

**A. INTRODUCTION**

This chapter considers the project's effects on natural resources, organized in two major subsections: the aquatic environment and the terrestrial environment. Aquatic resources evaluated include wetlands, surface water, groundwater, related habitats and life forms associated with them, and threatened and endangered species and significant habitats. Terrestrial resources include vegetative habitats (both common and potentially significant) and species associated with these habitats including any threatened and endangered species (both plant and animal). The chapter begins with a brief overview of the geologic and hydrogeologic (groundwater) setting and is followed by an evaluation of existing natural resources and their value, then by an assessment of the specific effects on those resources of both construction and operation of project elements. Finally a discussion of appropriate mitigation measures is presented.

**B. GEOLOGIC AND HYDROGEOLOGIC SETTING****REGIONAL GEOLOGICAL CONDITIONS**

The Long Island Transportation Corridor (LITC) lies within two distinct geologic regions. Manhattan and parts of the Bronx are within the Highlands Region. This area, which also includes the uplands of Northern New Jersey and portions of Connecticut, is characterized by a hilly to mountainous terrain, showing the scars of glaciation during the Pleistocene era. The rocky outcrops visible on hillsides and along streams and rivers are mostly ancient gneiss and schist (highly metamorphosed sedimentary and igneous rocks). Once buried miles below the earth's surface, they were altered during a series of uplift and erosion events that occurred over hundreds of millions of years.

This region contains freshwater lakes, created during glacial advance and retreat, and a network of rivers and streams that drain the land and flow towards the Atlantic Ocean. The primary type of mature vegetation is the oak-hickory forest, but the area supports a wide variety of vegetative communities, depending on elevation, slope, soils, and the presence of water. The portion of the LITC within the Highlands Region, however, is almost entirely developed, except in parks and other open space areas. The process of development included major changes in topography, so that much of the soil covering the area is actually fill. Major surface waters are the Hudson and Harlem Rivers; the East River, which is a tidal strait between the Long Island Sound and New York Harbor; and Newtown Creek, which divides Brooklyn and Queens as it flows to the East River.

Most of Brooklyn and Queens and all of Nassau and Suffolk Counties are part of the Atlantic Coastal Plain. This region, which is generally flat or gently sloped, is the result of 100 million years of sedimentation on the edge of the continent. When this process began in the late Cretaceous era, the Atlantic Ocean and river basins flowing to it had generally been formed. Sediments from the eroding Appalachian Mountains traveled down river to the Atlantic Coastal

Plain, beginning the formation of the land that exists today. Since then, as glaciers formed and then retreated, sea levels rose and fell. These changes brought sands, gravels, and other materials to create a great wedge of sedimentary material in the Atlantic Coastal Plain. This material consists of layers of sedimentary rock formations that are relatively narrow near land and thicker closer to the ocean.

The resulting geology of the LITC within the Atlantic Coastal Plain consists of three distinct formations of sedimentary materials above bedrock, is shallower in the north and western part of the LITC and dips deeper toward the southeast. The specific layers are as follows:

- Upper Pleistocene deposits, the most recent formation and the closest to the surface, were created 15,000 years ago when the retreating glaciers deposited sand and gravel in their wake. These deposits extend from the surface down about 100 feet to the top of the Magothy Formation.
- Magothy Formation, just below the Upper Pleistocene, was formed in the Cretaceous Age (70 to 140 million years ago). This formation, which consists of fluvial and deltaic deposits, is composed mainly of mixed layers of sand, silt, and clay, with some gravel. Gravel is also present, but limited primarily to the lower strata of the formation. Minerals (e.g., muscovite and pyrite) distinguish this formation from the upper glacial deposits, as does lignite, which is a signature feature of the Magothy. This formation is several hundred feet thick and contains some discontinuous clay layers (“lenses”).
- Raritan Formation. Beneath the Magothy Formation is a thick layer of clay (frequently 100 feet or more), which is the upper portion of the Raritan Formation. Below the clay is the Lloyd Sand, which consists primarily of fine to coarse-grained sand and gravel, intermixed with clay.
- Bedrock. The bedrock is ancient, from the Precambrian and Paleozoic eras (more than 500 million years old), and begins deep below the surface (often 1,000+ feet). It is composed of impermeable schist and gneiss.

In western Queens, bedrock is significantly shallower (e.g., 60 feet at Yard A). Overlying deposits are generally glacial.

Some vegetative communities in the Atlantic Coastal Plain are similar to those of the Highlands, but several are distinct, particularly the pine barrens communities that grow on well-drained, infertile, sandy soils, and contain, among others, dwarf species. Major surface waters are the Long Island Sound and Atlantic Ocean. Fresh water resources are relatively rare, but there are four river basins, including the Connetquot, Carmans, Peconic, and Nissequogue, and a number of fresh water wetlands associated with the rivers, as well as those that form in low-lying areas atop impermeable soils, such as clay. These latter wetlands are fed by overland runoff and groundwater.

Although Long Island is considerably less densely developed than New York City, substantial sections have been graded, filled, and landscaped to form suburban communities. Many remaining open areas are farms. Others are natural resources including some of significant quality, such as the South Shore and Peconic Estuaries; valleys of the Peconic and Carmans Rivers, which have been designated as wild and scenic rivers by the New York State Department of Environmental Conservation (NYSDEC); the pine barrens vegetative communities in eastern Suffolk County; and the Wertheim and Seatuck national wildlife refuges. In addition, a number of

state and county parks have been dedicated to conservation and preservation of natural resources on Long Island.

## **REGIONAL HYDROGEOLOGY AND GROUNDWATER QUALITY**

### *MANHATTAN AND THE BRONX*

Groundwater is not a major resource of the LITC in the Highlands Region. Very little is found either above the rock or within fractures in the rock, and it is insufficient as a source of water supply. All potable water in Manhattan and the Bronx comes from a system of upstate reservoirs. Groundwater quality is variable, but frequently poor, as it has been altered by more than a century of contamination by industrial uses. However, it is never used for potable supply and only to a limited extent for non-potable uses, such as car washes.

### *LONG ISLAND INCLUDING BROOKLYN AND QUEENS*

The sand, silt, and gravel within the Upper Pleistocene deposits and the Magothy and Raritan Formations form the aquifers through which groundwater flows. These three aquifers are as follows: the upper glacial aquifer in the Upper Pleistocene deposit, the Magothy aquifer, and the Lloyd aquifer in the Lloyd Sand portion of the Raritan Formation. The thick layer of Raritan Clay forms a boundary between the Magothy and Lloyd aquifers. The bedrock beneath the Lloyd aquifer is the lower boundary of Long Island's groundwater system. Groundwater can flow between the upper glacial and Magothy aquifers in most areas, except near the South Shore of Long Island, where local clay layers separate the aquifers. The two aquifers are sometimes regarded as a single system due to this hydraulic interconnection.

Groundwater flows generally north and south away from a regional groundwater divide located near the center of Long Island. Groundwater recharge to the deeper portion of the Magothy and Lloyd aquifers occurs in the vicinity of the regional groundwater divide, where groundwater flows vertically downward (i.e., it has a downward vertical hydraulic gradient). The groundwater flow direction becomes more horizontal with increasing distance from the divide. The groundwater ultimately discharges to streams and creeks near the shoreline and into the surrounding bays and Long Island Sound to the north or the Atlantic Ocean to the south.

In general, the quality of the groundwater on Long Island in the shallow upper aquifer (either the Upper Pleistocene or the upper portion of the Magothy) has been affected by numerous sources of contaminants, including leaking underground storage tanks, disposal of liquid industrial wastes into floor drains connected to dry wells, or into septic systems in the unsewered portions of Long Island. Most public drinking water supply wells on Long Island, however, draw water from deep in the Magothy aquifer, often at depths greater than 500 feet. As a result, the public water supply wells generally meet drinking water standards without the need for treatment. In certain areas of Long Island, however, regional contamination of the shallow groundwater has affected deeper groundwater quality. In these areas, public water suppliers have installed water treatment systems to remove contamination so that the water quality meets the federal and state drinking water standards. The U.S. Environmental Protection Agency (EPA) designated the Long Island aquifer as a sole source aquifer, concluding that the system is the "principal source of drinking water" to the people of Long Island, and "if contaminated, would create a significant hazard to public health." (For more information, see the discussion below in section C under "Groundwater.")

Nassau and Suffolk Counties rely entirely on groundwater for potable water supply. All of Brooklyn and most of Queens are served by New York City's system, which comes from upstate reservoirs. Some of southeastern Queens still relies on the aquifer as its source of potable water supply, but none of the project sites are in this area.

### **C. REGULATIONS THAT DETERMINE RESOURCE DEFINITIONS, PERMITS, AND IMPACT THRESHOLDS**

A number of federal and state agencies have jurisdiction over elements of the aquatic and terrestrial environment. Charged with protecting these resources and regulating the circumstances of their use and potential disturbance, these agencies include EPA, the U.S. Army Corps of Engineers (ACOE), the U.S. Department of the Interior (DOI), the Federal Emergency Management Agency (FEMA), NYSDEC, the New York State Department of State (NYSDOS), and the New York City Department of Environmental Protection (NYCDEP). The regulations that pertain to the natural resources analyses for the East Side Access project are discussed below. These include regulations covering wetlands, surface water, groundwater, and ecologically sensitive areas.

#### **WETLANDS**

In general terms, wetlands are lands that are at least periodically saturated with or covered by water. They are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. While there are many types of wetlands distinguished by specific ecological characteristics, there are two fundamental wetland types: tidal and freshwater. Freshwater wetlands have no saline inputs, whereas tidal wetlands are regularly submerged by a salt water body. Wetlands are a valuable resource since they can be essential to breeding, rearing, and feeding grounds for many species of fish and wildlife. They may also perform flood protection and pollution control functions.

Freshwater and tidal wetlands in New York State are regulated both by ACOE and NYSDEC. ACOE regulates freshwater wetlands pursuant to Section 404 of the Clean Water Act (33 CFR Part 230), regardless of size. NYSDEC regulates freshwater wetlands that are 12.4 acres or larger, or, if the freshwater wetlands have unusual local importance, under their permit authority (6 New York Codes, Rules, and Regulations [NYCRR] Part 663). NYSDEC also regulates a protective buffer zone around the freshwater wetland, called the "adjacent area." The regulated adjacent area is 100 feet from the wetland boundary. State freshwater wetlands are depicted on U.S. Geological Survey (USGS) quadrangle base maps.

Tidal wetlands are also regulated by NYSDEC and the ACOE. NYSDEC's regulatory authority is contained in 6 NYCRR Part 661, and the ACOE's regulatory authority is contained in 33 CFR Part 330. In addition to tidal wetland resources, within New York City limits, NYSDEC regulates a protective adjacent area, which extends 150 feet from the regulated wetland boundary. As defined by 6 NYCRR Part 661.4(b)(1)(ii), if there is a functional and substantial fabricated structure that lies generally parallel to the landward-most tidal wetland boundary and that is a minimum of 100 feet in length, as measured generally parallel to such landward-most boundary, the seaward edge of this structure may represent the limit of the regulated wetlands and adjacent area. State tidal wetlands are depicted on aerial photographs.

Activities within the wetlands and buffer areas cannot be undertaken without a permit from ACOE or NYSDEC, as relevant. In general, permission to disturb, fill, or otherwise remove a

wetland itself can only be granted if there is no feasible alternative to avoid such action and if appropriate mitigation, such as replacement wetlands in another location, can be agreed upon. Activities in the wetland buffer areas are limited to those types of development that would not change natural drainage systems or require removal of vegetative cover. However, New York State's Public Authorities Law exempts MTA from the need to obtain state wetlands permits on sites previously in transportation use where the general character of the prior transportation use at that site will not change.

## **SURFACE WATER**

Activities in and discharges to surface waters are controlled by federal, state, and local agencies through a number of permits and approvals, reflecting legislation and regulations promulgated at all levels of government. The State of New York classifies water quality for its surface water resources, issues permits for discharge to surface waters; identifies and protects wild, scenic, and recreational rivers; and oversees the state's coastal zone management program. At the federal level, a number of programs address activities in navigable waters and protect the environment of these waters. New York City regulates discharges to its sewer system, which then discharges to surface water bodies under the aegis of New York State. Nassau and Suffolk Counties maintain several additional programs for the protection of Long Island's resources. Those programs that are relevant to this project are discussed below.

### ***NEW YORK STATE***

#### ***State Water Quality Classifications***

The federal Clean Water Act establishes objectives to provide "fishable and swimmable waters for the enjoyment of all." To this end, NYSDEC has a system of use classifications and discharge standards as defined under 6 NYCRR Part 701. Use classifications are assigned to the state's water bodies to set attainment goals, but they do not necessarily indicate existing water quality conditions. For example, by classifying waters as SA (with "S" representing saline waters and "A" the highest classification), NYSDEC has set a management goal to achieve water quality capable of supporting shellfish harvesting.

