

A. PROJECT DESCRIPTION

PROJECT IDENTIFICATION

The City of New York, with the New York City Department of Parks and Recreation (DPR) as lead agency, is proposing the development of Fresh Kills Park. The project site is an approximately 2,163-acre City-owned property, the majority of which is Fresh Kills Landfill and under the jurisdiction of either the New York City Department of Sanitation (DSNY). (This land area does not include the DSNY Waste Transfer Station or borough garage facilities.) The balance of the site is under the jurisdiction of the New York City Department of Parks and Recreation (DPR), with a small portion under the jurisdiction of the New York City Department of Environmental Protection (NYCDEP). The project site is located in the southwest portion of Staten Island and within both Staten Island Community Boards 2 and 3. The boundaries of the project site are defined by existing parkland and residential uses, waterways, and City and State roadways. The eastern boundary is Richmond Avenue, which is under the jurisdiction of the New York City Department of Transportation (NYCDOT). Across Richmond Avenue (to the east) is the City's LaTourette Park. Main Creek, Richmond Creek, Great Fresh Kill, and Little Fresh Kill cross the project site. The Arthur Kill shoreline forms the site's western boundary. The southern boundary is Arthur Kill Road, a City street. The West Shore Expressway (New York State Highway Route 440), which is under the jurisdiction of the New York State Department of Transportation (NYSDOT), bisects the project site.

For many years, Fresh Kills Landfill operated as the City's principal municipal solid waste landfill, receiving household, commercial, and municipal solid waste and construction and demolition debris between 1948 and 2001. A state law passed in 1996 mandated that solid waste landfill operations cease at Fresh Kills by December 31, 2001; landfilling subsequently ended on March 22, 2001. Since then, the Fresh Kills Landfill was only temporarily used for the disposal of materials after the attacks of September 11, 2001. Large portions of the site are defined by four solid waste landfill sections—identified as 3/4, 2/8, 6/7, and 1/9. The four landfill sections are regulated as Solid Waste Management Unit (SWMU) areas by the New York State Department of Environmental Conservation (NYSDEC). Approximately 987 acres or 43 percent of the project site is within an SWMU. The balance of the Fresh Kills Landfill property is regulated as a buffer and environmental compliance area and includes landfill monitoring and maintenance systems. With the cessation of solid waste disposal operations at Fresh Kills Landfill, DSNY is completing final closure construction at Fresh Kills. DSNY completed closure construction at Landfill Sections 3/4 in 1996 and 2/8 in 1997. Final closure design has been approved by NYSDEC and closure construction is underway at Landfill Section 6/7. At Landfill Section 1/9, final closure design has also been approved by NYSDEC and subbase grading has begun.

Fresh Kills Park GEIS

Lastly, the project site also includes lands that are essentially undeveloped and contain no landfill-related facilities or monitoring equipment. These include, for example, natural areas, such as the Isle of Meadows.

Total acreage of the proposed Fresh Kills Park is 2,163 acres. In addition to mapping new parkland, with the proposed project all of the public parkland currently mapped at the site, but not publicly accessible, would be made publicly accessible. In addition, there would be approximately 7 miles of new park roadways. Upon completion, Fresh Kills Park would be the City's second-largest park (after Pelham Bay Park in the Bronx), and would be more than double the size of the Staten Island Greenbelt. The magnitude of the proposed project is made even more complex by its location on what is the City's largest municipal solid waste landfill, which has at least 30 more years of management and monitoring to ensure that the landfill does not adversely impact the environment, the surrounding neighborhoods or, assuming approval of the proposed project, the proposed park users. That being said, it is expected that park development would take many decades, and would continue through 2036. The proposed project would be developed in many multiple phases with designs that are expected to evolve over time as capital projects are proposed. The proposed park has five key planning areas: North Park, South Park, East Park, West Park, and the Confluence. Park implementation in North Park and South Park is expected in the earlier phases of the project (through 2016), along with proposed park roads to provide access. Development in East Park and West Park, as well as the Confluence, and completion of the circulation plan are longer-term initiatives.

Fresh Kills Park would create, for the first time, public access and waterfront recreation at Fresh Kills, along with an extensive habitat restoration program. The design concepts for the proposed park have involved many City and State agencies, among them the New York City Department of City Planning (DCP), DPR, the Mayor's Office for Economic Development and Rebuilding, DSNY, the New York City Department of Environmental Protection (DEP), NYCDOT, and the New York City Department of Health and Mental Hygiene (DOHMH). State agencies involved in this process have included NYSDOT, NYSDEC, and the New York State Department of Health (NYSDOH).

The proposed park would feature recreational fields; landscaped areas and enhanced ecological habitats; new park roadways, including a new connection with the West Shore Expressway and a signature bridge across the Fresh Kills waterway; water access for motorized and non-motorized craft; cultural, entertainment and commercial facilities (e.g., amphitheater, restaurants, event and banquet space); and the supporting park operations, maintenance facilities, and parking. The proposed park roadways would connect the park with Richmond Avenue on the east and the West Shore Expressway on the west, and vehicular access would be supported by the necessary service roads, parking, and transit facilities. Existing natural areas, such as the Isle of Meadows, would continue to be protected.

This Generic Environmental Impact Statement (GEIS) has been prepared to describe and analyze the potential environmental impacts of the proposed project. The analyses contained in this GEIS are supported by a number of technical and engineering studies that have been prepared relative to the design of the proposed project, including its recreational elements and transportation and landscaping plans. Since the proposed project is a major capital investment with a long-term, multi-phased implementation program, this GEIS analyzes park implementation through two phases of completion, with a 2016 interim analysis year and the full build out of the park assumed to be completed by 2036.

PERMITS AND APPROVALS

There are many City, State, and Federal land use and environmental approvals that are necessary to implement the proposed park. With respect to City approvals, the following actions are proposed:

- Amendment to the City map to establish as parkland those portions of this project site that are not currently mapped as parkland;
- Amendment to the City map to eliminate certain unbuilt paper streets;
- Amendment to the City map to map a public place to serve as the right-of-way for the future vehicular road system, which entails demapping a small portion of the existing mapped parkland;
- A zoning map amendment to assign a zoning district (M1-1) to the areas being de-mapped as park and simultaneously mapped as public place.
- A zoning map amendment to vacate the NA-1 zoning where it currently exists on the site; and
- A zoning text amendment to remove “Fresh Kills Park” from Section 105-941 of the current zoning text.

At the State level, approvals necessary for the proposed project include modifications to the Fresh Kills Landfill Final Closure Plan; potential amendments to the Order on Consent between NYSDEC and the City governing closure of Fresh Kills Landfill and/or Part 360 landfill closure approvals for end use; permits for activities in tidal wetlands and adjacent areas; protection of waters; and access to a State highway (Route 440). Federal approvals would apply to constructing structures over or in navigable waterways or activities in wetlands as delineated in accordance with U.S. Army Corps of Engineers (ACOE) procedures, which also includes a Coastal Zone Consistency review. Construction of the proposed Signature Bridge over the Fresh Kills waterway would also require approval of the U.S. Coast Guard.

Because the proposed park roads would pass through existing mapped parkland (portions of the project site are already mapped parkland), a State legislative action was approved for the alienation of parkland along these segments of proposed road corridors (Chapter 659 of the 2007 Laws of the State of New York).

PROJECT PHASING AND COORDINATION WITH DSNY ACTIVITIES

As currently proposed, the near-term phases of construction include multiple segments of the park roads, North Park, most of South Park, and the accompanying habitat enhancement projects. These short-term projects are expected to be completed by 2016. Completion of the park is not expected until 2036. Long-term projects include completion of the East and West Parks, the central activity areas of the Point, and the completed park roads. During this time, in accordance with agreements between the City and State of New York and the permits and approvals issued to the City, DSNY must construct final closure at Landfill Sections 6/7 and 1/9, continue to maintain the landfill facilities and environmental control systems, and perform the required monitoring in accordance with the Fresh Kills Landfill Post-Closure Monitoring and Maintenance Operations Manual. Among the DSNY facilities at Fresh Kills Park that must remain in operation during this period are the leachate and landfill gas collection and treatment infrastructure, and the environmental monitoring systems. These systems are integral to the protection of public health and the environment around the landfill into the indefinite future, and must remain through at least 2036.

Fresh Kills Park GEIS

These facilities (e.g., the leachate treatment plant and the landfill gas collection system and purification plant) are therefore included as part of the proposed park mapping and are part of the project site. In addition, to move the park project forward, DPR and DSNY must coordinate all phases of project design and construction in order to ensure compatibility between the continued operations of Fresh Kills Landfill post-closure facilities, monitoring, and maintenance, and the implementation of the proposed park.

FRAMEWORK FOR ENVIRONMENTAL REVIEW

To assess the potential environmental impacts of the proposed park, DCP and DPR developed a reasonable worst-case development scenario (RWCDS) that was presented in the *Fresh Kills Park Final Scope of Work to Prepare a Generic Environmental Impact Statement* as issued by DPR and DCP on August 31, 2006. This RWCDS was developed to cover the range of potential uses for impact analysis in this DGEIS including those both currently contemplated, as well as those that may arise as preferred uses over the next several decades as the park develops. It is the objective of the RWCDS to allow flexibility in the project design and implementation while examining a range of possible uses in this GEIS. The RWCDS therefore identifies programmatic land uses and activities based on different land cover types and activities, including active recreational paved surfaces (for skateboarding, basketball), active recreational field surfaces (for baseball, soccer), active recreational indoor surfaces (for indoor track and field) commercial uses (retail and restaurants, cafés, banquet hall), natural habitats with public access (restored marshes with a boardwalk), meadows and forests (with paths), water recreation (kayaking and boating facilities), and an amphitheater for outdoor events. In addition, in order to understand the maximum impacts of the proposed circulation system, all park roads are assumed to be four-lane-wide roads. While the analyses presented in this GEIS are comprehensive based on the current RWCDS assumptions and designs, it is expected that subsequent environmental reviews, including supplemental environmental reviews, are likely to be necessary as project design advances to implementation.

