants at each proposed dredge site.

- The number of samples and chemical analytes will be determined through consultation with NYSDEC, USACOE, and USEPA. A formal sediment sampling plan will be submitted to permitting agencies for approval prior to implementation of any sediment sampling.
- The method for dewatering and disposal of dredge spoil shall be determined through consultation with permitting agencies, with the following general guidelines:
  - Dredge spoil will be contained so as to not re-enter any waterbody, wetland, or protected area.
  - Clean spoil shall be disposed at an upland site approved by permitting agencies.
  - Contaminated dredge spoil shall be remediated in accordance with NYSDEC and USEPA standards and properly disposed of.
- To minimize resuspension of silt, oil, grease, and other fine particles or materials, careful equipment operation, floating booms, and silt curtains or screens shall be used.
- To minimize the amount of material disturbed or returned to the water body, a closed, watertight bucket (closed clamshell) shall be used, and barge overflow will be prohibited.
- Dredging, piling and dock installation, and other aspects of marina construction will be conducted during a dredging window approved by the US Army Corps of Engineers, NYS Department of State, and NYS Department of Environmental Conservation to avoid impacts to spawning shellfish and spawning finfish. This window will likely be November 1<sup>st</sup> through January 31<sup>st</sup>.
- Proposed bathymetric contours in the proposed boat basins will be sufficiently deep (i.e. six to eight feet deep at mean low water) to prevent scouring and propeller dredging from the operation of vessels.