The water quality classifications are shown in Table 15-1. All of these water quality classifications exist in waters close to portions of the project sites. The higher water quality classifications makes some waters more sensitive than others to pollutant loadings due to the standards required to meet their intended uses.

#### ***Wild, Scenic, and Recreational Rivers System***

Article 15, Section 15-2701 of the New York State Environmental Conservation Law (ECL), the Wild, Scenic, and Recreational Rivers System, authorizes NYSDEC to protect the outstanding natural, scenic, historic, ecological, and recreational resources of certain designated river corridors. Corridors are designated as "wild, scenic, or recreational." The implementing regulations are set forth in 6 NYCRR Part 666.

#### ***New York State Pollutant Discharge Elimination System (SPDES)***

Under the Clean Water Act, EPA has delegated to NYSDEC regulation of discharges into surface water bodies. Prior to a discharge of waste water (industrial waste water, sanitary waste water, or storm water), a State Pollutant Discharge Elimination System (SPDES) permit must be obtained from NYSDEC. A storm water pollution prevention plan must be prepared to obtain

**Table 15-1**

**New York State Department of Environmental Conservation  
Surface Water Quality Classifications**

<b>Class</b>	<b>Best Usage of Waters</b>
N	Fresh – enjoyment of water in its natural condition and, where compatible, as a source of water for drinking or culinary purposes, bathing, fishing, fish propagation, and recreation.
AA-S	Fresh – a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival.
A-S, AA, or A	Fresh – a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival. This classification may be given to those waters that, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, meet or will meet New York State Department of Health drinking water standards and are or will be considered safe and satisfactory for drinking water purposes.
B	Fresh – primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival.
C	Fresh – fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.
D	Fresh – fishing. Due to such natural conditions as intermittent flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.
SA	Saline – shellfishing for market purposes and primary and secondary contact recreation.
SB	Saline – primary and secondary contact recreation and any other use except shellfishing for market purposes.
SC	Saline – fishing, fish propagation, primary and secondary contact recreation although other factors may limit the use for that purpose.
I	Saline – secondary contact recreation and any other uses except primary contact recreation and shellfishing for market purposes.
SD	Saline – fish survival.

the SPDES permit. The pollution prevention plan describes the storm water collection system, the volume of storm water, the rate of discharge, and the measures that are implemented to prevent pollutants from contaminating the storm water. In New York City, all sanitary waste water is discharged into the municipal sewer system, which is operated by NYCDEP. NYCDEP has SPDES permits for its discharges and limits the materials that can be disposed of in the New York City sewer system. If storm water is discharged into the combined sewers, NYCDEP regulates the volume and rate of storm water discharge, and the types and concentrations of pollutants.

In addition, separate SPDES permits are also required for projects that disturb more than 5 acres of land at one time during construction. These construction-related SPDES permits cover the issues associated with construction, such as those related to dredging and filling, dewatering, and discharge, as well as storm water and erosion control planning.

### *Coastal Zone Management*

The Federal Coastal Zone Management Act (CZMA) of 1972, established to support and protect the distinctive character of the waterfront, set forth standard policies for reviewing proposed development projects along coastlines. New York State Department of State (NYS DOS) administers the program at the state level and New York City Department of City Planning (NYC DCP) administers it in New York City. The program includes 44 statewide policies for waterfront protection and improvement and 12 policies specifically for New York City. Coastal policies and the project's consistency with these are discussed in Chapter 16, "Coastal Zone Management."

### *FEDERAL JURISDICTION OF SURFACE WATERS*

#### *Activities in Navigable Waters*

Section 10 of the Rivers and Harbors Act of 1899 gives ACOE jurisdiction over any structure in navigable waters. Section 10 requires a permit for construction of structures (such as piers and bulkheads) on or affecting navigable waters of the United States. For the permit to be issued, the project must not obstruct or alter navigable waters, present a significant adverse effect on the aquatic environment, or result in violations of water quality criteria. In addition, the project must result in public good. To the extent that the proposed project would result in the installation or rehabilitation of bulkhead in a navigable water (e.g., the East River), it would be subject to ACOE review.

#### *National Estuary Program*

The 1987 amendments to the Clean Water Act established a National Estuary Program. In 1988, Congress added the Peconic Estuary on Long Island to the priority list, and in 1991 the Peconic Estuary was officially approved as one of the nation's estuary programs. A Draft Comprehensive Conservation and Management Plan for the estuary was released in September 1999. Preparation of the plan was under the direction of the Suffolk County Department of Health Services, with financial and technical assistance from EPA and NYS DEC. There are many elements to the plan, but the foremost objective is to protect and restore ecologically the waters and adjacent coastal lands between the North and South Forks of eastern Long Island. The estuary features significant maritime resources and is home to many plant and animal species, including several nationally and locally threatened and endangered plants and animals. Moreover, the popularity of the region's ecological, cultural, and economic assets has generated an increase in both year-round and seasonal residents in recent years, with the result being increased pressure on the area's natural resources and water quality. In an attempt to preserve unique areas of open space, beaches, creeks, woodlands, and wetlands of this area, the Peconic Estuary Program delineates Critical Natural Resource Areas (CNRAs) to ensure that sensitive ecosystems are protected from the impacts of development.

CNRAs are geographically specific locations that currently have significant biodiversity and often require an extra level of protection to preserve their unique characteristics. In many cases, these areas are presently threatened by development or uses that could degrade their quality by jeopardizing habitat reproducing areas, feeding grounds, high concentrations of co-dependent species, or healthy natural coastal communities. CNRAs are also defined as deep water zones in excess of 3 meters, shallow water zones that remain submerged throughout the tidal cycle, shoreline zones periodically inundated by tides, freshwater wetlands, rivers and ponds, and terrestrial zones.

### *Floodplains*

Storm water is conveyed to a receiving water via the land's drainage system. An important component of this system is the floodplain, or the area low enough to hold flood waters during large storms. When the banks of rivers or streams overflow during a storm, the wide, flat floodplain spreads the water, reducing its velocity and force. The floodplain permits the water to flow more slowly to the stream or river and, in some cases, its vegetation removes pollutants. Thus, it is a very important element in protecting water resources.

Regulated floodplain areas have been defined by FEMA and include areas that flood during storms that have a 1 percent chance of occurring in any given year, which is equivalent to a likelihood of occurring once every 100 years (100-year storm). FEMA also maps the 500-year floodplains, but these are not regulated. Federal regulations require an analysis of impacts and options to avoid floodplain encroachment. FEMA has responsibility for mapping and regulating floodplain areas. Federal regulations stipulate that in the case of a "significant encroachment" on the floodplain by a proposed project, a finding of an "only practicable alternative" is required. While a project is permitted to encroach on the 100-year floodplain, this encroachment may not be significant. In addition to federal requirements, NYSDEC Environmental Conservation Law regulations (6 NYCRR Part 502) require state agencies contemplating projects in the floodplain to consider the effect of these actions individually as well as cumulatively with other projects in the vicinity. In New York City, Local Law 33 of 1988 regulates building in the 100-year floodplain. In all cases, habitable structures must be flood-proofed or raised above the 100-year floodplain.

### **GROUNDWATER**

In addition to the surface waters that could be affected by the project, the project areas in Long Island are located above an important groundwater resource. All of Long Island (including Brooklyn and Queens) is located above EPA-designated sole source aquifers. The aquifers supply all of the drinking water for Long Island and are vital to all of Long Island outside of New York City. In New York City, limited portions of the aquifer in southeastern Queens (away from the project areas) are used for drinking. In addition, the New York City Parks Department has applied non-potable groundwater for irrigation in parks in Queens. Groundwater beneath Manhattan and the Bronx is not used for drinking or non-potable purposes, and is not an issue with this project. The groundwater under Manhattan and the Bronx is contained in igneous and metamorphic rocks, and is not connected to the groundwater under Queens and Brooklyn, which is contained in sediments.

In 1978, EPA designated the Long Island aquifer as a sole source aquifer (*Federal Register*, 43, June 21, 1978), concluding that the system is the "principal source of drinking water" to the people of Long Island, and "if contaminated, would create a significant hazard to public health." As a result, federally funded projects must be reviewed by EPA to ensure that they do not adversely impact groundwater. This designation is made pursuant to the Safe Drinking Water Act, Section 14-24(e).

Nine Special Groundwater Protection Areas (SGPAs) are located within Nassau and Suffolk Counties. These SGPAs were designated by the Long Island Regional Planning Board, which was authorized by the State of New York (pursuant to Article 55 of the Environmental Conservation Law) to prepare the SGPA plan as a supplement to the Board's 1978 Regional 208 Study. The SGPA plan was completed in 1992 and certified by the commissioner of NYSDEC in April



1993. Plans for each area define various zones with appropriate management policies. The SGPAs are usually located in largely undeveloped or sparsely developed areas of Long Island that provide recharge to portions of the deep flow aquifer system. Groundwater protection in these areas requires avoidance or minimization of the impacts from land use activities that can have potentially harmful effects on groundwater. Although specific sources of pollutant loadings vary within the SGPAs, there are a number of similar issues including protection against contaminants that exceed the natural filtering ability of soils, and impacts from agricultural and recreational uses on the land, and the use and disposition of consumer projects. The SGPA maps reflect a range of policy recommendations dealing with land use categories, acquisitions, and other techniques needed to preserve these groundwater recharge areas.

### **ECOLOGICALLY SENSITIVE AREAS**

Significant or unique habitats and landforms are regulated by NYSDEC, NYSDOS, and local authorities. Areas such as wetlands, groundwater recharge areas or primary aquifers, or habitats critical to spawning of fish and animal populations must be given close examination. The quality, rarity, human use, and wildlife of such areas will dictate the severity of potential impacts and the level of required mitigation, if necessary.

### ***CRITICAL ENVIRONMENTAL AREAS***

NYSDEC has the authority to designate Critical Environmental Areas. These areas have unique ecological and environmental characteristics that are worthy of special protection. A project that would affect a Critical Environmental Area is required to be given detailed analysis of the potential impacts on natural resources and those characteristics. In New York City, the only Critical Environmental Areas are Jamaica Bay, its tributaries and tidal wetlands. The East Side Access Project is not located near Jamaica Bay, and does not affect any Critical Environmental Areas in New York City. Numerous Critical Environmental Areas exist on Long Island. Any Critical Environmental Areas near the potential Long Island yard sites are described in the discussions of those sites.

### ***SIGNIFICANT COASTAL FISH AND WILDLIFE HABITATS***

NYSDOS has designated Significant Coastal Fish and Wildlife Habitats in New York State under 6 NYCRR Part 600. These habitats have been evaluated and rated by NYSDOS in cooperation with NYSDEC, and have to be “protected, preserved, and where practical, restored so as to maintain their viability as habitats.” None of the New York City project sites are located near any of the designated Significant Coastal Fish and Wildlife Habitats. Numerous Significant Coastal Fish and Wildlife Habitats exist on Long Island. The increased train service along existing routes would not have any potential effects on these areas. Any Significant Coastal Fish and Wildlife Habitats near the potential Long Island yard sites are described in the discussions of those sites.

As part of the designation of these important areas, habitat area narratives and accompanying maps constitute a record describing the basis for these designations, and provide specific information regarding the fish and wildlife resources that depend on each designated habitat area. General information is also provided to assist in evaluating the effects of proposed activities on features that are essential to the viability of the habitats. This information is used in a habitat impairment test. This test must be met for any activity that is subject to consistency review under federal and state laws, or under applicable local laws. Under the habitat impairment test, “land

and water uses or development shall not be undertaken if such actions would destroy the habitat, or significantly impair the viability of a habitat.”

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area, or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as a reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include, but are not limited to: reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The tolerance range of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in mortality may occur as environmental factors fall beyond a tolerance limit. Many environmental factors, however, do not have sharply defined tolerance limits, but produce increasing emigration or mortality rates with increasing departure from conditions optimal for the species. Examples of generic activities and impacts that could destroy or significantly impair habitats are listed in the habitat designation reports.

#### *RARE, ENDANGERED, THREATENED, OR SPECIAL CONCERN SPECIES*

As part of the 1974 Endangered Species Act, several categories of federal status for plants and animals were created by the DOI, Fish and Wildlife Service. The regulations for the designations are contained in 50 CFR 17. Plants and animals can be listed as endangered or threatened, thereby receiving protection under federal law. Picking, damaging or destroying any protected plants on property not owned by the individual is illegal. Likewise, hunting, importing, exporting, or possessing protected animals is illegal. Under Section 7 of the Endangered Species Act, any federal agency that is sponsoring or assisting a project must coordinate with DOI for a determination of impacts on protected plants and animals.

Under New York State Environmental Conservation Law, NYSDEC maintains a list of plant and animal species that are considered rare, endangered, threatened, or of special concern. The regulations for the designations are contained in 6 NYCRR Parts 182 and 193. The classifications are slightly different for plants and animals. Plants can be considered endangered, threatened, rare, or vulnerable, while animals can be endangered, threatened, or of special concern. The state designations provide legal protection for endangered, threatened, or rare species; the designations of “vulnerable” and “special concern” do not provide legal protection. Picking, damaging, or destroying any protected plants on property not owned by the individual is illegal. Likewise, hunting, importing, exporting, or possessing protected animals is illegal.