The proposed project and its related actions have been analyzed in this GEIS for the purposes of informing decision makers as to the potential environmental consequences of the proposed Fresh Kill Park. A GEIS approach was selected by the lead agency during scoping for the environmental review approach, given that the project is a long-term plan, would be implemented over a number of decades, and, at this time, is largely conceptual in design. However, the actions necessary to initiate the park project, including mapping of the proposed park and related actions, need to move forward as a first step in the process of developing the park, which under CEQR/SEQR needs to be examined comprehensively. To that end, this GEIS analyses relies on a RWCDS developed for the plan (see Appendix A), the Fresh Kills Park DMP (March 2006) and the additional site-specific details that have been described in this GEIS for the near term projects (e.g., North Park Phase A and the Arthur Kill Road parking lot). As park development proceeds and each of the site-specific projects move forward they will be reviewed for consistency with the analyses contained in this GEIS. That review will take one of three forms: 1) a technical memo that examines individual capital projects for the purposes of determining if the impact of each capital project has been addressed in this GEIS; 2) an Environmental Assessment Statement (EAS) and negative declaration for new park proposals where no significant adverse impacts would occur; and 3) preparation of a Supplemental Environmental Impact Statement (SEIS).

For the proposed project, as described in Chapter 1, "Project Description," a range of potential uses have been examined over the project site. Those uses have been grouped into a number of

categories to reflect proposed park land cover types in the RWCDs. In addition, certain aspects of the proposed project have been advanced including the designs for North Park (particularly Phase A), the Arthur Kill Road parking lot in South Park (see Figure 1-35b), and the proposed road designs which are presented in the 100 Percent Schematic Report (Arup et.al., January 2008).

An SEIS would potentially be necessary to examine significant environmental impacts that were not previously identified in this GEIS. This could occur in a case where site-specific effects were not previously known or analyzed or new information has come forward that could potentially change the impact analyses previously presented in an EIS such that new undisclosed significant environmental impacts could occur.

In determining the need for an SEIS, DPR would review each proposed capital project following the process described above and evaluate the relevance and importance of the new information and the extent and coverage of technical analyses presented in this GEIS. Should it be determined that an SEIS is necessary, the scope of analysis may be limited to the new potential significant impact that has been identified. The SEIS would also be subject to the same acceptance and review procedures as an EIS (i.e., scoping, etc.).

Over the approximately 30 years of project implementation, site designs will be developed for each capital. DPR will review these project elements in accordance with CEQR/SEQR as these designs are developed to ensure that each element of the project has been afforded a thorough environmental review, relying first on the analyses presented in this GEIS. Each technical memorandum would therefore examine and identify any additional environmental quality review that may be required for discretionary approvals by City, State, or federal agencies (e.g., including permitting), the sufficiency of coverage under the impact analyses prepared for this GEIS, and any site-specific impacts and impact avoidance or mitigation measures that may need to be performed.

For longer-term projects, and as the park continues to develop, it is possible that additional formal environmental quality review may be necessary to analyze and disclose additional significant impacts that were not foreseen in this GEIS or to consider changes in the project program that were not contemplated at this time. In addition, since this is a long-term project, DPR will continue to examine information gathered for each capital project during project implementation and will review that data for the purposes of determining the need, at any point, for additional environmental review based on new information that is compiled or new regulatory or environmental standards that may take effect. It is possible that given the long-term nature of the proposed project, an SEIS will be necessary at some point during the project implementation process in order to re-evaluate project impacts in the context of new information, substantial changes in background conditions, or project modifications.

In addition, circumstances may arise where a substantial new use is proposed due to changes in recreational demands or needs (i.e., a golf course which is not currently proposed or evaluated), or added structures or buildings proposed with expanded or different uses (e.g., larger retail uses), or there is as significant change in roadway design that could affect traffic patterns or natural features.

ENVIRONMENTAL REVIEW PROCESS

This GEIS has been prepared in conformance with applicable laws and regulations, including Executive Order No. 91, New York City Environmental Quality Review (CEQR) regulations, and follows the guidance of the *CEQR Technical Manual* (October 2001), as well as the State

Fresh Kills Park GEIS

Environmental Quality Review Act (SEQRA) and its implementing regulations and guidelines, and the guidelines of the National Environmental Policy Act (NEPA). DPR is the lead agency preparing this GEIS with the assistance of DCP and other City agencies. The GEIS contains a description of the proposed project and its related actions, including the project site and its environmental setting; examines the short and long-term environmental impacts of the proposed project for the two analysis years; identifies any significant adverse environmental impacts; presents and analyzes alternatives to the proposed project; identifies the irreversible and irretrievable commitments of resources; and describes the mitigation measures necessary to minimize, eliminate, or avoid significant adverse environmental impacts that could occur with the proposed project. As stated above, implementation of the proposed park requires many discretionary actions, among them the City's Uniform Land Use Review Procedure (ULURP) procedures. This GEIS, which was certified as complete on May 16, 2008, has been prepared in support of the proposed project's ULURP application and related discretionary actions. During ULURP, public hearings will be held on this GEIS and the ULURP actions by Staten Island Community Boards 2 and 3, the Staten Island Borough President, the New York City Planning Commission (CPC), and the City Council during the 7-month ULURP review process.

BACKGROUND TO THE PROPOSED PROJECT

SITE HISTORY

Before solid waste landfilling operations began, natural conditions at the project site were almost entirely coastal marsh and creeks. In 1948, to address its increasing solid waste disposal needs, the City of New York opened the Fresh Kills Landfill as part of a network of municipal solid waste landfills that were developed to serve the dual purposes of municipal solid waste disposal and land reclamation. In the decades that followed, Fresh Kills became the City's principal landfill facility for the disposal of collected household and commercial and municipal solid waste and construction and demolition debris. It eventually grew into the largest landfill in the world by the mid-1990s. While the City had a number of operating landfills through the latter half of the 20th century, many were closed, as new environmental regulations came into effect. By 1991, Fresh Kills was the City's only operating landfill. At its peak, Fresh Kills received as many as 29,000 tons of solid waste per day.

Landfill operations at Fresh Kills predated the existence of Federal and State regulations pertaining to the design and operation of solid waste landfills. With the promulgation of new federal statutes, such as the Resource Conservation and Recovery Act (RCRA) in the 1970s, federal guidelines were established for the siting, design, operation, closure, and monitoring of landfill. In addition, it required states to perform an inventory of their landfills to determine the level of compliance with the new regulations. Following the passage of the Environmental Conservation Law (ECL) of New York State in 1973, stringent new regulations were adopted governing the state's solid waste landfills. These new regulations included 6 NYCRR Part 360, Solid Waste Management Facilities, signed in 1977. To ensure that landfills throughout the state were in compliance with these new regulations, municipalities were required to apply for permits from NYSDEC for their landfills.

NYSDEC recognized that bringing existing landfills into compliance with new regulations would not occur immediately. To enable the Fresh Kills Landfill to come into compliance with the Part 360 regulations for solid waste management facilities, NYSDEC entered into a consent order that allowed DSNY to continue operating the Fresh Kills Landfill while the City made environmental and operational improvements at the landfill. A review of a Part 360 permit application for Fresh Kills Landfill was subsequently terminated when a state law was passed in 1996 requiring the landfill to cease accepting solid waste by December 31, 2001. As a result,

Fresh Kills Landfill continues to be governed by the consent order between NYSDEC and the City of New York (April 24, 1990, as modified DEC Case #022-9001-89-03), which governs landfill closure at the site.

Fresh Kills Landfill received its last barge of solid waste on March 22, 2001. Subsequently, landfill closure construction has proceeded in accordance with a NYSDEC-approved closure plan under the Consent Order. After the World Trade Center attacks of September 11, 2001, the Consent Order was amended by the Governor of New York to temporarily allow disposal of materials from the World Trade Center site. No other materials were brought to Fresh Kills during this temporary suspension of the closure.

Today, as a result of its history as a significant landfilling operation, much of the project site is a highly engineered complex of man-made infrastructure and artificial landscapes. Final closure construction was completed at Landfill Sections 3/4 (within the area proposed as North Park) and 2/8 (within the area proposed as South Park) in the mid 1990s. Closure of Landfill Sections 6/7 (within the area proposed as East Park) and 1/9 (within the area proposed as West Park) is currently underway. The disturbance to natural ecosystems and the effect of 50+ years of solid waste landfilling operations at the site has been significant, and today much of the landfill area only supports simple, relatively homogenous vegetated cover and biological systems. However, despite these adverse and stressed ecological conditions, the project site retains many significant ecological assets, including hundreds of acres of salt marsh and an extensive network of tidal creeks.

PROJECT PURPOSE AND NEED

The purpose of the proposed Fresh Kills Park project is to create permanent public access and waterfront recreation facilities at the City's Fresh Kills property, along with extensive new landscapes. As a result of the use of the site over the past 60 years as a municipal solid waste landfill, the large waterfront City-owned parcel has been closed to the public. However, the cessation of municipal solid waste landfilling operations in 2001 opened the possibility of transforming this large City property into a unique and significant public open space for use by neighborhood residents, residents of Staten Island, the City of New York, the region as a whole, and national and international visitors to New York City. It also presented the opportunity to meet local and regional needs for active recreational fields, enhanced landscapes, new park roads and connections to a regional highway, water access for both motorized and non-motorized craft, and new cultural entertainment and commercial facilities.

Transforming Fresh Kills Landfill into Fresh Kills Park marks a commitment by the City to create a vast new open space with extensive waterfront access with accompanying recreational and cultural amenities. The proposed park would provide a number of public benefits, including protecting ecological habitats; providing hundreds of acres of land for active and passive recreation; promoting public waterfront access; and improving site access and the local transportation networks through new park roads and bikeways, walkways, and trails that would not only connect local roadways with the park and the West Shore Expressway, but also provide hiking and biking connections with existing adjacent parks, such as William T. Davis Wildlife Refuge to the north and LaTourette Park and the Staten Island Greenbelt to the east. In sum, the proposed Fresh Kills Park would establish a much-needed and vast new public park resource for the City of New York.

DESCRIPTION OF THE PROJECT SITE

SITE OWNERSHIP

The project site is all City-owned land comprised of multiple blocks and lots, under the jurisdiction of either DPR or DSNY, with the latter having jurisdiction over the majority of the land. A small portion of the site is also DEP land.