## D. AQUATIC AND GROUNDWATER ENVIRONMENT

The natural aquatic and groundwater environment of the LITC and the specific areas directly affected by the East Side Access Project vary widely in condition and in potential for impact. The methodology for analysis and results of the assessment of existing conditions, future conditions common to all alternatives, and potential impacts of project alternatives on aquatic and groundwater resources are discussed below. The existing terrestrial resources (including vegetation and wildlife) and the project alternatives' effects on those resources are discussed in the next section of this chapter (section E).

### METHODOLOGY

#### *ASSESSMENT APPROACH*

The investigation focused on those locations where the project alternatives would involve construction or operational activities with the potential to result in adverse impacts. These areas include Grand Central Terminal (GCT) and the Manhattan tunnel alignment, the Sunnyside Yard/ Yard A area (Queens), Blissville Yard (Queens), Maspeth Yard (Queens), Fresh Pond Yard (Queens), and Highbridge Yard (Bronx). *In addition, the seven sites being assessed in this FEIS as potential rail storage sites on Long Island are considered (for more information on these sites, see Chapter 2).* Effects of project alternatives on each of the aquatic resources described above in section C were assessed, as appropriate. To establish the existing conditions in the study area and baseline data for the assessment, the following research was completed:

- Identification of wetlands within the study areas. United States Geological Survey (USGS) Watershed Maps, NYSDEC freshwater and tidal wetlands maps, and DOI National Wetlands Inventory (NWI) maps were consulted to identify specific wetlands and waters within the area. ACOE was contacted for the New York City sites to establish the need for any permits or consultation required for the implementation of the project.
- Review of water quality conditions using New York State Best Use Classifications and NYCDEP Harbor Water Quality Surveys, which document current and historic water and sediment quality conditions for the New York Harbor Area.
- Determination of floodplain encroachment in any of the study areas by reviewing Flood Insurance Rate Maps from FEMA.
- Review of National Oceanic and Atmospheric Administration (NOAA) maps of navigable waters for the water bodies with potential to be affected.
- Review of database records for the project study areas from NYSDEC's Natural Heritage Program (NHP), NYSDEC's Significant Habitat and Endangered Species units, the U.S. Fish and Wildlife Service, NYSDOS, and the National Marine Fisheries Service (NMFS). Each of these agencies were contacted to determine if they had records of rare and endangered species being present on the project site or if rare and endangered species could be affected by the project. Copies of the correspondence are provided in the natural resources appendix.
- Field observations of the New York City sites were conducted in 1999. At the Long Island yard sites *evaluated in this FEIS*, the sites were not available for visual inspection or field surveys. Therefore, these sites were observed, where possible, from their perimeters, and

aerial photographs of the sites were inspected. Data were also gathered from a number of sources including NYSDEC documents and local environmental impact statements.

## EXISTING CONDITIONS

### *NEW YORK CITY PROJECT SITES*

All of the New York City project sites are within developed areas. Water bodies located near one or more of the project sites include the East River (63rd Street Tunnel, Sunnyside Yard, Yard A/Arch Street Yard, Blissville Yard); Newtown Creek (Sunnyside Yard, Yard A, Blissville Yard, Maspeth Yard); Dutch Kills (Sunnyside Yard, Yard A, Blissville Yard); Maspeth Creek (Maspeth Yard); and the Harlem River (Highbridge Yard). Fresh Pond Yard is not near a surface water body. The surface waters are briefly described below.

The completed 63rd Street Tunnel lies beneath the East River just north of the Queensboro Bridge. The East River separates Manhattan from Queens, extending from the Upper New York Bay at the southern edge of Manhattan to the southern end of the Long Island Sound in northern Queens. Roosevelt Island divides the East River into the West Channel and East Channel. The East River is classified by NYSDEC as a Class I water. The best recreational usages of a Class I water, as determined by NYSDEC in accordance with the considerations prescribed by the Environmental Conservation Law, 6 NYCRR Part 701.10-710.14, are secondary contact recreation and fishing (see Table 15-1, above). Secondary contact recreation involves recreational activities where contact with the water is limited, such as boating. Class I waters are also suitable for fish propagation and survival. The Harlem River, which separates Manhattan from the Bronx, extends from the Hudson River at the northern tip of Manhattan to where it meets the East River at the southern end of Wards Island. It is also classified by NYSDEC as a Class I saline surface water.

The groundwater under Manhattan and the Bronx is not generally used. A true aquifer does not exist in the bedrock under Manhattan or much of the Bronx. Tests of the groundwater have shown that it is not suitable for use as drinking water. The groundwater under Manhattan and the Bronx has not been given a water quality classification. However, in New York State, all groundwater is considered to Class GA (drinking water) unless otherwise classified. Therefore, the groundwater is considered to be Class GA even though it is generally not potable.

Newtown Creek is located east of the East River, and serves as the boundary between Queens and Brooklyn. Dutch Kills is a small branch of Newtown Creek which terminates approximately 400 feet south of Sunnyside Yard. Maspeth Creek is also a small branch of Newtown Creek, terminating approximately 400 feet southwest of Maspeth Yard. Newtown Creek, Dutch Kills, and Maspeth Creek are classified by NYSDEC as Class SD saline surface waters. The best usage of a Class SD water is fishing. It is suitable for fish survival but not fish propagation, and does not meet the requirements for either primary or secondary contact recreation.

No significant or unique habitats were identified in any of the New York City project sites during the request for information from the various agencies regulating critical habitats and endangered species, and none of the proposed project areas is on NYSDEC's Critical Environmental Areas list, last updated in June 1999. The project sites are not close to any of the 15 Significant Coastal Fish and Wildlife Habitats in New York City.

### *Grand Central Terminal and Manhattan Alignment*

The only existing natural resource that would be affected by the project in Manhattan would be groundwater. No known organisms are found in the bedrock. The tunnels do not have any surface expression. The ventilation shafts and substations would be located in existing structures or below existing paved streets and sidewalks. As discussed above, no true aquifer exists in the Manhattan bedrock, but groundwater could be found in the area where new tunnels are planned.

### *Sunnyside Yard and Yard A*

Sunnyside Yard is located more than 1,000 feet from the East River (Class I) and Newtown Creek (Class SD), but is approximately 400 feet from the north end of Dutch Kills. Development and streets lie between the yard and this waterbody. Yard A/Arch Street Yard is not close to a surface water resource. However, a drainage system serving the yards discharges to Dutch Kills as well as to the city sewer system, and a portion of this area is included in the 100- and 500-year floodplain (see Figure 15-1). Newtown Creek and Dutch Kills generally do not attain the goals of their water quality classifications. Few aquatic species are known to exist in Newtown Creek or Dutch Kills because of the high level of pollution.

In Sunnyside Yard, no wetland indicator species were observed during the site inspection. Soil borings taken from April to July 1999 indicate moist soils with groundwater at 7 to 12 feet below grade. One potential wetland area was noted along the northeast boundary of Yard A adjacent to the offsite industrial buildings. Phragmites and cottonwood predominated in this region. Soil borings installed in April 1999 showed this area to have a relatively shallow depth to groundwater, approximately 2 to 4 feet below grade. This pocket of lowland was small, approximately 3,000 to 5,000 square feet in area, and was not examined for hydric soils. This small, linear depression most likely receives surface runoff that cannot drain fully because of the shallow groundwater table. It has low value as a potential wetland resource and does not provide any sensitive habitat or ecological function.

### *Blissville Yard*

Blissville Yard lies within the coastal zone approximately 300 feet southeast of Dutch Kills (Class SD) and 200 feet northeast of Newtown Creek (Class SD). Most of the site is within the 100- and 500-year floodplains (see Figure 15-2). However, the land between the yard and the water bodies is developed and industrial. Stormwater from the yard area both percolates into the ground and runs off by overland flow to local sewers. The yard is now abandoned and mostly vegetated. No species indicative of wetlands were observed. The depth to groundwater was recorded by the USGS as less than 10 feet below grade. Dutch Kills and Newtown Creek generally do not attain the goals of their water quality classification. Few aquatic species are known to exist in Dutch Kills or Newtown Creek because of the high level of pollution.

### *Maspeth Yard*

Maspeth Yard lies north of the end of Maspeth Creek (Class SD) and the majority of its area is within the coastal zone. However, it is not in a mapped floodplain, and its surfaces drain to local sewers or recharge to the ground. The yard therefore has at most a very minimal relationship to this surface water body. The yard is developed and mostly without vegetation. Some pioneer species can be found in little-used areas of the yard. No wetland indicator species were observed. Monitoring well data collected in May 1999 indicated the depth to groundwater as 8 to 15 feet below grade, and hydrology at this site did not indicate wetlands. Maspeth Creek

generally does not attain the goals of its water quality classification. Few aquatic species are known to exist in Maspeth Creek because of the high level of pollution.

#### *Fresh Pond Yard*

Fresh Pond Yard is not near a surface water body and is not within a mapped floodplain. No wetland species were observed during the site inspection. The site is characterized by dry, sandy soil and gravel. The depth to groundwater was recorded by the USGS as 10 to 20 feet below grade, and the hydrology at the site did not indicate wetlands.

#### *Highbridge Yard*

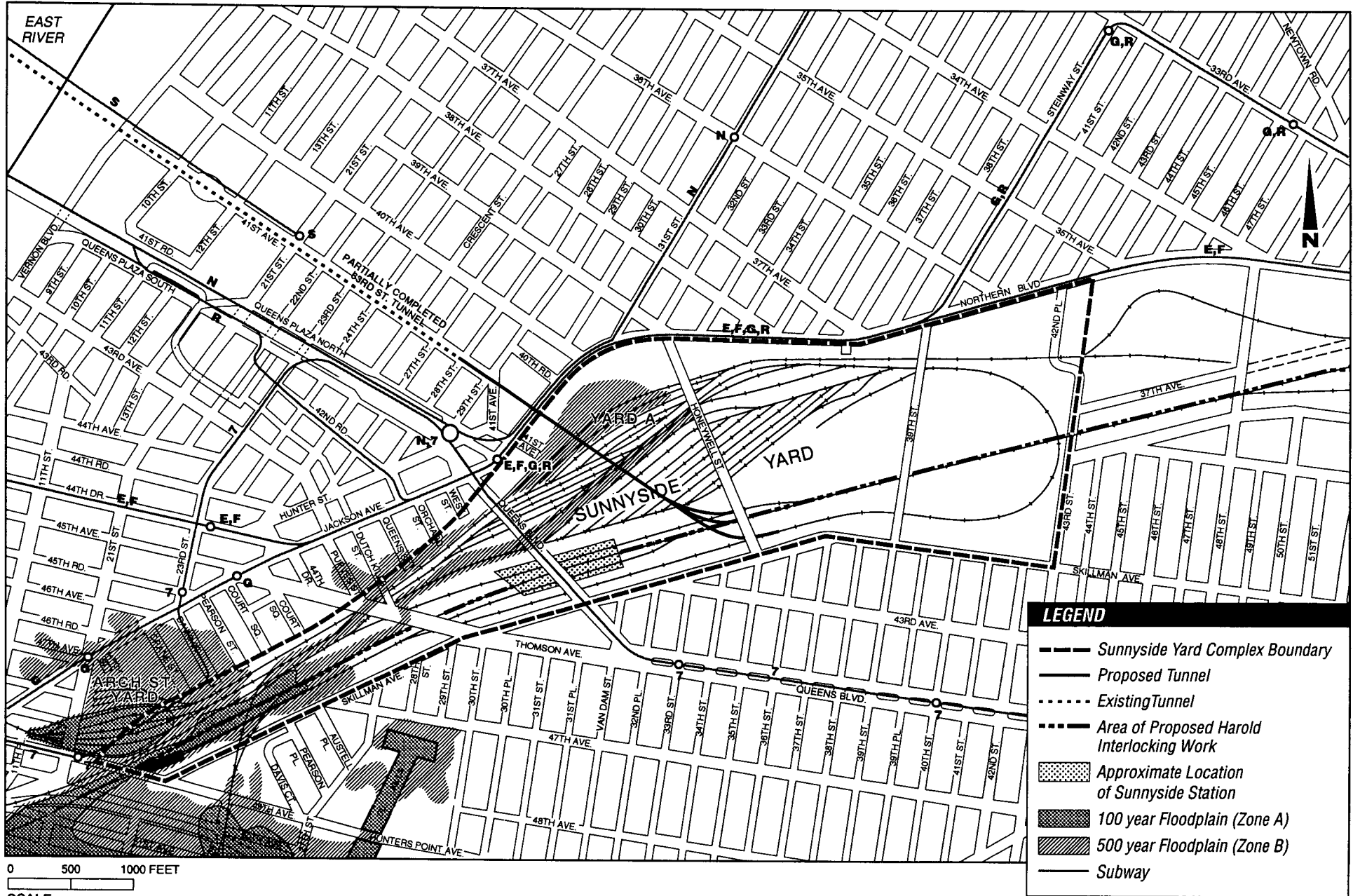
Highbridge Yard is situated on the east bank of the Harlem River in the coastal zone, approximately 1/3 mile south of the Alexander Hamilton Bridge. The entire yard is within either the mapped 100- or 500-year floodplain (see Figure 15-3). Storm water from the yard is currently discharged directly into the Harlem River. The Harlem River is Class I and generally meets the goals of this water quality classification.

The Harlem River is designated by NYSDEC as a littoral zone of a tidal wetland (that portion of a tidal water that is shallow enough to let sunlight penetrate to the land on the bottom). The biological importance (i.e., the contribution to marine food production) of littoral zones varies greatly, although typically little vegetation grows in these zones because of the high turbidity of the waters. An existing riprap wall running north and south along the shoreline separates the Harlem River from Highbridge Yard. A site reconnaissance was conducted and the wall appears to be functional. According to NYSDEC regulations, this riprap wall limits their jurisdiction and ends the adjacent area of the tidal wetlands.

One potential freshwater wetland area was noted east of the yard boundaries, along the wall of the Major Deegan Expressway. Phragmites predominated in this small region, which was approximately 1,000 to 3,000 square feet and was not examined for hydric soils. This small, linear depression most likely receives surface runoff from the Major Deegan Expressway, with a shallow groundwater table preventing total drainage, as occurs elsewhere on-site. It has low value as a potential wetland resource and does not provide any sensitive habitat or ecological function.

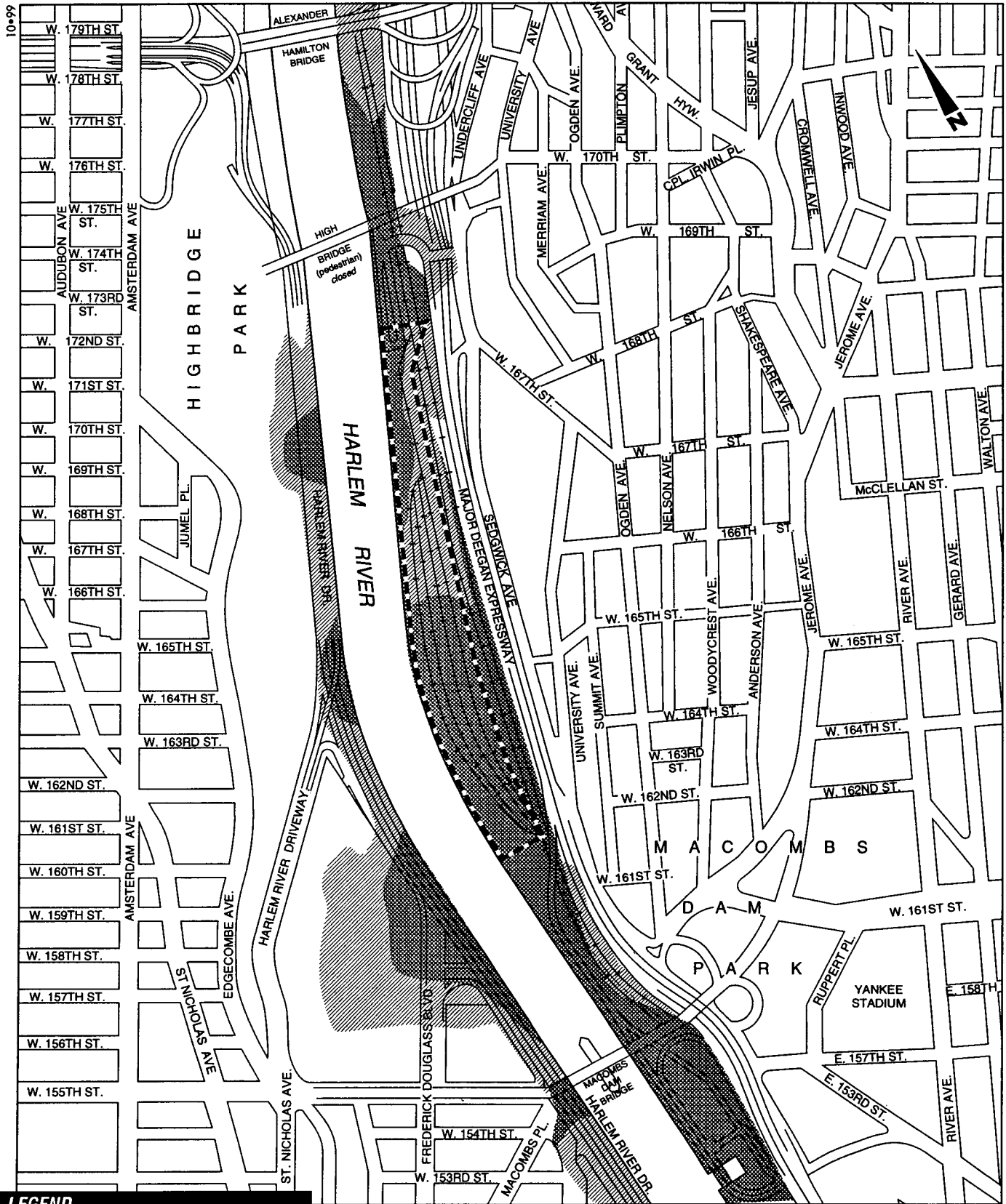
Soil borings installed at Highbridge Yard in April 1999 indicate groundwater 6 to 8 feet below grade.

The Harlem River is populated by a number of aquatic species. It has a relatively low value as a residential fish habitat, but it does serve as a migratory route from the Hudson River to the Long Island Sound and East River. Striped bass, shad, bluefish, and American eel use the Harlem River during their seasonal migrations. Conditions in the river that limit utilization by fish at various times of the year include swift currents, lack of protected habitats, and lack of food sources. The swift currents scour the bottom and prevent accumulation of sediment, thus limiting the bottom community on which fish feed. The few soft bottom communities present along the edges of the river are not highly productive. The lack of shallow water habitat and the swift currents limit the population of forage fish. According to the U.S. Fish and Wildlife Service, the shortnosed sturgeon, an endangered species, is found in the Hudson River, with which the Harlem River connects.



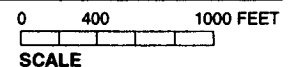
***Figure 15-2***  
***Floodplain: Blissville Yard***





**LEGEND**

- Highbridge Yard Boundary
- 100 year Floodplain (Zone A)
- 500 year Floodplain (Zone B)



### *LONG ISLAND YARD SITES*

As discussed above, three aquifers are located under much of Queens and all of Long Island. The uppermost of the aquifers is used in southern Queens for watering lawns and car washing. The two lower aquifers are the sole source of drinking water on Long Island, but are only used to a limited extent in southeastern Queens. The upper aquifer is often separated from the lower two aquifers by a lens of sediment (aquitar) that limits the interconnectedness of the aquifers. However, the aquitar is frequently punctured or missing and some groundwater does make its way from the upper, non-potable, aquifer to the two lower potable aquifers.

#### *Cerro Wire Site*

There are no streams, water bodies, or mapped wetlands on or near the site and the site does not fall within the 100-year floodplain. The site is not in a designated Special Groundwater Protection Area. Groundwater at the site, as elsewhere on Long Island, is protected pursuant to the Safe Drinking Water Act and county regulations.

#### *Babylon Site*

Just west of the yard site, Sampwams Creek passes beneath the Long Island Rail Road (LIRR) tracks and Route 231, flowing south to the Great South Bay. The creek is one of a number of South Shore Estuary coastal tributaries to the Great South Bay. It is designated by NYSDEC as a Class C fresh surface water. The best use of Class C waters is primary and secondary contact recreation (although other factors may limit its use for these purposes), as well as fish propagation and survival. The westernmost portion of the site, in close proximity to the stream, is within the 100-year floodplain and may be partly within a mapped NYSDEC freshwater wetland. *The Babylon site is located in the coastal zone.*

Farther south, the creek becomes tidal, and portions of the creek are designated as a Critical Environmental Area by the Town of Babylon. Sampwams and the other creeks of the Great South Bay provide important freshwater input to the estuarine environment of the bay. Generally, these creeks are short in length, with small watersheds, and they support important finfish, shellfish, and avian habitats. The lower tidal portion of Sampwams Creek is known to possess herring populations.

The Babylon site is not in an SGPA. Groundwater at the site is protected pursuant to the Federal Safe Drinking Water Act as well as county regulations.

#### *Yaphank East Site*

Just east of the Yaphank East site is the Carmans River. One of the major streams on Long Island, along with the Peconic River, the Carmans River is a major freshwater contributor to Bellport Bay and the larger Great South Bay. This upper reach of the Carmans River is designated as a Class C fresh surface water by NYSDEC. As noted above, the best use of Class C waters is fishing and these waters are intended to be suitable for fish propagation and survival. The water quality shall also be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

A broad corridor along the river is designated as a freshwater wetland by NYSDEC (there are approximately 868 acres of wetlands designated as Class I along the Carmans River). The project site may fall within the wetland's regulated 100-foot buffer area. Even if it is outside the buffer area, based on a review of local topography, the site is within the watershed of the river. In

addition, immediately along the river there is also a mapped 100-year floodplain. This floodplain is relatively narrow and no portion of the project site appears to fall within the floodplain.

South of Southaven Park and the Sunrise Highway, the lower reaches of the Carmans River, in the Wertheim Wildlife Refuge and nearer Bellport Bay, are tidal. In addition to finfish, this is also an area that contains abundant shellfish beds. This lower stretch of the Carmans River is designated a Class SC saline surface water. Like Class C, the best use of Class SC waters is fishing and these waters are intended to be suitable for fish propagation and survival. The water quality shall also be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

Because of its vital vegetation and wildlife values, and generally pristine character, the river and corridor are designated as a New York State Wild and Scenic River. This designation affords the river corridor protections against clearing and other direct and indirect impacts (e.g., indirect water quality impacts). In addition, all of Southaven County Park and sections of the Carmans River north of the Long Island Expressway are designated Critical Environmental Areas.

The river contains spawning brown trout, although spawning success, fry survival, and contribution to sea stocks is unknown. With its anadromous and resident salmonid populations, this South Shore Estuary tributary is designated as Significant Coastal Fish and Wildlife Habitat by NYSDOS from its mouth at Bellport Bay, north for about 5 miles, or to the river headwaters in Cathedral Pines County Park (north of the Long Island Expressway). It is reported that an abundance of freshwater fish including brook trout, brown trout, rainbow trout, yellow perch and carp are present in the headwaters (the river is one of a few on Long Island that is stocked by the state with freshwater fish). State-protected tiger salamander have also been observed in the river corridor. The river is a popular area managed for trout fishing. It is bounded in large part by public lands and is thus accessible and well protected.

Vegetation along this reach of the river is pine-oak forest and deciduous forested wetlands. The habitat is part of the Central Pine Barrens core preservation area and is known to host a variety of state-protected species including silvery aster, whip nut-rush, and southern yellow flax. In addition to its value as a vegetation habitat, the river is also important wildlife habitat; it is known to host nests for osprey as well as red-tailed hawk, marsh wren, and many species of waterfowl. White tailed deer, eastern cottontail, raccoon, and muskrat also use the river corridor for nesting and foraging. (Terrestrial resources are discussed in more detail below in section E of this chapter.)

The Yaphank East site is just south of the Central SGPA, designated by the Long Island Comprehensive Special Groundwater Protection Area Plan. Central Suffolk is the largest of the nine SGPAs on Long Island, covering about 125,000 acres, including about 40 percent of the land in the Town of Brookhaven. The major vegetation association found within the SGPA is the pine-oak forest (primarily pitch pine) and part of the Long Island Pine Barrens. As described earlier in section B, groundwater protection in the designated SGPAs requires avoidance or minimization of the impacts from land use activities that can have potentially harmful effects on groundwater. Although specific sources of pollutant loadings vary within the SGPAs, there are a number of similar issues including protection against contaminants that exceed the natural filtering ability of soils, and impacts from agricultural and recreational uses on the land, and the use and disposition of consumer projects. Groundwater beneath the Yaphank East site is also protected pursuant to the federal Safe Drinking Water Act as well as county regulations. Groundwater flow below the site is to the south.

*Yaphank West Site*

The Yaphank West site is away from the Carmans River and is not near any other surface waters or wetlands. It therefore does not have the same issues with respect to surface waters, freshwater wetlands, floodplains, or protected area designations as with the Yaphank East site. As with all sites on Long Island, groundwater is protected pursuant to the Safe Drinking Water Act as well as county regulations.

*Ronkonkoma Site*

The site is not located near or along streams or waterbodies. There are mapped freshwater wetlands in the general area, but they lie to the north and across the existing rail line. The site is not within an SGPA, but it is protected pursuant to the federal Safe Drinking Water Act as well as county regulations.