CURRENT ZONING AND MAPPED PARKLANDS

ZONING

The proposed site has four City zoning districts and two overlying special zoning districts. The underlying districts are M1-1, M2-1, M3-1, and R3-2. Open space and recreational facilities are allowed in the R3-2 and M1 districts, but are not allowed in the M3-1 and M2-1 districts.

There are also two special districts mapped over Fresh Kills: the Natural Area District (NA-1) and the Special South Richmond Development District (SRD). The NA-1 zoning special district was created by the City to preserve the unique natural habitats and topography of Staten Island. The SRD was approved by the City in the mid-1970s to guide future development and land use in the South Richmond area of Staten Island.

MAPPED PARKLAND

Portions of the project site are currently mapped as parkland although they are not publicly accessible. Because the proposed park roads would pass through existing mapped parkland on the project site, a State law authorized the alienation of parkland along these segments of proposed road corridors (Chapter 659 of the 2007 Laws of the State of New York). The park mapping action examined in this GEIS would redefine the limits of both the mapped parkland and park roadways that are proposed under the Fresh Kills Park plan. However, as described in greater detail below, historically none of this mapped parkland has been publicly accessible and the proposed project provides a significant increase in mapped parkland and would provide for public access to the currently and newly mapped parkland on the site for the first time.

CURRENT LAND USES, STRUCTURES AND OPERATIONS AT THE PROJECT SITE

LAND AND WATER USES

About 43 percent, or 987 acres, of the site is occupied by the four landfill sections (see Table S-1). In addition to the landfill and its associated infrastructure, there are hundreds of acres of undeveloped land, including natural areas with tidal marshes and open water. Approximately 210 acres of the site are open water (e.g., Little Fresh Kill, Great Fresh Kill, Richmond Creek, and Main Creek) and 360 acres are designated wetlands. The Isle of Meadows, which is also part of the project site, is approximately 100 acres in size.

Table S-1
Landfill Sections at Fresh Kills and Current Status

Landfill Section	Area (acres)¹	Closure Status²
3/4	142	Construction Complete
2/8	139	Construction Complete
6/7	305	Approved Design, Construction Underway
1/9	401	Approved Design, Construction Underway
Total	987	
Sources:		
¹ Fresh Kills Landfill Post-Closure Monitoring and Maintenance Operations Manual, DSNY, December 2002.		
² DSNY, December 2007.		

The four landfill sections range in top elevation from 90 to 195 feet above sea level (2007 survey). Because these landfill sections contain solid waste, they are also regulated by NYSDEC as SWMUs. The SWMUs are delineated based on areas where waste was placed after 1980. In addition to the SWMUs, the project site contains a network of DSNY facilities that were used during the decades of landfill operations, as well as facilities on the site such as the leachate treatment and landfill gas recovery plants, and the landfill gas migration and groundwater monitoring wells that are part of the Fresh Kills environmental control system and post-closure monitoring program. Lands that contain the environmental monitoring facilities are within the Fresh Kills environmental compliance boundary (i.e., the lands outside the SWMUs that serve as a buffer between the SWMUs and surrounding sensitive uses).

Final closure construction was completed at Landfill Sections 3/4 and 2/8 in the mid 1990s. Final closure construction is underway at Landfill Section 6/7 in accordance with a NYSDEC-approved design. Final closure design has also been approved by NYSDEC for Landfill Section 1/9 and subbase grading has begun. Final closure construction includes a final cover that minimizes water infiltration with a soil/geomembrane layer and vegetative cover that minimizes erosion. There is also a comprehensive network of drainage structures to collect surface water runoff. It is expected that final closure construction of Landfill Sections 6/7 and 1/9 will be completed by 2012.

To support the closure of Fresh Kills Landfill, there is an extensive infrastructure system that was installed and is managed and maintained by DSNY. This includes, in addition to the final cover, landfill gas and leachate collection and treatment systems, stormwater collection and control structures, bridges, and landfill access roads. There are also the main plant facilities and a significant stretch of bulkheaded waterfront, where the solid waste previously arrived by barge when the landfill was operating.

POST CLOSURE MONITORING AND MAINTENANCE OPERATIONS

Regulatory Requirements

In accordance with the requirements of the State of New York, including 6 NYCRR Part 360 and the Order on Consent between NYSDEC and DSNY, Fresh Kills Landfill has a Post-Closure Monitoring and Maintenance Operations Manual. Under the requirements of the Consent Order (Modification #7), the City is required to perform a variety of measures to ensure that closure and post-closure monitoring and maintenance of the landfill occurs in compliance with 6

Fresh Kills Park GEIS

NYCRR Part 360. Specifically, a comprehensive post-closure monitoring and maintenance operations manual is required to provide all information necessary to effectively monitor and maintain Fresh Kills for the entire post-closure period.

In accordance with all of the applicable requirements, DSNY's Fresh Kills Landfill Post-Closure Monitoring and Maintenance Operations Manual is a detailed protocol for the management of the Fresh Kills Landfill over the post-closure period.

Three decades from now it is expected that most of the biodegradable material in the landfill will be decomposed, and both settlement and landfill gas production will be minimal. However, until this time, and as long as it is deemed necessary by NYSDEC, it is the principal objective of the Fresh Kills Landfill environmental control systems and the monitoring and maintenance program to protect the environment of the landfill site, as well as the surrounding environment and residential communities. Among the requirements of the post closure maintenance and monitoring programs are the protections and monitoring of the final cover and stormwater management systems, landfill gas management (including inspections and monitoring of landfill gas migration management systems, and the landfill gas collection and recovery systems), leachate control and corrective measures systems (including conducting inspections and operating and maintaining the leachate control). In addition, groundwater monitoring well data are used at Fresh Kills to detect any landfill-based groundwater contamination. There is also a surface water and sediment monitoring program that provides an effective means of monitoring and evaluating surface water quality trends in the waterbodies at Fresh Kills.

In addition, the landfill perimeter is also monitored quarterly for any potential landfill gas migration. Monitoring consists of the measurement of subsurface pressure and concentration of methane, oxygen, and carbon dioxide as a percent of the landfill gas at the numerous monitoring wells located around the perimeter of the landfill.

DSNY FACILITIES ADJACENT TO THE PROJECT SITE

DSNY operates a number of facilities at Fresh Kills Landfill that support solid waste and sanitation services for the Borough of Staten Island. These include the Staten Island Waste Transfer Station, Yard Waste Composting Facility, and Rock Crushing and Screening Facility, as well as two local Sanitation Districts 2 and 3 garages and supporting facilities. All of these facilities are located adjacent to, but outside the boundaries of the proposed park.

FUTURE CONDITIONS AT THE PROJECT SITE WITHOUT THE PROPOSED PARK: 2016 AND 2036

As stated above, final closure construction at Fresh Kills Landfill has been completed at Landfill Sections 3/4 and 2/8. Closure of Landfill Sections 6/7 and 1/9 is underway and must continue in the future with or without the construction of the proposed park. Closure construction at the site is expected to be completed by 2012. While the closure construction would be completed by the 2016 GEIS analysis year, the monitoring and maintenance program would continue through at least 2036.

For the future conditions on the project site, it is assumed that DSNY would complete its final cover construction on Landfill Sections 6/7 and 1/9 by 2016. DSNY would also have all environmental monitoring facilities in-place and would continue to implement its environmental maintenance and monitoring program through both the 2016 and 2036 analysis years. No public access would be provided at the site. While the site is zoned for manufacturing uses, it is not

assumed that there would be an expansion of these uses on the site. Any use of the site for manufacturing is also likely to require a disposition approval.

FRAMEWORK FOR ENVIRONMENTAL IMPACT ANALYSIS

The proposed Fresh Kills Park project and its related discretionary actions are the subject of this GEIS. The GEIS approach was selected by the Lead Agency (DPR) because of the long-term nature of the proposed build program, and because the level of design for many of the features of the proposed park facilities is conceptual at this time. The purpose of this GEIS is to establish a framework for the environmental review that allows for flexibility in future detailed designs, while providing the required comprehensive examination of the potential environmental impacts of the park proposal.

There are two currently active DPR park projects in the area. One is the 21-acre Owl Hollow Park project. This proposed recreational field has been advanced to provide a much-needed public recreational facility for the local neighborhood. That project was subject to its own environmental review process with DPR as the Lead Agency, and a Negative Declaration was issued in March 2008. Another DPR project is the reconstruction of the north portion of Schmul Park. Schmul Park is an existing park located in the Travis neighborhood. Here, DPR is proposing to restore and reconstruct the existing Schmul Park, which would provide a gateway entrance to the proposed Fresh Kills Park.

To comprehensively analyze the impacts of the proposed project, this GEIS takes into consideration many factors, including:

- An Illustrative Plan developed by the City during the scoping process for this GEIS, which conceptually presents the anticipated future uses of the proposed park;
- The Fresh Kills Park Draft Master Plan (March 2006); and
- Design and engineering studies that were prepared to support the conceptual plan.

It is the objective of this GEIS to provide a comprehensive and cumulative examination of the potential environmental impacts of the proposed project, with an emphasis on the short-term projects and those project elements that require permits and approvals from City, State, and Federal agencies.

PLANNING AND DESIGN ASSUMPTIONS FOR THE GEIS IMPACT ANALYSES

ILLUSTRATIVE PARK PLAN

The City of New York, led by DCP, conducted a GEIS scoping process for the Fresh Kills Park that had as its product an Illustrative Park Plan. For the purposes of developing the RWCDS, the proposed land uses and activities described in the DMP were considered illustrative categories of park uses. It is anticipated that future park capital projects could include those currently presented in the DMP, while also allowing for other potential uses as designs. These potential park uses and activities have been grouped into illustrative park-element categories, based on a similarity of use or activities. It is assumed that during park final design and capital project implementation, uses or activities of equal or less intensity that fit into these element categories could be substituted without triggering the need for additional or supplemental environmental review.

DMP CONCEPTUAL PLAN

The Fresh Kills Park DMP (March 2006) is based on the theme of “lifescape, a new park for New York City” and is defined by three functional layers: program, habitat, and circulation. The DMP considers diversity of cultural, athletic, and educational programming, as well as a landscaping plan that includes new landscapes that would offer wildlife habitat, as well as natural open spaces for park visitors. A primary park circulation system for vehicles, as well as a network of foot, bicycle, and equestrian paths, would provide access for various transport modes throughout the park.