*Pilgrim Hospital Site*

There are no waterbodies on or near the project site; thus there are no floodplains or major wetland systems. A small depression on the site appears on the US Geological Survey Maps and could be a regulated federal wetland; there are, however, no state-regulated wetlands.

The site is within the Oak Brush Plains SGPA, one of the more developed of Long Island's nine SGPAs. This small SGPA covers approximately 3,000 acres and extends from Hauppauge Road to Long Island Avenue, in the vicinity of the Long Island Expressway/Sagtikos State Parkway. This west central Suffolk SGPA is located in Hydrogeologic Zone I, which contributes groundwater to the Magothy Aquifer. As defined by the plan, Zone I requires the "most careful management." Although a large part of Zone I is built and subject to pollutant loads, several sections are still relatively undeveloped.

The two unique aspects of the Oak Brush Plains SGPA are the nature of the existing vegetative cover and the predominance of institutional land uses in the area. The shrubby heath-oak brush thickets make up the largest single area of its kind on Long Island. The Oak Brush Plains SGPA provides part of the approximately 1,400-acre Edgewood Oak Brush Plains habitat. Institutional land use (the Pilgrim State Hospital and the Suffolk County Community College western campus) covers about 763 acres of the SGPA (24 percent). Land used for utility purposes also cover another 771 acres (25 percent of the total SGPA land). With recent acquisitions, about 760 acres is permanently protected in the Edgewood State Preserve.

The SGPA Plan states that the groundwater below this SGPA has been impacted to varying degrees by point and non-point source contamination associated with residential and institutional land use activities. However, the plan outlines a number of ways to mitigate these impacts from existing and proposed development. Several policy recommendations include: planning for the extension of the Southwest Sewer District collection system to serve Pilgrim State Hospital and prohibiting any new development on the hospital or the Suffolk County Community College campus until that connection is made; investigating the feasibility of connecting industrial and commercial establishments to an extended collection system; and expanding regulatory activities and remedial efforts to preclude avoidable contamination and reduce, where feasible the impact of earlier storage and disposal practices.

With regard to land use recommendations for the area, the SGPA Plan proposes that the residential, commercial, and utility land uses in the area be increased modestly, whereas the plan recommends that open space within the SGPA be increased by approximately 200 acres (from

825 to 1,023 acres of open space land). In part, this objective was achieved through the acquisition of the former multi-town resource recovery site and its addition to the Edgewood State Preserve. The plan further recommends that the existing 367 acres of vacant land become open space and the amount of industrial, institutional, and agricultural land be reduced slightly. For the area currently occupied by Pilgrim State Hospital, the plan recommends institutional land use mixed with open space. Vacant or industrial uses are recommended for the lands proposed for the connecting rail line.

In addition to the SGPA protections, groundwater beneath the site is also protected by the Safe Drinking Water Act and county regulations.

#### *Riverhead Site*

The proposed Riverhead Yard site is located east of Saw Mill Creek and west of and adjacent to Indian Island County Park and a heavily wooded area bordering Flanders Bay. The surrounding area and the site are part of the Saw Mill Creek watershed, a designated freshwater wetland Area that is a Critical Natural Resource Area under the Peconic Estuary Program. This CNRA is defined as an area of ecological significance because it sustains a unique estuarine habitat of fish, invertebrates, and bird species that thrive in the mix of fresh and salt water. This mix of species, some of which are endangered, are considered to be vital components of a healthy estuary system. *The Riverhead site is located in the coastal zone.*

The site itself contains no wetlands and does not lie within the 100- or 500-year floodplains. Like the other sites, the property falls within the protected Long Island sole source aquifer and groundwater is also protected by county programs.

#### **FUTURE CONDITIONS COMMON TO ALL ALTERNATIVES**

Future conditions of the study area waters are expected to improve as a result of pollutant load reductions and the resulting water quality improvements. Current and planned activities include:

- Combined Sewer Overflow Abatement—NYCDEP anticipates that as many as 12 retention facilities will be required citywide. The program currently consists of eight facility planning projects: four areawide projects (East River, Jamaica Bay, Inner Harbor, and Outer Harbor) and four tributary projects (Flushing Bay, Paerdegat Basin, Newtown Creek, and Jamaica Tributaries). Implementation of this program is expected to continue through at least 2006.
- New York Harbor Estuary Program and Bight\* Restoration Plan—This plan concentrates on water pollution problems within the bight, but targets management strategies in New York Harbor and the surrounding coastal region. The collaborative framework of the Harbor Estuary Program/Bight Restoration Plan provides a unique opportunity to characterize estuarine and ocean-related problems, develop solutions, and incorporate these findings into long-range implementation strategies, with recommendations for protecting the New York Harbor and the New York Bight.
- Long Island Sound Comprehensive Conservation and Management Plan—This plan focuses on relieving oxygen-deficient water conditions—also known as hypoxia—in western Long Island Sound as its highest priority as well as on reducing nitrogen, but also addresses other

---

\* A bight is defined as a bend in the coast that forms an open bay, in this case, the New York Bight, which extends from Cape May, New Jersey, to Montauk Point, New York.

water quality problems, such as toxics, pathogens, floatables, and the effects on living marine resources within the Sound.

- Continued implementation and operation of the citywide floatables program, industrial pre-treatment, and nutrient reduction programs.
- Development of a comprehensive floatables plan.
- Toxics reduction.

In addition, waters within the study area could improve as a result of similar efforts in the States of New Jersey and Connecticut as well as in other New York State municipalities that discharge to the Hudson River and western Long Island Sound.

### **PROBABLE IMPACTS OF THE PROJECT ALTERNATIVES**

This section presents the potential impacts on aquatic resources by the various alternatives. The potential impacts are presented by each alternative. Under the Preferred Alternative, the impacts are presented by site, starting with the New York City sites and then the Long Island sites.

#### ***NO ACTION ALTERNATIVE***

##### ***New York City Project Sites***

The No Action Alternative would have no direct or indirect adverse effects on aquatic resources in the project's study areas. As discussed above under "Future Conditions Common to All Alternatives," however, the City of New York is in the process of implementing several projects that are expected to improve future water quality in the waters surrounding the city. The indirect benefits of the Preferred Alternative on regional air quality and their related effect on the study area's natural resources would not occur. Specifically, as discussed in Chapter 10, "Air Quality," the Preferred Alternative would reduce vehicular emissions throughout Long Island and parts of New York City. While it is not possible to quantify the beneficial effects of the reduced deposition of certain airborne pollutants (acid aerosols and ozone) on the study area's natural resources, under the No Action Alternative, this benefit would not occur.

##### ***Long Island Yard Sites***

As described in Chapter 2, under the No Action Alternative, a new yard would be constructed on the Port Jefferson Branch, as well as adjacent to the existing Babylon Yard and Ronkonkoma site.\* These yard facilities would be smaller than those of the Preferred Alternative, and therefore would likely have similar, but lesser effects on aquatic resources than those discussed below for the Preferred Alternative.

#### ***TRANSPORTATION SYSTEMS MANAGEMENT (TSM) ALTERNATIVE***

##### ***New York City Project Sites***

As described in Chapter 2, "Project Alternatives," the TSM Alternative consists of three components: increasing LIRR train length, increasing train service to the Long Island City and

---

\* See page S-6 of the Executive Summary or pages 2-1 through 2-5 of Chapter 2, "Project Alternatives," for a discussion of the No Action Alternative.

Hunterspoint Avenue train stations, and constructing a contraflow bus/taxi lane on the Long Island Expressway (LIE) in Queens.

The potential impact on aquatic resources would be related to the possible secondary elements of the increased train service to Long Island City. If this increase in train service causes an increase in the demand for ferry service from Long Island City to East 34th Street that exceeds the capacity of the existing ferry slip in Queens (currently sufficient to handle a 250-passenger ferry), an additional ferry slip in Long Island City may have to be constructed. Should such a slip be required, it would undergo its own environmental review. At the least, permits from appropriate agencies such as NYSDEC and ACOE would be necessary and these agencies would conduct the environmental review. They would ensure that the construction of such a slip would not have adverse impacts on aquatic resources.

#### *Long Island Yard Sites*

As with the No Action Alternative, the same yard facilities would be constructed *on the Port Jefferson Branch* and adjacent to the Babylon and Ronkonkoma sites. These yard facilities would be smaller than those of the Preferred Alternative, and therefore would likely have similar, but lesser effects on aquatic resources than those discussed below for the Preferred Alternative.

#### *PREFERRED ALTERNATIVE*

This analysis considers the Preferred Alternative's effect during operations on the aquatic and groundwater resources at each of the project sites. The existing terrestrial resources and the Preferred Alternative's effects on those resources are discussed in the next section of this chapter (section E). Consistency with the Coastal Zone Management policies contained in New York City's Local Waterfront Revitalization Program for the New York City sites and New York State policies for the Long Island sites, where relevant, is discussed in Chapter 16, "Coastal Zone Management." Effects on aquatic and groundwater resources during construction, including dewatering, are discussed in Chapter 17, "Construction and Construction Impacts."

#### *New York City Sites*

*Grand Central Terminal and Manhattan Alignment.* Under either Option 1 or Option 2, these project sites are not associated with surface waters or wetlands and thus the Preferred Alternative would have no impact on them. Groundwater may be affected by the tunneling for the track alignment and Option 2 (deeper station in Grand Central Terminal). However, as described in Chapter 17, "Construction and Construction Impacts," the tunnel would be constructed in Manhattan so as to limit the effect on groundwater. The groundwater in Manhattan is not used for any purpose and is not a recharge site for other groundwater locations. Therefore, no significant adverse impact on groundwater is expected.

*Sunnyside Yard and Yard A.* The project would add new facilities and tracks in Yard A/Arch Street Yard, and minor changes to Sunnyside Yard and the Main Line tracks adjacent to Sunnyside Yard. *The cleaning and maintenance facilities to be constructed in the Sunnyside Yard complex would be designed incorporating the recommendations of EPA for reducing pollution generated by these activities.* An internal separate stormwater system exists within the yard area, and this system would be used to collect runoff that is generated from the affected areas. The new facilities in Yard A would increase the amount of impervious area, and therefore could lead to additional runoff. To accommodate these new flows, the stormwater system

serving Yard A would be supplemented by new catch basins and storm sewers. Using the existing and new stormwater system serving Yard A and Sunnyside Yard would keep storm water separate from the sanitary sewage that is generated in the yards' facilities.

Throughout New York City, the city sewers are combined, which means that while sanitary sewage normally flows to water pollution control plants through the combined pipes, during rain storms, when stormwater runoff enters the system, the volume is too great to be handled by the plants, and the combined runoff and sanitary sewage are discharged into nearby surface waters. However, NYCDEP limits the volume and rate of runoff that can be discharged into the combined city sewers. This limit recognizes both the ability of the city system to handle the flows and the effects of the combined sewer discharge into nearby waterways. Based on NYCDEP's limits, the discharge of stormwater from the project is not expected to have an adverse impact on Dutch Kills or Newtown Creek, the surface waters near the railroad yards to which sewers connect.

Portions of the western end of Sunnyside Yard and Arch Street Yard, in the location of the tunnel portals for the four East River tunnels to Penn Station, are located within the 100-year floodplain. However, the proposed construction in this area involves only minor improvements to an existing rail right-of-way. The area is already developed, so the project is not eliminating the primary beneficial floodplain characteristics that exist now.

A very small area in Yard A and another in Arch Street Yard contain phragmites, vegetation typically associated with wetland areas. These depressed areas are not valuable wetland resources and are not mapped as NYSDEC-regulated wetlands. The depressions are less than 1/8 acre and work there would be allowed under ACOE's nationwide permit (NWP) program. ACOE has determined, in connection with issuance of its NWPs, that activities allowed under the NWP program do not have the potential for an adverse environmental impact.

As is detailed in Chapter 17, "Construction and Construction Impacts," some dewatering would be required in the early stages of construction at Yard A. However, to avoid affecting groundwater flow at the yard, special construction techniques would be employed. These would include using a virtually watertight slurry wall to surround the excavation area and using a pressurized tunnel boring machine to pass beneath Sunnyside Yard (see Chapter 17 and also Chapter 14, "Contaminated Materials.") Once operational, the project would not affect groundwater beneath Yard A or Sunnyside Yard. Therefore, no significant adverse impact on groundwater is expected.

***Blissville Yard.*** Blissville Yard is situated within the 100-year floodplain. However, it is not located within a floodway (as all flooding in this area is tidally driven, and not caused by riverine systems), and most of the construction activities involve rehabilitating an existing but unused rail yard. This construction would therefore not be considered a significant encroachment and would not result in any increases in flood levels in surrounding areas.

The improvements to the existing rail yard would not support incompatible floodplain development because the development already exists. Any construction that would take place within the 100-year floodplain would not increase flooding risks, impact on natural and beneficial floodplain values, or support probable incompatible floodplain development. Therefore the Preferred Alternative would not constitute a floodplain encroachment.