The DMP defines Fresh Kills Park by five designated planning areas: the Confluence (175 acres), which comprises primarily the Point (50 acres) and Creek Landing (20 acres), North Park (280 acres), South Park (415 acres), East Park (530 acres), and West Park (560 acres) areas. In addition, Fresh Kills has about 700 acres that include wetlands and waterways and natural areas (e.g., the Isle of Meadows). The DMP objectives for the five planning areas are summarized below.

The Confluence

The Confluence encompasses the center of the proposed park at the meeting of the creeks and would be to be the central area of park activity and the principal point of arrival by 2036. It will orient park users and be defined by a Loop Road Park Road that would provide access to all five park areas, and would be the location of the majority of recreational, cultural, commercial, and educational facilities and activities. The Confluence would provide visitor and information centers, restaurants, and event spaces, as well as park landscapes and constructed surfaces (e.g., synthetic turf fields), allowing for a range of more intense uses, and would concentrate its major development into two specific locations, the Point and Creek Landing. These are the large, flat, paved, bulkheaded, and structured surfaces previously used for receiving solid waste at Fresh Kills Landfill (Plants 1 and 2). In addition to these two main areas, the Terrace and the Marsh and Sunken Forest are envisioned as special, bucolic areas more representative of the preserve nature of much of the park. These areas, accessible along the proposed Confluence Loop Park Road, would provide opportunities for new landscapes that are accessible for passive recreation.

Within the Confluence is the 50-acre Point, a large waterfront area that would provide sports fields, event spaces, lawns, art works, and other cultural and commercial facilities serving park users such as restaurants and market roofs. This area would serve as a gateway marked by a proposed signature bridge crossing the Fresh Kills waterway. The Point is also the proposed location for the main park administrative center, DSNY facilities to support landfill post-closure management, and would offer active recreation programs, multi-use sports facilities and fields with the ability to host athletic events, and is likely to be an active area in both daytime and evening.

Creek Landing is located at the convergence of Fresh Kills, Main and Richmond Creeks. It is planned for a concentration of on-water recreation and cultural activities accessible via the north segment of the Confluence Loop Park Road. It would be a key location for access to and interaction with the waterfront, a programming goal of particular importance to Fresh Kills Park stakeholders. At 20 acres in size, this area is smaller than the Point, and is oriented primarily toward family and community uses, with an emphasis on ecological, educational, and participatory water-related programs. Creek Landing emphasizes waterfront access, including a waterfront esplanade, canoe and boat launch, restaurant, visitor center, restored wetland exhibit

with boardwalk, fishing piers and overlooks, and a large event lawn for gatherings, picnics, and sunbathing.

East Park

East Park is characterized by large, vegetated spaces with spectacular views and is the main area for vehicular access into the park from the east. It is intended to primarily protect and improve natural resources with created and enhanced wetlands as well as enhanced lowland forest. The man-made berm and ponds along the east side of project area presents an opportunity for new natural landscapes as well as hiking and walking trails. Along the sides and on top of the closed landfill section, new forest and meadow areas would be created.

Major park circulation components across the East Park are described below.

North Park

North Park is one of the early phases of implementation. It encompasses the closed Landfill Section 3/4 and the surrounding lands and is proposed for simple recreational facilities, vast natural settings, meadows, wetlands, and creeks, and is envisioned as a lightly programmed natural area connecting with Schmul Park. This planning area is bordered by the William T. Davis Wildlife Refuge and Main Creek to the north and east. North Park vehicular access and parking is provided from both the Travis neighborhood entrance to the north (local access) and through a much larger central parking area to be provided at Creek Landing to the south. The proposed North Park concept is also responsive to community input suggesting that this area be programmed primarily for natural landscapes and passive recreation.

South Park

South Park is also one of the early phases of implementation. South Park would encompass the closed Landfill Section 2/8 and the surrounding lands and is proposed to have active recreational uses, an equestrian facility, a mountain biking venue, and a neighborhood park in a large natural setting. South Park is unique in that it contains both ample flat, non-wetland space for active recreational programming and a large area of natural woodland that would be preserved. The proposed recreational programming is concentrated in a 38-acre area in the lowland that would be accessible from Arthur Kill Road. Here there would be tennis courts; an indoor aquatic and/or track and field facility; and an equestrian center. Mountain biking is also proposed on the landfill section.

West Park

A focus of West Park is the September 11 monument. In recognition of the important 9/11 recovery activities that occurred on the site, the DMP calls for a 9/11 monument on top of West Park, including a possible earthwork design. From here, park visitors would have a panoramic view of New York City, New York Harbor, and New Jersey. In addition, West Park would be landscaped with meadows and woodland and traversed by a network of footpaths.

EVENTS PROGRAMMING PLAN

At this time DPR has not yet developed a formal events program for the park. While it is expected that by the 2016 analysis year there would be park events, there are no event facilities proposed for 2016. However, by 2036, with the completion of the Confluence and the Point, there would be event facilities, including an amphitheater. Since these are longer-term (2036)

Fresh Kills Park GEIS

components of the project, DPR would address event management issues (e.g., access and transportation) once an events program is developed.

SOIL MANAGEMENT PLAN

Introduction

Development of Fresh Kills Park would require large volumes of soil, including soil to provide a new soil cover that provides safe public access, new landscapes, and a subbase for the proposed recreational surfaces, roads, and parking.

Soil Quality and Characteristics

The project site is a combination of disturbed areas that have been subject to municipal solid waste landfilling operations, areas of known disturbance that are outside the managed landfill sections, and natural areas that are largely undisturbed. In developing the Fresh Kills Park soils strategy, the following guidelines were established:

- Protection of public health and safety;
- Ecological enhancement;
- Compliance with landfill closure and post-closure needs;
- Cost effectiveness and feasibility; and
- Sustainability.

It is the overall objective of the City to provide the publicly accessible areas of the site with two feet of soil cover, where necessary, for the purpose of protecting public health and safety at the open spaces of the proposed park.

There are no soil standards in the State of New York that are directly applicable to soil cover for landfills when the proposed end use is parkland. New York State environmental regulations that apply to the site include the Title 6 New York State Codified Rules and Regulations (NYCRR) at Part 360, which governs Solid Waste Management Facilities. However, these regulations do not provide criteria for soils used in a park. Therefore, guiding the soil strategy for Fresh Kills Park is Title 6 NYCRR Part 375 Environmental Remediation Program (hereinafter referred to as subpart 375). Although not directly applicable to landfills, the applicability of subpart 375 can be applied to the use of soils in former industrial areas when conversion to other uses would allow public access.

Landscape Soils

To ensure the success of newly created natural areas in the park, soil criteria would be carefully tailored to meet both public access and agronomic specifications that are suitable for the proposed program. Unlike the engineering soils, where the focus is physical properties, the requirements of landscaping would be more stringent with respect to chemical, physical, and agronomic properties.

For Fresh Kills it is an objective to emulate native Staten Island soil communities. Soil profiles under consideration for the park include landscaping for new meadow, woodland, turf, and wetland/salt marsh environments.

Engineering Soils

Engineering soils (e.g., soils for road bed, parking, and building subsurface) would comprise a relatively small portion of the volumes of soil that are necessary for the park. It is assumed that these soils would be used at the site in accordance with the roadway design standards of NYCDOT and NYSDOT as well as DSNY and would not need to meet the above criteria.

Soil Volumes and Sources

It is anticipated that a large volume of soil, about 1.6 million cubic yards for North and South Parks alone, for example, would need to be imported to the Fresh Kills Park site to meet the above-described objectives. Given the large volumes of soil that are necessary, two options are under consideration: (1) “making” or manufacturing the soil on-site; or (2) buying clean soil, which requires little or no on-site processing. Both options are being considered in the long term. In the short term, soil purchase is the preferred approach in order to meet construction scheduling for near-term projects.

LANDSCAPE PLAN

As stated above, the project site is a largely engineered landscape, given the nearly 50 years of municipal solid waste landfilling that occurred at Fresh Kills Landfill. However, despite these many decades of ecological intrusion and alteration of native coastal marshes, the natural resources of the project site remain significant and include extensive waterways with hundreds of acres of salt marsh, particularly along the shorelines at Main Creek and Richmond Creek, and in proximity to the adjoining natural areas of William T. Davis Wildlife Refuge to the north, LaTourette Park to the east, and the 100-acre Isle of Meadows along the Arthur Kill.

It is an the objective of the proposed project to protect and build upon these ecological assets for the purposes of cultivating a diverse landscape within the park that would provide multiple environmental and park user benefits as well as enhancing the final cover on the landfill sections to provide a more ecologically productive habitat. Goals for the Fresh Kills Park landscape plan include:

- Create a diverse, resilient landscape that is a benefit to the local ecology, the City, the New York Harbor Estuary, and the region in terms of ecological connectivity, water and air quality improvement, biodiversity and sustainability;
- Enhance, restore, and construct new landscapes by taking into consideration vegetation and wildlife;
- Build on the native biodiversity of Staten Island to establish distinctive plant communities (e.g., Pine Oak Barrens);
- Design the park around existing natural resources;
- Phase ecological improvements so that the park can be understood and enjoyed as a “landscape in progress,” designed to promote successional diversification over time;
- Integrate ecological improvements with ongoing landfill maintenance and monitoring operations to increase benefits, reduce public expenditure, and enhance site sustainability;
- Enhance and create freshwater and tidal wetlands (see also Figure 1-13a);
- Expand grassland on the landfill sections to include native meadows, improving their value as a natural resource;

Fresh Kills Park GEIS

- Expand woodland and tree plantings both on and off the landfill sections for the purposes of providing wooded trails and canopy and also providing ecological connections to adjacent habitats and a visual buffer at the site perimeter that defines the proposed park;
- Enhance the final cover on the landfill sections for the purpose of providing more ecologically productive landscapes and a range of settings for recreation;
- Increase soil quality and quantity while ensuring structural stability in accordance with NYSDEC requirements;
- Retain more water for plants and utilize water as a precious resource, including supporting wetland hydrology understanding that care will be given to protecting the drainage layer of the final cover;
- Reduce the spread of and opportunities for invasive species;
- Reintroduce native plant communities capable of building a diverse seed bank and establishing a robust cover; and
- Minimize maintenance requirements and costs, while complying with regulatory requirements.

The proposed landscape enhancement proposal includes a range of techniques for achieving the above objectives, including long-term, in-situ management and importing and/or manufacturing new soils on site. Given the range of conditions and cover types at Fresh Kills, it is anticipated that a combination of soil management techniques would be necessary.

WATER ACCESS AND RECREATION PLAN

The proposed project includes many water recreation and access opportunities for the public. In the near term, this includes trails and public access to the water proposed at North and South Parks. In addition to providing a facility for on-water recreation (e.g., a kayak launch), an observation deck would be developed providing visual access to the water and natural areas of Main Creek and the William T. Davis Wildlife Refuge.

The proposed park would include numerous locations along Main and Richmond Creeks where trails would provide access to the water recreation facilities. In addition, in the long term (2036), the proposed park would provide a 50-slip marina for small craft, along with a ferry/water taxi landing in the Point.

VEHICULAR CIRCULATION PLAN

Introduction

An essential component of the Fresh Kills Park project is a circulation plan that would provide both vehicle and pedestrian/bicycle access to and across the park. The principal objectives of the roadway network are to provide:

- Access to the proposed park, including a Confluence Loop Park Road that would facilitate circulation within the central area of the park;
- Local access improvements and connections with the West Shore Expressway (Route 440), including two connections with Richmond Avenue, one in 2016 at Forest Hill Road and the other in 2036 at Richmond Hill Road.

A challenge in the design was the crossing of Landfill Section 6/7, which lies between Richmond Avenue and the West Shore Expressway. This east/west connection is complicated not only by the presence of the landfill and the associated infrastructure, but also the presence of wetlands that extend along Main and Richmond Creeks.

The design intent of the park roads is that they be integrated to the natural setting while providing the dual functions of local traffic relief and access to the park while limiting environmental impacts and using the existing topography to the extent possible. In the spirit of U.S. National Parks and Scenic Byways, Fresh Kills Park roads are proposed to be an integral feature of the park experience. The road design and materials are also proposed to be as sustainable as possible and the latest technologies would be incorporated with respect to sustainable materials, and a roadway design through a landscaped corridor.

Road Design Criteria

As examined in this GEIS, the road design features a four-lane park road that includes 11-foot-wide travel lanes, a flush four-foot textured median, and 6-foot shoulders. Although the decision on whether the road design will include two lanes or four lanes has not been finalized, this DGEIS conservatively assumes construction of four-lane park roads in order to analyze all possible impacts associated with this element of the project. The shoulders would contribute to improved sight distance along the inside of curved roadway segments and help keep the roadside clear of hazards. Along the Confluence Loop Park Road, the median and shoulders are narrowed where the road needs to fit within existing bridges and beneath the West Shore Expressway.

As with every road construction project in New York City, the process for design review and approval will provide all individual agencies several opportunities to participate in this multi-year roadway design and the multi-year construction project.

Landfill Considerations

With the proposed project, certain modifications to the landfill system would be required for those road segments that cross the landfill. Specifically, this includes two crossings of Landfill Section 6/7: one, an approximately 2,700-linear-foot crossing at the south end of Section 6/9 as part of the Forest Hill Road Connection, and the other an approximately 2,100-linear-foot segment (referred to as the Yukon Saddle) as part of the Richmond Hill Road Connection. An overall objective of the park road design is to not compromise the function or integrity of the landfill's existing environmental control systems. The road design must therefore provide a level of environmental protection consistent with what is provided today as per NYSDEC requirements and DSNY design. Thus, any elements of landfill infrastructure that are proposed to be modified must be designed to the satisfaction of DSNY and DEC. Both agencies would have approval review of all designs through final design and construction.

Project implementation must also include a plan for the systematic monitoring of construction activities to ensure that construction is consistent with the design, and a plan for post-construction monitoring to document the long-term protections and maintenance of the landfill closure structures and environmental control systems (see also "Construction Impacts," below).

West Shore Expressway Corridor Improvements (2016)

Under the proposed project, modifications within the West Shore Expressway corridor between Arthur Kill Road on the south and Victory Boulevard on the north are proposed to improve access to and from the park with extended service roads, and new ramps. The West Shore

Fresh Kills Park GEIS

Expressway mainline would not be affected beyond minor adjustments needed to accommodate new or modified ramps. These access improvements are summarized below.

Northbound West Shore Expressway Access Improvements

The proposed northbound service road improvements begin with a new intersection at Arden Avenue and a new service road that extends to the proposed Confluence Loop roadway. The service road would operate one way, northbound.

A new exit ramp from the highway would afford northbound West Shore Expressway traffic direct access to the park north of Arden Avenue, and a new entrance ramp would offer drivers the means to efficiently re-enter the northbound West Shore Expressway.

In addition, along North Park, an existing DSNY service road would be reconstructed as a new two-lane one-way northbound road. The service road would begin at the intersection with the north leg of the proposed Confluence Loop Park Road, and connect with the existing West Shore Expressway northbound service road at Wild Avenue. The new service road would provide access to North Park, Wild Avenue, the Victory Boulevard, and to the northbound West Shore Expressway via an entrance ramp just beyond Victory Boulevard.

Southbound West Shore Expressway Access Improvements

A southbound service road provides access from Victory Boulevard to the Staten Island Waste Transfer Station and accessory facilities. The project proposes to open the entire length to public use as a park entry road that would connect to the north leg of the Confluence Loop Park Road.

In addition, a new West Shore Expressway entrance is proposed south of Arden Avenue to offer park visitors access to the southbound West Shore Expressway mainline and local traffic an additional access point. To provide room for the new entrance, the existing exit ramp to Arthur Kill Road would be relocated to a position north of Arden Avenue.

Confluence Loop Park Road

The proposed Confluence Loop Park Road links the entire circulation system, providing the means to cross from all park areas and from Richmond Avenue to the West Shore Expressway. The Confluence Loop Park Road alignment generally follows existing DSNY service roads and existing bridges across Main and Richmond Creek. Under the proposed project these bridges would be modified to become part of the park road system. This proposed road would also pass under the West Shore Expressway along both the north and south shorelines of the Fresh Kills waterway. Widening the existing service roads at these locations is necessary to accommodate the proposed park road and a pedestrian/bicycle path.

Forest Hill Road Connection (2016)

This segment of proposed park road would connect on the east with the intersection of Richmond Avenue and Forest Hill Road. From this intersection the park road would head west to connect with the Confluence Loop Park Road at a location near the Richmond Creek Bridge. The proposed park road would cross a wetland and an existing DSNY landfill service road before climbing onto Landfill Section 6/7. It is anticipated that a viaduct bridge structure or a combination of bridges and embankment would carry this proposed road segment over the wetland and provide a grade-separated crossing over the existing service road. This segment of the park circulation system is limited to vehicular use, and no pedestrian or bicycle path is proposed.

Richmond Hill Road Connection (2036)

This segment of the proposed park road system would connect on the east with the intersection of Richmond Avenue and Richmond Hill Road. Once into the park, this alignment quickly turns and passes through existing stormwater basins and freshwater wetlands to the east of Landfill Section 6/7. Within this segment, it is anticipated that the proposed park road would be composed of a combination of viaducts or embankments and culverts. The road would continue at-grade parallel to the existing berm along Richmond Avenue that defines the eastern edge of the park. In the vicinity of Yukon Avenue, the road would turn west and rise to cross over the existing DSNY landfill service road on a short-span bridge and continue west over Landfill Section 6/7 to meet the Confluence Loop Park Road at a location near Main Creek Bridge. This segment of road is referred to in this GEIS as the Yukon Crossing. It is intended that this segment of park road also be limited to a vehicular corridor.

This segment of park road would require modifications to landfill infrastructure. Among the potentially affected elements are landfill gas collection laterals, landfill headers, a leachate stone trench, a water line, and several existing and post closure drainage ditches. In addition, the proposed embankments across B1 Drainage Basin would require modifications to the existing landfill drainage system.

Any landfill modifications would be designed in accordance with the requirements for landfill closure, and the modifications would also be subject to the approval of DSNY and NYSDEC to ensure that the environmental facilities at the landfill continue to meet their obligations for the long-term protection of the environment and public health.

Crossings and Bridges

Design Objectives

The principal functions of the proposed crossings and bridges are to carry people over or through conflicting features such as waterways while affording views of the park. It is proposed that all park bridges be designed to NYSDOT engineering standards, and become part of the NYSDOT Bridge Inventory System as publicly accessible bridges.

Confluence Loop Park Road: Main and Richmond Creek Bridges (2016)

There are two existing bridges along the proposed Confluence Loop Park Road alignment: one over Main Creek and the other over Richmond Creek. These bridges were constructed for and under the jurisdiction of DSNY.

Under the proposed project, it is proposed to re-use the Main Creek and Richmond Creek Bridges for vehicular circulation. However, reusing the existing bridges for vehicles does not leave enough width for a pedestrian/bicycle path with a four-lane road. Thus, separate parallel bridges for pedestrians and bicycles are necessary. It is assumed that these pedestrian/bicycle bridges would be 15 feet wide and at a somewhat higher elevation than the road bridges in order to maximize the sense of separation from the vehicular traffic, and to provide pedestrians and cyclists an unobstructed view of the park and making the pedestrian/cycling experience more pleasant.

Signature Bridge (2036)

Completing the Confluence Loop Park Road requires a new crossing of the Fresh Kills waterway at the western end of the Loop. This crossing is roughly 600 feet long and would introduce an iconic structure to carry the park drive, walkway, and bikeway over the Fresh Kills waterway. This bridge is referred in this GEIS as the “Signature Bridge.”

Fresh Kills Park GEIS

Overall, the length of the Signature Bridge and its approaches would be roughly 1,200 feet. A variety of structural types and span lengths could provide the required crossing, with different impacts, costs, and aesthetics. Three bridge concepts have been developed for consideration. Each would accommodate the proposed Park Road and a 15-foot-wide pedestrian/bicycle path. As the Signature Bridge is scheduled for construction in later phases of park development, by the time of implementation the final design may vary from the cable-stayed concept assumed in this GEIS.