***Maspeth Yard.*** Although the majority of Maspeth Yard is within the coastal zone, it is not in a mapped floodplain and it has at most a very minimal relationship to Maspeth Creek. Its



surfaces drain to local sewers or recharge to the ground. Since the yard is developed and mostly without vegetation and only track modifications and shallow utility work are proposed, the Preferred Alternative would not have significant impacts on aquatic resources. *(Further, as noted in Chapter 2, NYAR is no longer considering development of this site as a replacement rail storage yard.)*

*Fresh Pond Yard.* A maintenance facility for diesel trains is proposed at Fresh Pond Yard. The facility would use detergents, oil, and solvents. Their use would be within enclosed buildings and would not be discharged in the stormwater runoff. New York City Administrative Code 15 RCNY 19, Use of Public Sewers, Sections 19-01 through 19-04 establishes industrial discharge limits for several toxic substances. These limits are based on federal regulations governing the Industrial Pretreatment Program (IPP), which is locally administered by NYCDEP. Pre-treatment systems would be designed and specified to meet industrial discharge limits as administered by NYCDEP. Meeting IPP limits would ensure that the project's discharges to the sewer system would not have an adverse impact on water quality. *In addition, pollution source reduction techniques and prevention strategies, as recommended by the EPA's Office of Pollution Prevention, would be incorporated into the design of the maintenance facilities.*

Since the site is not near a surface water body or within a mapped floodplain and there are no wetlands on site, the Preferred Alternative would not have significant impacts on aquatic resources.

*Highbridge Yard.*

*Potential Effects on the Harlem River.* At Highbridge Yard, controls instituted during construction would prevent adverse effects on water quality in the Harlem River (see Chapter 17, "Construction and Construction Impacts," for further discussion). Once the project is operational, the wastewater and stormwater systems to be included in the new yard would prevent the Preferred Alternative from introducing new sources of pollution to the Harlem River. Issues related to industrial discharge, stormwater runoff, and releases of sediment, silt, and other contaminants during project operation are discussed below.

- *Industrial Discharge.* As described in Chapter 2, proposed construction at Highbridge Yard includes the development of six storage and servicing tracks, one locomotive inspection pit, two runaround tracks, a two-track car appearance facility, an employee access platform, and an employee parking lot. Development of additional facilities, including a car wash and five diesel consist tracks, may occur as part of related MNR construction. These new facilities would use various materials, such as cleaning fluid or solvents. *As with the other cleaning and maintenance facilities to be constructed as part of the project, EPA recommendations for reducing pollution generated by cleaning and maintenance facilities would be incorporated into the design.*

An industrial discharge evaluation would be made for the various types of waste streams generated at the Highbridge Yard that would be discharged into the New York City sewer system. These types of discharges may include discharges from storage and maintenance facilities, train car wash systems, train car sanitary waste removal operations, fueling pad area storm water and other industrial-related discharges. As described earlier in the discussion of Fresh Pond Yard, New York City law establishes industrial discharge limits for several toxic substances, based on federal regulations governing the Industrial Pretreatment Program (IPP), which is locally administered by NYCDEP. Pre-treatment systems would be

designed and specified to meet industrial discharge limits as administered by NYCDEP. Meeting IPP limits would ensure that the project's discharges to the sewer system would not have an adverse impact on water quality.

- *Stormwater Runoff.* None of the industrial discharges would be in the stormwater. The use of cleaning fluids and solvents would be in enclosed buildings and contained within those buildings.

Changes to the current patterns of stormwater drainage and runoff are expected as a result of the construction of additional buildings and an increase in the impervious (paved) area on the site. The project would create a new stormwater system at Highbridge Yard, where there currently is none. The system would be designed to properly convey storm water from roads and walkways while minimizing the volume of water that has to be collected, conveyed, and discharged. To handle the sediment and sand expected in the stormwater runoff from paved parking areas and service aisles, storm water would be collected and piped through a gross particle separator (GPS) before discharging into a storm drain trunk line feeding to a stormwater oil/waste separator.

The storm drain system would be designed for a 10-year storm event with the full yard development. Roof drains from all buildings would also be connected to the storm drainage system. The storm drain system would be designed as a sanitary system with gasketed pipe joints and neoprene boots at structures to prevent infiltration of groundwater into the storm drainage system.

A new application for a SPDES stormwater permit for the Highbridge Yard would be completed based on the final design and NYSDEC regulations.

- *Increase of Silt and Other Contaminants During Construction.* Controls would be instituted during construction to prevent soil erosion and runoff of sediment, silt, and other contaminants into the river. Controls include construction of silt fences and covers for exposed dirt and excavated areas to prevent soil erosion and an increased load of sediment, silt, and other contaminants to the Harlem River.

Stormwater drains directly connected to the Harlem River would drain to the river during a storm event. Drains connected to the combined sewer system would be discharge runoff to city sewers. In either scenario, silt and sediment caused by construction activities would be removed from storm water prior to discharge.

*Floodplains.* The Highbridge Yard lies within the 100- and 500-year floodplains. The construction of the expanded yard as part of the Preferred Alternative would bring the ground level to above the 100-year floodplain. This construction and the small number of additional structures to be built within this area would not be considered a significant encroachment or result in any increases in flood levels in surrounding areas. The design of the storage and maintenance facilities would meet the applicable floodplain management criteria for state projects in flood hazard areas in accordance with 6 NYCRR Part 502.

*Tidal Wetlands.* As discussed above under "Existing Conditions," Highbridge Yard lies along the Harlem River, which is a tidal wetland. A riprap wall is currently in place. Any construction that would occur in or near the tidal wetland would be reviewed with the ACOE for compliance with Section 10 of the Rivers and Harbors Act for work in a navigable water and Section 404 of the Clean Water Act. The New York State Public Authorities Law

exempts MTA from the need to obtain state wetlands permits on sites previously in transportation use where the general character of the prior transportation use at that site will not change.

*Freshwater Wetlands.* A very small area in Highbridge Yard contains phragmites, vegetation typically associated with wetland areas. However, it is not anticipated that this area would be within the construction footprint or otherwise disturbed by construction.

#### *Long Island Sites*

As described in Chapter 2, *new nighttime storage yards to be developed* on Long Island would not house maintenance facilities. Only light cleaning and toilet servicing would occur at those sites. Wastewater would be discharged to sewers, where they are available. Where no sewers are available, wastewater from toilet servicing would be removed by truck and wastewater from cleaning would be discharged to a leaching field.

*Cerro Wire Site.* With the exception of groundwater protection, there are no aquatic issues associated with the *Cerro Wire* site. Given the importance of the Long Island sole source aquifer, and the level of federal, state, and local protection, it is critical that any activities proposed for the yard not significantly impact groundwater or contravene state groundwater standards and drinking water standards. The wastewater at the site would be discharged to the sewer system, as described above.

*Babylon Site.* West of the site is Sampwams Creek, a mapped state freshwater wetland. Any activities such as disturbance of the wetland or lands within the 100 feet of the freshwater wetlands could require permits and would need to demonstrate a minimal impact on the freshwater wetlands of Sampwams Creek. The presence of the nearby creek also raises the potential for impacts to surface water quality. To this end, it would be necessary to demonstrate that the proposed activity would not be within the mapped wetland and would not affect the freshwater portion of the creek, its downstream tidal wetlands, or the Sampwams Creek Critical Environmental Area.

Development of new storage tracks in a small portion of the floodplain would not adversely affect that area's ability to store flood waters.

Issues related to groundwater are similar to those discussed above. As at *Cerro Wire*, wastewater at the site would be discharged through the sewer system.

*Yaphank East Site.* Of all the sites analyzed, this site has the greatest potential to impact surface water systems. The nature of this impact is related principally to the protection of the Carmans River. Based on a review of preliminary layouts, there is the potential for development in areas of freshwater wetlands buffer areas and wetlands that are part of the Carmans River Corridor. The yard would be designed in a manner that avoids impacts to the Carmans River significant habitat. This would include minimizing the clearing of forested woodland that act as a buffer to the river. Wastewater from this site would be both removed by truck and treated in a leaching field. These measures would be adequate to avoid impacts to the Carmans River and the groundwater.

*Yaphank West Site.* This site is a greater distance from the river and the potential for impacts to surface water resources is less of a concern. However, the site is within the watershed of the Carmans River and protection of that surface water resource from runoff impacts is necessary. There are no state wetlands or wetland buffer area issues at this site.

Removing wastewater via truck and treating wastewater from cleaning in a leaching field would be adequate to protect groundwater.

*Ronkonkoma Site.* The only potential for aquatic impacts at the Ronkonkoma site is related to groundwater. Protection mechanisms, similar to those discussed above, would be used to avoid impacts to groundwater.

*Pilgrim State Hospital.* This site may have an issue with respect to the potential presence of an on-site freshwater wetland (federal, not state-designated wetland). If this wetland is present, federal permits may be necessary. Overall, however, the wetland is isolated and would not be expected to provide a significant habitat. Thus, this impact would not be considered significant.

This site is in the Oak Brush Plains SGPA. The designation of the SGPA amplifies the need to avoid impacts to groundwater. Depending on the types of activities that are being considered, this may include containment and pretreatment facilities. Article 55 of the Environmental Conservation law mandates, with little exception, a non-degradation policy for water quality in these areas. In addition to protecting groundwater quality, groundwater recharge is important in the SGPA. To this end, minimizing impacts to clearing of natural pitch-pine scrub-oak forest would preserve natural groundwater recharge at the site.

*Riverhead Site.* Recognizing the sensitivity of the Saw Mill Creek wetlands as a CNRA under the Peconic Estuary Program, development at the Riverhead Yard site would need to strictly comply with the nonpoint source management measures defined by the Coastal Zone Management Program, to ensure controlled runoff and minimized pollutant concentrations. Surface runoff control structures would be evaluated for their effectiveness and installed as appropriate. These measures would comply with required federal, state, and county agencies to ensure the protection of the CNRA.

## E. TERRESTRIAL RESOURCES

Like the analysis of aquatic and groundwater resources, the investigation of terrestrial resources focuses on those locations where the project alternatives would involve construction activities that have the potential to result in adverse impacts. These areas include Grand Central Terminal (GCT) and the Manhattan tunnel alignment, the Sunnyside Yard/Yard A area (Queens), Maspeth Yard (Queens), Fresh Pond Yard (Queens), Blissville Yard (Queens), Highbridge Yard (Bronx), and the seven sites on Long Island assessed in this FEIS. Effects of project alternatives on each of the terrestrial resources listed above were assessed, as appropriate. To establish existing conditions in the study area and baseline data for the assessment, site visits and research were completed, including the following:

- For each of the New York City sites, a site visit was conducted to assess the types of vegetation, vegetative habitats, and wildlife that inhabit the site. Additionally, each site was inspected for potential wetland areas.
- The Long Island yard sites being *evaluated* for nighttime storage were not available for visual inspection or field surveys. Therefore, these sites were observed, where possible, from their perimeters, and aerial photographs of the sites were inspected. Data were also gathered from a number of sources including NYSDEC documents and local environmental impact statements.

- Review of database records for the project study areas at NYSDEC's Natural Heritage Program (NHP), NYSDEC's Significant Habitat and Endangered Species units, the U.S. Fish and Wildlife Service (FWS), NYSDOS, and the National Marine Fisheries Service. Each of these agencies were contacted to determine if they had records of rare and endangered species being present on the project site or if rare and endangered species could be affected by the project. Copies of correspondence are included in the natural resources appendix.
- Data were also gathered from a number of sources, including NYSDEC and New York City Department of Parks and Recreation documents, and environmental impact statements for other projects near the affected areas to determine wildlife that would be expected to use the project site.

## EXISTING CONDITIONS

### NEW YORK CITY PROJECT SITES

All of the New York City project sites are within developed areas. Additionally, most of the sites are located in heavily industrial and manufacturing districts. No significant or unique habitats were identified in any of the New York City project sites by the request for information from the various agencies regulating critical habitats and endangered species, and none of the proposed project areas is on NYSDEC's Critical Environmental Areas list, last updated in June 1999. The project sites are not close to any of the 15 Significant Coastal Fish and Wildlife Habitats in New York City.

#### *Grand Central Terminal and Manhattan Alignment*

All work at Grand Central Terminal and the Manhattan tunnel alignment would occur underground or in existing structures. Therefore, no effects on vegetation and surface-dwelling animals are expected.

NYSDEC's Division of Fish and Wildlife and NHP, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service were each contacted for information concerning endangered and threatened species. NHP reported a sighting of a peregrine falcon (*Falco peregrinus*) at the Met Life Building at 200 Park Avenue in correspondence dated April 26, 1999. This bird is listed as endangered by both federal and state regulatory agencies, and was last sighted at the building in 1998. FWS also reported sighting falcons in the vicinity of the Manhattan study area. Peregrine falcons are often seen nesting or perched on high structures in New York City.