Description of Vehicular Circulation: 2016 and 2036

With the proposed road improvements described above, the proposed park would provide approximately seven miles of new park roads and access roads. These roads would be open to the public and City vehicles (including DSNY), but not to public commercial and truck traffic. A description of the traffic circulation patterns, presented below, is provided for the two GEIS analysis years, 2016 and 2036.

2016

- By 2016, a new park road entrance would be provided from the Forest Hill Road/Richmond Avenue intersection that would allow access to the Confluence Loop Park Road, Creek Landing, and the West Shore Expressway.
- From the Confluence Loop Park Road, drivers could turn north to reach Creek Landing and the northbound service road, leading to Wild Avenue, Victory Boulevard, and the northbound West Shore Expressway.
- The south leg of the Confluence Loop Park Road would pass over the Richmond Creek Bridge and under the West Shore Expressway to reach the West Shore Expressway Southbound Service Road.
- From the West Shore Expressway, northbound drivers could reach the park or Richmond Avenue/Forest Hill Road via a proposed ramp as a proposed northbound service road connecting to Confluence Loop Park Road.
- From the West Shore Expressway, southbound drivers could reach the park or Richmond Avenue/Forest Hill Road by exiting at the existing ramp to Victory Boulevard, continuing onto an existing service road that would be modified for public use, and would connect to the Confluence Loop Park Road.

All proposed construction along West Shore Expressway roads would be designed in accordance with NYSDOT standards and subject to approval by NYSDOT.

2036

- By 2036, a new park road entrance would be provided from the Richmond Hill Road/Richmond Avenue intersection, providing drivers with another point of access to park facilities and the West Shore Expressway.
- A Signature Bridge would be constructed across the Fresh Kills waterway at a location west of the West Shore Expressway. This would complete the Confluence Loop Park Road and provide direct access to the facilities at the Point.

Intersection and Park Roadway Designs—2016

Forest Hill Road Connection

Under existing conditions, the intersection of Forest Hill Road and Richmond Avenue is a T-intersection. In 2016, with the proposed project, this intersection is proposed to be reconfigured

to accommodate the park entrance/exit to Forest Hill Road at Richmond Avenue (eastbound approach). In addition, new signals would be installed.

South Park Parking Entrance (Arden Heights Neighborhood Park)

In South Park, a driveway entrance would be added from Arthur Kill Road, providing access to about 70 parking spaces to be located in the Arden Heights neighborhood park.

South Park Parking Entrance at South Park Recreational Center

In South Park there would also be a new parking driveway entrance from Arthur Kill Road to the proposed South Park Recreational Facility. Here, there would be a total of about 430 standard “bosque parking” spaces at this facility with an additional 240 spaces for overflow parking.

North Park Parking Entrances

Two parking facilities and vehicle entrances are proposed at North Park. One would be near the intersection of the northbound service road with Wild Avenue. It would provide access to a 122-space parking facility at the end of Wild Avenue. The other vehicle entrance would be provided at the end of Melvin Avenue, which extends along the south side of Schmul Park. It would provide access to a parking facility with 80 spaces and serve the Travis neighborhood.

Intersection and Park Roadway Designs—2036

Richmond Hill Road/Richmond Avenue Intersection

Under existing conditions, the intersection of Richmond Hill Road and Richmond Avenue is a four-legged intersection. In 2036, with the proposed project, this intersection would be reconfigured to accommodate the park entrance/exit to Richmond Hill Road at Richmond Avenue (eastbound approach). In addition to the above physical improvements, new signals would also be installed.

Yukon Avenue/East Park Parking Entrance

In East Park there would also be a new driveway constructed at the intersection of Yukon Avenue and Richmond Avenue. This new driveway would provide access to overflow parking spaces to be provided in this area of the park.

PARKING PLAN

The proposed project calls for parking to be distributed throughout the park in a concept of tree-shaded “bosque parking” facilities. The parking facilities would also be designed with permeable surfaces to reduce heat island effect and minimize runoff. The parking areas would be located near the many park entrances, and sized appropriately for the park uses that would be directly accessed from that parking site. At major gathering points, the tree-lined parking areas, or “bosques,” would become design features of the park. In addition to the proposed formal parking areas, the proposed project would include areas designed and designated for overflow parking. These areas would be used during unusual peak park visitation days or when special events are held, for example. A total of 1,199 permanent parking spaces are proposed for 2016, which would increase to 1,873 by 2036. A total of 1,544 overflow spaces are also proposed. Overflow parking that is proposed along Arthur Kill Road would also require coordination between DPR and NYCDOT.

NON-VEHICULAR CIRCULATION PLAN

Overview

In addition to the proposed vehicular access, the project proposes more than 20 miles of specially designed paths and trails for bicyclists, mountain bikers, horseback riders, pedestrians,

Fresh Kills Park GEIS

and hikers. Water access would be accommodated via numerous docks and launches along the creeks, as well as a small marina proposed in the Fresh Kills, west of the West Shore Expressway, where a ferry landing may also be provided.

In addition, two pedestrian/bicycle bridges are proposed over roadways (in addition to the two within the Confluence Loop Park Road), one over the West Shore Expressway at Muldoon Avenue and the other over Richmond Avenue at Forest Hill Road.

As the pedestrian bridges are scheduled for construction in later phases of the park development (2036), the final design may vary from that presented in this GEIS.

STORMWATER MANAGEMENT PLAN

The park's stormwater management program is designed to complement and enhance the aesthetics of the park, while also meeting the overall stormwater management objective of meeting park drainage needs while avoiding impacts to DSNY stormwater management infrastructure. The proposed approach utilizes a mix of traditional conveyance and storage measures (including the existing armored downchutes and large-scale detention basins) and smaller controls selectively located throughout each subcatchment that are designed to enhance hydrologic and water quality function and the aesthetic and habitat quality of the completed site (e.g., pocket wetlands, vegetated treatment swales, planter boxes). By utilizing upstream stormwater controls, runoff flows would be routed through multiple levels of treatment prior to discharge off the site.

To avoid stormwater impacts from any increases in impervious surfaces (roads, parking, and other structures) to receiving waters, individual stormwater best management practices (BMPs) would be used and designed into the proposed park features. Multi-functional source control BMPs such as bioretention and pocket wetlands would not only provide water quality treatment of stormwater runoff, but would also provide aesthetic benefits. Implementation of runoff control and drainage systems proposed for the park would require coordination and review between DPR and DSNY through design and construction.

PUBLIC TRANSIT PLAN

It is expected that with the proposed roads, NYCT could modify its existing bus routes—specifically, the express bus routes that primarily operate via the West Shore Expressway and local routes along Richmond Avenue—to take advantage of new connections into the park. Although not proposed at this time, to accommodate the park-generated transit demand in 2016, DPR would coordinate with NYCT to amend the existing bus service and expand bus routes to include new stops within the park boundaries, extending service into the site from Richmond Avenue via the Forest Hill Road and Richmond Hill Road connections. Additional bus stops could also potentially be provided along Arthur Kill Road, which is a corridor served by a number of Staten Island buses, in order to provide transit service to South Park facilities. In order to extend bus service into the park, the proposed park roads would need to satisfy the design requirements of NYCT for bus operations.

INFRASTRUCTURE, ENERGY, AND SUSTAINABILITY PLAN

An evaluation of potential sustainable infrastructure and energy systems was developed for the proposed park. These measures are subject to further consideration and would reduce infrastructure demands.

LIGHTING PLAN

Lighting of the park, while not currently designed, is expected to be consistent with the lighting of other large-scale parks within the city, with both low-scale, low-light light fixtures that provide ambient illumination. Larger lighting fixtures would be used around playing fields and recreational facilities to allow greater use of athletic fields. Lighting would therefore be restricted to programmed areas and paths; the majority of the site—intended to be habitat and passive—would not be lit. There would also be light shields to control the impacts of indirect light on the local nighttime environment. In addition, the objectives of the International Dark Sky Association would be reviewed for use within the park.

SIGNAGE PLAN

The proposed park would be provided with signage that would, at a minimum, identify park boundaries using traditional DPR signage; water access and trails to the water; and areas of restricted or controlled access (see the discussion below); and would provide external and internal vehicular circulation guidance (e.g., access from the highway, directions to parking areas).

PLAN TO PROTECT PUBLIC HEALTH

A key objective for the park is to provide public access to the park while protecting the public health and safety of the park users and DPR staff. Much of the site of the proposed park has been a municipal solid waste landfill for decades. However, to avoid impacts to the local environment and public health, extensive environmental controls have been installed at Fresh Kills Landfill along with the post-closure monitoring and maintenance. The proposed park is designed to minimize impacts to these environmental control systems and to replace any elements of such infrastructure that may be necessary as a result of park and park roadway design and construction, and to retrofit or upgrade any elements of the system that are necessary for the purposes of providing public access.

In addition, there are a number of techniques that would be implemented for avoiding impacts on public health as the project site becomes publicly accessible open space including modified environmental control systems and expanded monitoring at the site, access controls, signage, and expanded park security measures.

As stated above, final closure construction is underway at Landfill Sections 6/7 and 1/9. Thus, these areas must have restricted public access through at least 2016. Heavy construction vehicles would be using the internal landfill service roads that connect these two landfill sections with each other and the West Shore Expressway, which is the principal delivery route for soils and materials used in the final closure construction. Thus, public health and safety would need to be protected both on land and in the water areas of Fresh Kills to ensure that public health and safety is not compromised during final closure construction. In addition, DSNY facilities, such as the leachate and landfill gas treatment plants and flare stations, would require secured perimeters.

FUNDING

To transform Fresh Kills Landfill into a world-class park, sizable investments in park construction, facilities, roads, and other infrastructure are necessary. Approximately \$200 million has been allocated for park construction. Fresh Kills Park will also have operating, management, and maintenance that would exceed the current landfill maintenance and monitoring costs. These operating costs will be

Fresh Kills Park GEIS

determined as the capital projects are designed. Future recreation and potential ancillary commercial activities such as restaurants, cafes, and banquet facilities are also proposed that, to some degree, would provide a revenue stream expected to cover a small portion of the park operating expenses.

STEWARDSHIP

With regard to stewardship, the City will seek to develop a new governance model for Fresh Kills Park that recognizes the unique circumstance of the shared responsibility for the site on the part of DPR and DSNY. The Fresh Kills Park project intends to employ sustainable and regenerative design, construction, procurement, and maintenance measures considering the importance of ecological sustainability, regeneration, and natural capital investments.

PARK MAINTENANCE FACILITIES AND PERSONNEL

Although the estimates are preliminary, DPR is anticipating a staff of up to 270 full time employees at the Park by 2036, with an additional seasonal staff of 220 persons. Of the full time staff, it is estimated that 55 would be Park Enforcement Police over a three-shift period. In addition, there would be 12 officers on 24-hour coverage in the peak seasons.

CONSTRUCTION PROGRAM AND PRACTICES

The proposed project is a multi-decade project that would be implemented in multiple phases of capital projects. Provided below, under “Construction,” is a description of those phases and the various construction programs and practices that would be incorporated into the proposed project.

PROJECT PHASING FOR THE 2016 AND 2036 ANALYSIS YEARS

Elements of the proposed Fresh Kills Park that are expected to be completed by the 2016 analysis year are listed in Table S-2 and summarized below. Elements of the proposed park that are expected by the 2036 analysis year are listed in Table S-3.

REGULATORY APPROVALS

There are many land use and environmental approvals that apply to the proposed project.

To summarize the necessary approvals, at the state level, discretionary approvals that would apply to the proposed project include modifications to the Consent Order and possible Part 360 end use approvals; permits for activities in tidal wetlands and adjacent areas; protection of waters; access to a state highway (Route 440) and structures over the highway. Federal approvals relate to constructing structures over or in navigable waterways or activities in freshwater and tidal wetlands (e.g., dredging or filling) as delineated in accordance with ACOE methodologies. In addition to these approvals, as stated above, New York State legislative approval has already been granted for the alienation of the existing parkland (Chapter 659 of the 2007 laws of the State of New York.)

All involved and interested agencies have been issued this DGEIS. In accordance with CEQR/SEQRA/NEPA regulations, DPR as lead agency is coordinating the environmental review of the proposed Fresh Kills Park project with all of these agencies.

**Table S-2
Park Projects for Analysis: 2016**

Project Phase	Estimated Completion Date
North Park (Phase A) Travis Neighborhood Park —trails to Main Creek with entry kiosk and bridges over wetland at two entrances, kayak launch, bird observation tower, kayak storage, sunning deck, overlook deck, off-mound upland landscape enhancement (about 20 acres), wetland enhancement (about 2 acres), parking, signage, and lighting.	2009/2010
North Park Multi-Use Path and Wetland Enhancement —parade grounds (lawn, softball field and picnic area) (about 12 acres), 2 tennis courts, grassy play mounds, picnic woods (about 1 acre), freshwater wetland enhancement, stormwater basin enhancement/skating pond (about 4 acres), outdoor eco-classroom, visitor center, 3 comfort stations, café, recreational multi-use path (about two miles) around landfill section 3/4, tidal wetland enhancement along Main Creek, fishing pier, parking, signage and lighting, flare station fence/enclosure, DPR maintenance and operations (secondary).	2013
North Park Landfill Section 3/4 Landscape Enhancement and Public Access —enhancements of existing landfill cover for landscape enhancement, public access on footpath trails and bikeways, parking.	2014/2015
South Park Arden Heights Neighborhood Park and Wetland Enhancement —entrance and parking, information center, enhancement of freshwater wetland (about 2 acres), playground, berm overlooks, picnic area, signage, lighting, DPR maintenance and operations (secondary), plant nursery/seed farm.	2009/2010
South Park Multi-use Paths and Recreation Facilities — recreational multi-use path (about eight miles) around landfill section 2/8, including pedestrian and high-speed bikeways, equestrian center and stable, horseback riding trails, indoor track and field facility and sports barn, tennis center, café, comfort stations, entrance and parking, signage and lighting.	2010/2014
South Park Landfill Section 2/8 Enhancement —enhancements of existing landfill cover for landscape enhancement and public access on top landfill section mounds 2/8 with mountain biking, and pedestrian trails, hilltop overlook deck, comfort stations.	2010/2011
Confluence—the Marsh, Terrace, and Sunken Forest —freshwater wetland improvements and possible tidal wetland enhancement within two stormwater basins at the Marsh—the Sunken Forest (2 acres) with boardwalk pedestrian and bike paths; and a freshwater pond/emergent wetland (2 acres), and freshwater wetlands developed within a stormwater basin at the Terrace (1 acre).	2012
Confluence—Creek Landing —activities on existing built surfaces and reuse of existing bulkhead for market roof area of private concessions including boathouse, kayak and canoe rental, café, and cultural space; lawn; possible tidal wetland creation in areas of bulkhead deterioration (about 1 acre of enhancement), parking, DPR maintenance and operations (secondary), and lighting.	2016
Wind Turbine Systems —concrete pads with wind turbines on landfill sections within North, South and East Parks.	N/A
Proposed Park Roads and West Shore Expressway Connections —Forest Hill Road connection extending from Forest Hill Road/Richmond Avenue to Confluence Loop Park Road; the south, east, and north legs of Confluence Loop Park Road, including modifications to Richmond Creek Bridge and Main Creek Bridge and access improvements along the West Shore Expressway, including extensions of the service roads; .	2016
Note: No date is provided for the wind turbines, as they are assumed to be proposed by private concession with a date to be determined.	
Sources: Fresh Kills Park Final Scope of Work to Prepare a GEIS, New York City Department of City Planning and New York City Department of Parks and Recreation, August 2006; Fresh Kills Park: Lifescape, Staten Island New York, Draft Master Plan, prepared by Field Operations for the City of New York, March 2006; Fresh Kill Park development team, November 2007.	

**Table S-3
Park Projects for Analysis: 2036**

<p>East Park—hilltop field (23 acres), recreational fields or golf course within a successional meadow (187 acres), mixed woodland community (187 acres), freshwater wetland enhancement/enhancement and boardwalk (13 acres), freshwater wetland enhancement/enhancement (21 acres), with a nature education center (outdoor classroom, 600 square feet), and nature education center (4,000 square feet), tidal marsh restoration/enhancement (28 acres), multi-use recreational path (12 miles), picnic lawn (2 acres), a flare station screen, parking along the east stormwater basin and additional parking along the Loop Road.</p>
<p>West Park—hilltop monument (12 acres), successional grassland (173 acres), woodlands (200 acres), recreational loop path (3 mile), Arthur Kill dock (450 square feet) and Isle of Meadows overlook (450 square feet). West Park, North Section—hilltop field (3 acres), earthwork art feature (2 acres) with an overlook (about 450 square feet), meadow (5 acres), meadow seating (2,000 persons), woodland buffer (20 acres).</p>
<p>The Confluence—The Point—central multi-use field area (14 acres, 1,000 seats), created swamp forest exhibit and basin (2 acres). Arthur Kill tidal wetland restoration (3 acres), exhibition hall (8,590 square feet), family fishing and picnic pier (4,100 square feet), pier overlook (3,500 square feet), fishing pier (4,900 square feet), esplanade (37,300 square feet), market roof (approximately 20,000 square feet), restaurant row (20,000 square feet), barge garden (43,500 square feet), marina/boating center (50 slips, 2 acres), boat launch (6,750 square feet), banquet hall with maintenance facilities (13,750 square feet), event lawn (10 acres), discovery center (32,700 square feet), ferry landing (6,000 square feet) and parking.</p>
<p>The Confluence—Creek Landing—visitor center (5,200 square feet), fishing pier (about 1,350 square feet), waterfront esplanade (22,850 square feet), boating lawn and terrace (2 acres), restaurant (1,000 square feet), DPR greenhouses (25,500 square feet).</p>
<p>Park Road North and Completed Confluence Central Loop Park Road and Landscape Ribbons—Completion of the Park Road System: construction of Park Road North, providing a second connection to Richmond Hill Road and Richmond Avenue about 40 parking spaces: construction of the west leg of the Confluence Loop Park Road with bikeway/walkways, corridor landscaping, and the Signature Bridge over Fresh Kills Creek near the Point.</p>
<p>Sources: Fresh Kills Park Final Scope of Work to Prepare a GEIS, New York City Department of City Planning and New York City Department of Parks and Recreation, August 2006; Fresh Kills Park: Lifescape, Staten Island New York, Draft Master Plan, prepared by Field Operations for the City of New York, March 2006, Fresh Kills Project Team, November 2007.</p>

B. PROBABLE IMPACTS OF THE PROPOSED PROJECT

LAND USE, ZONING, AND PUBLIC POLICY

The proposed project would create new open spaces over a closed municipal solid waste landfill with new habitats and recreational facilities. It would complement the predominantly residential and park uses in the study area by providing extensive new habitats and additional recreational space for residents and visitors alike. These proposed uses would be compatible with and support the land uses found in the surrounding area and would represent a significant positive change over the future without the project. The proposed park mapping would be compatible with the nearby zoning and mapped parklands. It would not conflict with current public policy for the area; rather, it would be consistent with and support City policies as they relate to Fresh Kills. These are positive impacts of the proposed project. For all these reasons, the proposed project would not result in any significant adverse impacts related to land use, zoning, or public policy.

SOCIOECONOMIC CONDITIONS

The proposed project would not result, either directly or indirectly, in a significant adverse socioeconomic impact. Because there is no existing or planned residential use on the project site, direct residential displacement would not occur as a result of the proposed project, nor would the proposed project result in the indirect displacement of residents. In addition, no private employment currently on the project site would be displaced. The proposed project would not

displace neighborhood businesses or special or unique manufacturing operations, nor is it likely to alter existing economic patterns. In addition, no indirect (secondary) displacements impacts are expected with the proposed project. The proposed project would expand on-site employment with private concessions and park maintenance and operations. This is a positive socioeconomic impact of the proposed project. For all these reasons, it is concluded that the proposed project would not result in any significant adverse impacts.