#### *Sunnyside Yard and Yard A/Arch Street Yard*

Sunnyside Yard is a 105-acre heavily trafficked rail yard in the Sunnyside neighborhood of Queens. Vegetation is limited to the Harold Interlocking and loop track areas of the yard (the perimeter of the site); however, the loop track area was not accessible for inspection at the time of the site visit. Less than 20 percent of the site is vegetated, and no vegetation is found between the tracks. A number of wind-disseminated weeds and grasses grow throughout the vegetated portions of the yard, including Japanese knotweed, ragweed, goldenrod, white clover, crab grass, and goose grass. Woody species (8-40 feet high; 3-10 inches diameter at breast height, or dbh) observed in the Harold Interlocking area include black and water locusts, fire and black cherries, tree-of-heaven, cottonwood, smooth sumac, and birch, with an underbrush of vines such as poison ivy. Vegetation observed in the island between tracks in the western limits of Harold Interlocking include smooth sumac, bouncing bet, butter-and-eggs, common mullein, ragweed, Indian hemp, goldenrod, and pokeweed. Taller, more mature trees (20-60 feet high;

8-14 inches dbh) including scarlet oak, red maple, and white mulberry, are south of the tracks and north of Skillman Avenue.

Yard A is a 60-acre crescent-shaped rail yard located north-adjacent to Sunnyside Yard and south of Northern Boulevard. Approximately 70 percent of the yard is vegetated with mainly weeds and grasses between the tracks and in between ballast, including ragweed, Indian hemp, fleabane, bull thistle, horseweed, and foxtail grass. Larger trees (8-40 feet high; 3-12 inches dbh) are limited to a narrow strip along the northern border of the rail yard adjacent to the industrial buildings and fenced areas. These species are primarily tree-of-heaven and cottonwood, with some oak and pawlonia. As described above in "Aquatic and Groundwater Environment," a small pocket of phragmites, a species usually associated with wetlands, is located at the northern portion of the yard. At the western end of Yard A, Arch Street Yard is a similarly disturbed rail yard. In its northern half, Arch Street Yard is developed with tracks, buildings, and paved areas used for rail freight operations. The southern half is predominantly paved, but also includes some unpaved areas vegetated with low grasses, tree-of-heaven, and narrow pockets of phragmites.

Because of the high level of human and railroad activity on these sites, existing wildlife resources are limited to those species adapted to disturbed areas and urban settings. Wildlife observed using or expected to use the site include grey squirrels, Norway rats, house mice, raccoons, striped skunks, opossums, eastern chipmunks, and feral dogs and cats. Bird species include sparrows, crows, starlings, American robin, mourning doves, and rock doves.

The U.S. Fish and Wildlife Service reported the occurrence of the peregrine falcon in the vicinity of Sunnyside Yard/Yard A in correspondence dated May 13, 1999.

#### *Blissville Yard*

Blissville Yard, located in western Queens, consists of an abandoned rail yard (approximately 6 acres) with several tracks in a serious state of disrepair running east-west along the entire extent of the yard. Like the other rail yards, the site is characterized by sandy soil and gravel ballast, and contains a mix of wind-disseminated weeds and grasses common to roadsides and disturbed areas. Approximately 90 percent of the site is vegetated. More mature trees (15-40 feet in height) are found in the central portion of the site between the railroad tracks, including tree-of-heaven, black cherry, and pawlonia, with some gray birch and black locust trees. Several planted poplar trees lined the southern portion of the site along the service road.

Existing wildlife resources in this developed urban area, with intermittent train service passing nearby, are limited to those species adapted to disturbed areas and urban settings. Wildlife observed using or expected to use the site would be similar to the species described above for Sunnyside Yard and Yard A.

#### *Maspeth Yard*

This site, located in Maspeth, Queens, is a 9-acre crescent-shaped rail yard bounded to the north by two sets of LIRR tracks along Rust Street, to the east by 57th Street, to the south by manufacturing buildings, and to the west by 49th Street. Several railroad tracks run northwest to southeast along the entire extent of the rail yard, and over 50 percent of the yard is vegetated. The site is characterized by sandy soil and gravel ballast, and vegetation is subjected to constant disturbance, as trains run through the yard daily. Wind-disseminated weeds and grasses have colonized areas between the tracks, including goldenrod, ragweed, red top, foxtail, and Timothy grass. The southern and eastern margins of the site have woody vegetation, primarily tree-of-

heaven, black cherry, and Japanese knotweed, and vines such as poison ivy. Other woody species include cottonwood, catalpa, and oak. More mature trees (20-60 feet high; 8-14 inches dbh), including maple and sycamore, are located just outside the study area, east-adjacent to the LIRR Montauk Branch tracks.

Because of the development around the site and the relative frequency of human and railroad activity at Maspeth Yard, existing wildlife resources are limited to those species adapted to disturbed areas and urban settings. Wildlife observed using or expected to use the site would be similar to the species described above for Sunnyside Yard, Yard A, and Blissville Yard.

#### *Fresh Pond Yard*

The project site is a triangular parcel located off Otto Road in Glendale, Queens. The approximately 2-acre area is bounded on each side by railroad tracks. Most of the site consists of a gravel parking lot, with two trailers and several piles of construction materials. Scattered patches of grass and a few isolated weeds are located randomly throughout the gravel drive area. These include domestic grasses, dandelion, plantain, butter-and-eggs, and Queen Anne's lace. One scarlet oak tree is located in front of one of the trailers on-site, and an area of weeds (less than 10 percent of the site) is located behind the trailer, between the piles of construction materials. This area consists mostly of ragweed and goldenrod.

NHP identified one vascular plant species, the pink wild bean, classified as unprotected, that has been historically sited in the vicinity of the Fresh Pond area as far back as 1911. A classification of "unprotected" does not give this species federal protection, but according to NYSDEC regulations, it may be given special consideration prior to disturbance. This plant was reported in the Glendale neighborhood of Queens, but probably does not currently occur in the project area, because the habitat for the plant has been removed due to urbanization.

As most of the site is graveled, with isolated patches of vegetation, there is little habitat for wildlife on-site. Small mammals and birds commonly found in urban and disturbed settings, as described above, may use the site but would not be expected to inhabit the site.

#### *Highbridge Yard*

Highbridge Yard in the Bronx is an approximately 20-acre crescent-shaped rail yard, located between the Major Deegan Expressway and the Harlem River. The site is mainly occupied by several tracks, including mainline tracks for Metro-North Railroad's Hudson Line, and a paved road. Approximately 30 percent of the site is vegetated. The site contains a mix of herbaceous and early successional woody vegetation throughout, with more mature trees (20-60 feet in height; 8-14 inches dbh) along the Harlem River. Along the shore, the width of the more mature woody vegetation type (mid-successional hardwoods) varies from being quite narrow to as wide as 75 feet or more. It is primarily composed of black cherry, fire cherry, tree-of-heaven, cottonwood, black locust, and staghorn sumac. The remainder of the site, including all the area between the non-active rails, is vegetated by wind-disseminated weeds and grasses typical of roadsides and disturbed areas, including ragweed, goldenrod, milkweed, dandelion, and foxtail and redtop grasses. The river bank is fully riprapped and exhibited no intertidal marsh vegetation (*Spartina* sp.) at the time of the site visit.

The area east of the commuter lines is vegetated with mostly ragweed and a few smaller trees (10-20 feet in height; 3-8 inches dbh) including tree-of-heaven, fire cherry, and white and paper mulberries. One potential freshwater wetland area was noted east of the yard site, along the wall of the Major Deegan Expressway. Phragmites predominated in this small region, which is

approximately 1,000 to 3,000 square feet, and was not examined for hydric soils (see “Aquatic and Groundwater Environment,” above).

Because of the high level of railroad activity on the site, existing wildlife resources are limited to those species adapted to disturbed areas and urban settings. Wildlife observed using or expected to use the site would be the same as those described above for the other yard areas in New York City. In addition, transient species such as red fox, grey fox, and coyote may also pass through the site.

The U.S. Fish and Wildlife Service reported the occurrence of the peregrine falcon in the High-bridge Yard area in correspondence dated May 13, 1999.

### *LONG ISLAND YARD SITES*

#### *Cerro Wire Site*

The Cerro Wire site, once a manufacturing complex, has been largely disturbed. Approximately two-thirds of the site is paved or covered by buildings and parking. Large areas have also been excavated. Vegetation on the sites comprises those species common to disturbed areas.

#### *Babylon Site*

The Babylon site is predominantly paved or occupied by buildings. It therefore has limited vegetation and that which is present is found in disturbed/suburban settings. A portion of the site has three residential properties that have small lawn areas with plantings. Overall, however, the site has limited value for vegetation or wildlife habitat.

#### *Yaphank East Site*

This woodland is part of a larger system connected with Southaven County Park to the east; immediately to the south of the county park is the Wertheim National Wildlife Refuge, managed by the U.S. Fish and Wildlife Service. Linking these open spaces is the Carmans River, a river of significant ecological importance on Long Island (see the discussion above under “Aquatic and Groundwater Environment”). This river is immediately east of the site and, as described above, much of the northern portion of the site is wetland-woodland type habitat. The balance is upland-woodland. In this area, much of the tree species is oak dominated interspersed with pitch pine.

The site is also adjacent to a Core Preservation Area designated under the Central Pine Barrens Protection Plan. Core Preservation Areas are designated for the long-term protection of pine barrens habitat and the protection of drinking water. The boundary of the Core Preservation Area is roughly equivalent to that of the county park.

NHP identified three species as historically located in the area, in correspondence dated March 21, 2000. These are slender pinweed, a vascular plant listed as rare in New York State; dwarf hawthorn, an unprotected plant of special concern; and the Persius duskywing butterfly, which is endangered in New York State. However, given that these species have not been sighted in the Yaphank area since the early 1900's, the likelihood of them being present on the yard site is limited. In addition, in correspondence dated March 29, 2000 (see the appendix), the U.S. Fish and Wildlife Service identified one federally endangered plant, the sandplain gerardia, as potentially present. The sandplain gerardia is typically associated with grassland communities and is known to occur at several locations on Long Island, including in the vicinity of the Yaphank East site.



### *Yaphank West Site*

West of the Yaphank East site, part of this site is an open farm field. However, the site may extend westward beyond the boundaries of this field, into an area that is wooded. Consistent with the vegetation complexes for the area, the wooded area is likely to be characterized by pine-oak forest.

As described above in the discussion of Yaphank East, NHP identified three species—two plants and one butterfly—as historically present in the Yaphank area, but there is only limited likelihood that these species are present on the Yaphank West site. In addition, the U.S. Fish and Wildlife Service identified one federally endangered plant species as present in the area (see above).

### *Ronkonkoma Site*

This site is partly wooded and partly previously disturbed. The site lies to the south of the existing Ronkonkoma Yard and north of MacArthur Airport. Therefore, the wooded portion of the site is isolated and not part of a larger complex. It is of limited value for terrestrial ecology.

In correspondence dated March 21, 2000, NHP identified six vascular plant species as potentially present in the vicinity of the Ronkonkoma site. These include velvety lespedeza (rare in New York State), silvery aster (endangered in the state), southern yellow flax and few-flowered nutrush (threatened in New York State), and slender beadgrass and catfoot (unprotected but of special concern). With the exception of slender beadgrass, these species have not been sighted in the area since the early 1900's and the potential for their continued presence in the area is limited.

### *Pilgrim Hospital Site*

About half of this site is vegetated. The other half is the built portion of the Pilgrim State Hospital complex. For the wooded portions, a dominant native ecological complex in this area is Edgewood Oak Brush Plains. This complex is recognized for its value as pitch-pine oak forest with the potential to support protected vegetation and wildlife species. About 760 acres of this habitat are permanently protected in the Edgewood State Preserve located to the west.

The New York State Natural Heritage Program has identified a number of ecological communities across New York State, one of which is the pitch pine/scrub oak barrens. Locally known as the Edgewood Oak Brush Plains, this is a community found in few areas of New York State (typically five or fewer occurrences and vulnerable to extirpation). This shrub-savanna type community is limited to well-drained, sandy soils that have developed on sand dunes, glacial till, and outwash plains (the latter being the case at the project site). Pitch pine is the dominant tree; the percent cover of pitch pine is variable, ranging from 20 to 60 percent. The shrub layer dominants are scrub oaks, which often form dense thickets. Beneath this shrub canopy is typically a low shrub layer, often composed of sweet-fern blueberries and black huckleberry. Scrub oak thickets cover 60 to 80 percent of the community; pitch pines are scattered through the shrub thicket, occurring as emergent trees within an extensive shrub land. Within the shrub thickets are small patches of grassland dominated by the prairie grasses—big bluestem, little bluestem, and Indian grass. This community can be rich in vegetative diversity. Characteristic forms include bush-clovers, goat's rue and wild lupine. Portions of this habitat, primarily to the southwest of the project site, are recognized as providing habitat for such protected plant species as southern yellow flax and lespedeza.

Terrestrial wildlife populations are not high in this area, given its generally built environment. This would include marginal populations of mammals and reptiles. Characteristic birds include rufous-sided towhee, field sparrow, prairie warbler, brown-headed cowbird, indigo bunting, brown thrasher, whippoorwill, and the common barn owl. The coastal barrens buckmoth (a special concern species) is believed to use the area.

In correspondence dated March 21, 2000, NHP identified one rare vascular plant species, the New England blazing-star, in the area likely to be affected by the project.

#### *Riverhead Site*

Although this site is located along the bay coast of the North Fork, it is generally upland from the waterfront (above elevation 20) and outside coastal floodplains. This is a previously disturbed field that is covered by invasive grasses with a woodland perimeter. The site is also situated between the Saw Mill and Terry Creeks and northeast of the Peconic River (a designated Wild and Scenic River) and therefore is likely to provide habitat for a range of avian species; the open field is likely to be particularly attractive to coastal raptors.

NHP identified a number of species as likely to be in the project area in appropriate habitat, in correspondence dated March 21, 2000. These included the following vascular plant species: Virginia false gromwell, New England blazing-star, swamp pink, fibrous bladderwort, and rush bladderwort, all of which are classified by the state as rare; silvery aster, classified as endangered by New York State; swamp sunflower, marsh fimbry, weak rush, heart sorrel, and few-flowered nutrush, all classified by the state as threatened; and southern arrowwood, rough rush-grass, short-fruit rush, wild ipecac, star grass, dwarf huckleberry, spotted pondweed, coastal goldenrod, and swamp oats, all of which are unprotected but of special concern. Several insect species were also identified in the correspondence from NHP, including the American burying beetle, which is considered endangered in New York State and by the federal government, as well as several tiger beetle species that are unprotected but of special concern. Nearly all of these species were sighted 50 to more than 100 years ago; only one was identified more recently (1972). As a result, the potential for these species to be on the site—particularly considering that the site is disturbed—is limited.

### **FUTURE CONDITIONS COMMON TO ALL ALTERNATIVES**

In the future, terrestrial natural resources conditions should not be significantly different from the current conditions. Development of some of the sites, independent of the project, would result in similar loss of habitat to that envisioned by the project, (e.g., paving and construction of buildings).

### **PROBABLE IMPACTS OF THE PROJECT ALTERNATIVES**

This section presents the potential impacts on terrestrial resources that could result from the No Action, TSM, and Preferred Alternatives. Under the Preferred Alternative, the impacts are presented by site, starting with the New York City sites and then the Long Island sites.

#### *NO ACTION ALTERNATIVE*

##### *New York City Sites*

The No Action Alternative would have no direct or indirect adverse effects on terrestrial resources in the project's study areas. As discussed above under "Aquatic and Groundwater

Environment,” the indirect benefits of the Preferred Alternative on regional air quality and their related effect on the study area’s natural resources would not occur.

*Long Island Yard Sites*

As described in Chapter 2, the No Action Alternative would construct a *new storage yard on the Port Jefferson Branch as well as* adjacent to the existing Babylon Yard and adjacent to the Ronkonkoma site.\* These yard facilities would be smaller than those of the Preferred Alternative, and therefore would likely have similar, but lesser effects on terrestrial resources than those discussed below for the Preferred Alternative.

*TSM ALTERNATIVE*

*New York City Project Sites*

Of the three components included in the TSM Alternative, only the new contraflow bus/taxi lane on the LIE might affect terrestrial resources. The addition of a lane on the LIE may clear some invasive vegetative species on the existing road shoulder. However, it is not expected that any of these activities would result in loss of habitat or have a significant impact on terrestrial resources.

*Long Island Yard Sites*

The effects of the TSM Alternative on the terrestrial resources at the potential Long Island yard sites would be the same as under the No Action Alternative: the new yard facilities to be constructed *on the Port Jefferson Branch* and adjacent to the Babylon and Ronkonkoma sites would have similar, but lesser, impacts than those discussed below for the Preferred Alternative.

*PREFERRED ALTERNATIVE*

*New York City Project Sites*

The Preferred Alternative would have no significant adverse impact on terrestrial resources at any of the New York City project sites. Some vegetation would be removed at the yard sites. However, none of the vegetation or related habitat was found to be sensitive.

*Grand Central Terminal and Manhattan Alignment.* All work at Grand Central Terminal and the Manhattan tunnel alignment would occur underground or in existing buildings. Therefore, no effects on vegetation and surface-dwelling animals are expected.

The peregrine falcon, observed in the study area in 1998, nests and roosts on tall structures. As such, it would be unaffected by project activities in Grand Central Terminal and the Manhattan alignment.

*Sunnyside Yard and Yard A/Arch Street Yard.* The site’s vegetation and wildlife are characterized by species commonly found in disturbed areas and urban settings. As described above, the site is an active rail yard. The Preferred Alternative would increase human and train activities on site. Some vegetation would be cleared, mainly wind-disseminated weeds and grasses in the central portions of the yards. Wildlife would continue to inhabit the site, particularly the

---

\* See page S-6 of the Executive Summary or pages 2-1 through 2-5 of Chapter 2, “Project Alternatives,” for a discussion of the No Action Alternative.

more densely vegetated areas at the perimeter of the rail yard. Thus, it is not expected that clearing at the site is significant.

As described above in “Aquatic and Groundwater Environment,” a very small area in Yard A and another at Arch Street Yard contain phragmites, vegetation typically associated with wetland areas. These are depressed areas and are not valuable wetland resources.

*Blissville Yard.* Under the Preferred Alternative, the site would be returned to use as a rail yard. Vegetation and wildlife on site are typical of disturbed areas and urban settings. Clearing and reuse of the site for a yard would not be expected to significantly affect terrestrial resources or avian wildlife populations.

*Maspeth Yard.* The site’s wildlife is characterized by species adapted to disturbed areas and urban settings. As described above, the site is an active rail yard. The Preferred Alternative would increase human and train activities on site. Some vegetation would be cleared, mainly wind-disseminated weeds and grasses in the central portions of the yard. Wildlife would continue to inhabit the site, particularly the more densely vegetated areas at the perimeter of the rail yard. Thus, it is not expected that clearing at this site is significant. *(Further, as noted earlier, NYAR is no longer considering Maspeth Yard for its replacement rail storage yard.)*

*Fresh Pond Yard.* The site is mostly graveled, and clearing herbaceous plants commonly found in urban areas would not pose a significant impact.

*Highbridge Yard.* As described above, the site is an active rail yard, with vegetation and wildlife typical of disturbed and urban areas. The Preferred Alternative would increase human and train activities on site. Wildlife would continue to inhabit the site, particularly the more densely vegetated areas at the perimeter of the rail yard. Transient species, such as red fox and coyotes, would continue to pass through the site.

As described above in “Aquatic and Groundwater Environment,” a very small area in Highbridge Yard contains phragmites, vegetation typically associated with wetland areas. However, it is not anticipated that this area would be within the construction footprint or otherwise disturbed by construction.

#### *Long Island Yard Sites*

*Cerro Wire Site.* At this site, about 13 acres would be cleared. This is almost entirely disturbed area, and the impacts of terrestrial resources would not be significant.

*Babylon Site.* Approximately 8 acres of land would be affected at the Babylon site. With the exception of that portion of the site near Sampwams Creek, this site is almost entirely developed. There would be no impacts to terrestrial resources.

*Yaphank East Site.* A portion of this site is wooded. The total area proposed for the yard is approximately 6 acres. Even if the site were entirely wooded, the loss of 6 acres would not represent a significant impact on terrestrial resources. This assumes that the affected area is outside of Southaven County Park and the Central Pine Barrens Core Preservation Area, the boundaries of which are coterminous.

As noted above under “Existing Conditions,” the U.S. Fish and Wildlife Service indicated that a federally endangered grassland plant species is present near the Yaphank East site. In correspondence dated March 29, 2000, FWS stated:

Although there are no records of this species occurring at this site, the project area should be evaluated by a qualified person to determine the presence or absence of the sandplain gerardia. The project environmental documents should identify any direct, indirect, and cumulative impacts on the sandplain gerardia and its habitat. This information should be provided to this office to determine the need for further consultation pursuant to Section 7 of the Endangered Species Act.

*Yaphank West Site.* Much of this is open farm field and perhaps some woodland area. While this site provides some habitat for terrestrial and avian resources, it would not be expected that clearing for the site, about 6 acres, is significant.

*Ronkonkoma Site.* A part of this approximately 3-acre site is wooded, although the wooded areas are thin. The clearing of trees and shrub growth vegetation at this site is not a significant impact.

*Pilgrim Hospital Site.* A small portion of the Pilgrim Hospital site is wooded. Even if the entire 7.5-acre parcel (including the yard and access corridor) were wooded with pitch pine and scrub oak forest, this would represent a small portion of the approximately 1,400 acres of Edgewood oak brush plains habitat that is found in this area. While there is the potential for certain state-protected plant species to be present in this habitat, given the prior disturbances from the construction of the nearby Sagtikos Parkway and within the hospital grounds itself, it is not considered likely that the area of impact hosts these species. Likewise, protected wildlife species, like the coastal barrens black moth, are not expected to be present in the area of impact.

*Riverhead Site.* Most of this approximately 4-acre site is a former field and woodland edge. While its ecological features and coastal location indicate that the site is likely to host a diversity of avian species that may use the site for foraging or nesting, clearing and use of this small site for a yard would not be expected to significantly impact terrestrial resources or avian wildlife populations, given the large area remaining in the vicinity for use by avian species.

## F. MITIGATION MEASURES

Mitigation measures required for project construction are not extraordinary, but they would be applied widely, as the need arises. As identified above, there is a greater potential for impacts at the Long Island yard sites. Prior to any work on *any* Long Island yard sites, after the design of project elements is more fully developed and prior to the start of construction, a detailed site reconnaissance of the terrestrial and aquatic resources would be performed at sites *under consideration*.

## IMPACTS OF STORMWATER

At sites in New York City where new facilities (e.g., additional buildings or an increase in the paved area) could lead to additional runoff, a stormwater system would be used to collect runoff that is generated from the affected areas. Any existing storm drainage systems would be evaluated for condition, regulatory compliance, and capacity. The systems would be rehabilitated, replaced, or supplemented with new systems for new yard development. Where necessary, the storage yards would have underdrains installed to keep the sub-ballast and ballast from becoming saturated. Roof drains from all buildings would also be connected to the storm drainage system. The storm drain system would be designed as a sanitary system with gasketed pipe joints and neoprene boots at structures to prevent infiltration of groundwater into the storm

drainage system. The stormwater design would properly convey storm water from roads and walkways while minimizing the volume of water that has to be collected, conveyed and discharged. In large paved parking areas or service aisles, where sediment and sand would be carried in the storm water, storm water would be collected and piped through a gross particle separator (GPS) before discharging into a storm drain trunk line feeding to a stormwater oil/waste separator. Therefore, within the yards, the stormwater would be separate from the sanitary sewage that is generated in the yards' facilities.

### **IMPACTS OF MAINTENANCE FACILITIES**

Maintenance facilities are proposed at Yard A/Arch Street Yard, Fresh Pond Yard, and High-bridge Yard. These facilities would use detergents, oil, and solvents, but their use would be limited to within enclosed buildings and would not be discharged in the stormwater runoff, but rather, a pre-treatment system would be constructed on the site so that process discharges would not have an adverse impact on water quality.

### **ADDITIONAL MITIGATION AT LONG ISLAND SITES**

Given the importance of the Long Island sole source aquifer, and the level of federal, state, and local protection (some of the sites are within designated Long Island Special Groundwater Protection Areas), it is critical that any activities proposed at the Long Island yards not significantly impact groundwater or contravene state groundwater standards and drinking water standards. To avoid impacts on groundwater, wastewater from cleaning activities would be discharged to leaching fields. Where possible, a connection to a regional sewer network would be made. Article 55 of the Environmental Conservation Law mandates, with little exception, a non-degradation policy for water quality in these areas. In addition to protecting groundwater quality, groundwater recharge is important in the SGPAs. To this end, minimizing impacts may include preserving natural groundwater recharge at the site.

At sites close to freshwater or tidal wetlands, any activities such as disturbance of the wetland or lands within the regulated buffer of the wetlands would require wetlands permits and would need to demonstrate a minimal impact on the wetlands and any associated downstream wetlands, critical environmental areas, significant habitats, etc. At sites within the watershed of these sensitive habitats (but outside the legal buffer area), protection of that resource from runoff impacts is still necessary and would be evaluated on a site-by-site basis.

The yards should be designed in a manner that avoids impacts to significant habitats. This would include minimizing the clearing of sensitive terrestrial habitats (e.g., forested woodland) both for mitigation of impacts to that habitat and because these habitats may also act as a buffer to adjacent sensitive resources such as rivers. If the Yaphank East site is selected, additional studies will be conducted, as requested by the U.S. Fish and Wildlife Service, to determine the presence or absence of sandplain gerardia, a federally endangered grassland plant species, as well as the potential for direct, indirect, or cumulative impacts on that species. ❖