COMMUNITY FACILITIES

Because the proposed project would not add any residential units to the area, it would not meet the threshold for analysis of public schools, libraries, health care facilities, and day care centers. With respect to police, fire protection, and hospital services, *CEQR Technical Manual* guidelines require a detailed assessment only when a project would have a direct effect on those services. Because the proposed project would not directly affect any police precinct houses, fire stations, or hospitals, a detailed assessment of these services is not required. In addition, the proposed project would not result in direct effects on the physical operations of, or access to and from, any New York City Police Department (NYPD) precinct house. It is NYPD policy to make continued adjustments in the deployment of personnel and equipment. Thus, the proposed project would not result in significant adverse impacts to police protection services. Likewise, the proposed project would not result in any direct effects to New York City Fire Department (FDNY) facilities and services would be provided as needed. FDNY does not allocate personnel based on proposed or potential development, and it is expected that FDNY would continue to evaluate the need for personnel and equipment and make necessary adjustments to adequately serve the area. Therefore, the proposed project would not result in significant adverse impacts to fire protection services.

OPEN SPACE

The proposed project would have the positive impact of adding significant mapped and publicly accessible open space to the area and dramatically increasing recreational opportunities along and adjacent to the waterfront. Although the proposed project would add new worker populations to the area, the amount of new open space acreage, for both passive and active use and extensive new habitats, more than offsets this demand. Thus, it is concluded that the proposed project would result in significant quantitative and qualitative open space benefits for local residents, the Borough, and the City as a whole.

SHADOWS

Shadows from structures proposed in the park would be limited and the project design would seek to avoid any of the impacts on proposed sun-sensitive resources, including open spaces and landscaping. The proposed project may include a future concession that would provide wind power with up to six wind turbines that would be installed within North, South, and East Parks. However, shadows from a structure of this configuration would be very slender. For this reason, although the shadows would extend a great distance, they would not be expected to impact open space users and activities that are proposed on top of the landfill sections, nor would they be expected to impact in any way the planting program that is proposed in these areas. If the proposed park is approved, the wind turbines are expected to be operated as a separate concession requiring its own permits and approvals, and would be subject to a separate environmental review.

HISTORIC RESOURCES

ARCHAEOLOGICAL RESOURCES

A Phase 1A Archaeology study prepared for the project concluded that portions of the project site are sensitive for precontact and historic-period archaeological resources. As project design progresses, it is recommended that individual construction projects be reviewed by an archaeologist to determine if the project could impact any archaeologically sensitive areas identified in the Phase 1A archaeological documentary study. If it is determined that impacts are possible, further investigation such as Phase 1B archaeological testing would be necessary to identify the presence or absence of archaeological resources.

ARCHITECTURAL RESOURCES

One architectural resource (the New York City Landmark [NYCL] Sleight Family Cemetery, a.k.a. Blazing Star Burial Ground) was identified on the project site. No previously identified architectural resources are located in the study area, however, nine potential architectural resources were identified. The proposed project is not expected to result in any direct or indirect adverse impacts to these architectural resources. No construction is currently planned within close proximity of the Sleight Family Cemetery, however, as project plans progress, if any construction activity is planned within 90 feet of this resource, a Construction Protection Plan may need to be prepared to ensure that the resource would not be inadvertently affected by construction-period impacts.

URBAN DESIGN AND VISUAL RESOURCES

PROJECT SITE

The proposed park would provide a dramatic urban design benefit by creating new upland and wetland habitats, recreational waterfront activities, passive and active athletic facilities and dining and entertainment amenities. Expansive views within the project site of attractive and enhanced ecological habitats would also be created.

Although a number of existing buildings associated with landfill operations would be retained, the number of on-site structures related to the landfill operations would be reduced and the context of the project site would be greatly altered by the addition of park-related structures, restored habitat, and recreational spaces. The buildings to be constructed would be permanent and aesthetically pleasing in contrast with today's utilitarian and industrial structures.

The proposed park would also create a public streetscape across the site where none currently exists. Existing DSNY service roads currently off-limits to the public would be redeveloped for public use as paths. The proposed park roads would include landscaping, lighting, and other pedestrian and public amenities. New paths and trails built in conjunction with the park road system would create cycling and running opportunities, and a street life in this area would evolve during both daytime and evening hours.

The ecological restoration that would occur on site would drastically enhance not just the environmental but the aesthetic qualities of Fresh Kills. The creation of attractive open spaces would soften the visual presence of the landfill on the adjacent neighborhoods and new, productive ecosystems would enhance the environmental aesthetics and functionality of the site. Overall, no significant adverse impacts would occur on the project site, as proposed uses would

provide a dramatic improvement compared to the future condition without the development of the park.

Lastly, the proposed project would be expected to enhance views from the surrounding community to the site and views from the site of the region. Views from the top of the landfill would be made accessible to the public for the first time. Views along existing and new roads would be designed such that driving through the park would be a unique visual experience, with views of dramatic topography and habitats. Iconic views of the William T. Davis Wildlife Refuge, the Staten Island Greenbelt, and Arden Heights Woods would also be emphasized.

STUDY AREA

The uses proposed for the project site would be compatible with and complementary to existing uses in the study area, increasing recreational opportunities for Staten Islanders and New York metro region residents, enlarging valuable natural areas such as the Staten Island Greenbelt, and enhancing the visual quality of the neighborhood. The proposed roads would serve to provide connectivity with this area of Staten Island.

Views from the surrounding neighborhood are expected to be greatly enhanced, as the proposed project would attract positive attention and serve as a visual amenity. At final build-out, views from the entire park perimeter—of both land and water—would be greatly improved with the project. For the study area as a whole, the proposed project would not have any significant adverse impacts on visual resources, as the project would represent a dramatic improvement in the visual character of the project site. In sum, impacts of the proposed project with respect to urban design and visual resources are positive.

NEIGHBORHOOD CHARACTER

The proposed park would provide recreational opportunities and public access to the waterfront on the site of Fresh Kills Landfill. The new park would alter the project site's land use and urban design characteristics and result in increases in traffic, pedestrian activity, and noise levels. However, these changes overall would not be significantly adverse with respect to neighborhood character; to the contrary, the proposed project is expected to have a positive effect on neighborhood character. The project site would be enlivened with recreational amenities that would draw visitors to the area. The character of the surrounding neighborhoods would be improved by the new recreational opportunities and waterfront access that would be provided by the proposed park. The proposed project would not result in any noise impacts. In addition, there would be benefits from improved circulation with new road connections across the proposed park.

NATURAL RESOURCES

INTRODUCTION

The park also includes a number of proposed elements with the potential to affect the existing terrestrial and aquatic resource, including: nighttime lighting; roads; stormwater management and water quality; structures over water; wind turbines; and increased human use. Provided below is a summary of those potential impacts.

NIGHTTIME LIGHTING

Nighttime lighting can have a significant impact on wildlife activity, including insects, birds, and mammals. Pertinent features of lighting design include luminance (brightness of a light's surface), illumination (lighting a feature near the source of a light), and the quality or physical composition of the light. Light pollution, the condition of periodically or chronically increased light conditions in an area, has known impacts on wildlife orientation or disorientation (i.e., birds or insects attracted to a light source), that may affect feeding, communication, reproduction, communication, critical interspecific interactions, and other behaviors, as well as effects on individuals, communities, or ecosystems.

Measurements of current light levels within the project site are unavailable for use in projecting future nighttime light levels. However, there are limited light sources at the park and measures to reduce light pollution would be part of the design consistent with safety requirements for lighting parks and road features.

Some examples of lighting strategies to protect natural resources include use of a limited, non-continuous lighting schedule in areas where darkness is preferred (reducing light use during low use periods), the use of shielding devices and cutoff-type luminaries with visors or hoods, reduction of ground-reflected light and upward light emissions (which accounts for up to 20 percent of 'sky glow' or atmospheric light pollution) by assigning proper directionality and pole heights suited to the appropriate use, limiting or adjusting illumination of non-target structures (i.e., bridges, secondary roads, etc.) to minimize light trespass, and using light sources suitable for the surface material of roadways or pathways (i.e., concrete vs. asphalt surfaces reflect light differently).

With the exception of areas of Fresh Kills Park where human activity would necessitate light while open to the public (i.e., park facilities open after dark, such as walkways and recreational facilities, roads, and parking), most areas of the park would not require nighttime lighting. For areas being illuminated through the night, minimizing glare and avoiding lights that illuminate structures in silhouette would be appropriate in these cases. Careful design and planning of lighting arrays would minimize many significant adverse impacts associated with the proposed project in relation to wildlife activity. In addition, the objectives of the International Dark Sky Association would be applied to the project, where feasible.

PARK ROADS

Development of the park roads has the potential to result in direct impacts to natural resources through the loss of habitat temporarily impacted during road construction or permanently impacted by the new road. Operation of the park roads also has the potential to result in long-term adverse impacts to aquatic resources, including:

- Contamination of stormwater runoff (i.e., oil and grease, and application of road salt); and
- Hydrologic changes associated with the impervious surface of the roadway.

Roadway sections with the greatest potential to have adverse impacts to natural resources include:

- South segment of the Confluence Loop Park Road in the Confluence where the roadway runs adjacent to stormwater basins C1 and C2 (e.g., The Marsh and The Sunken Forest portions of the Confluence);

- The Forest Hill Road Connection as it runs through the previously described wetland and stormwater basin system east of Landfill Section 6/7 and where it separates the woodland habitats proposed for restoration at the southern portion of the East Park;
- Confluence Loop Park Road (south segment) where it separates any habitat restoration areas proposed for the Terrace portion of the Confluence from the habitat restoration proposed for Section 2/8 within South Park; and
- The Richmond Hill Road Connection as the roadway runs through the stormwater management basin system on the east side of Landfill Section 6/7 (Yukon Avenue) and crosses over Landfill Section 6/7 (Yukon Saddle) through proposed meadow habitat restoration areas.

These roadway corridors have the potential to result in long-term adverse impacts to wildlife due to:

- Habitat fragmentation—Roadways can impede wildlife movement between or within habitat areas, subdividing species into smaller subpopulations.
- Degradation of habitat quality and loss of habitat due to avoidance—Noise, reduced air quality, light pollution, increased human activity, and invasive exotic plant species along the road edge can lower the quality of the habitat adjacent to the roadway.
- Decreased wildlife biodiversity.
- Direct loss of wildlife individuals due to impact with vehicles—Road type, adjacent habitat and abundance of individuals have been found to influence the number of deer, elk and other ungulates/vehicle collisions along roadways. Wildlife/vehicle collisions were also affected by length of road barrier and presence of median structure that limits or slows crossing.
- Decreased access to habitat vital to the lifecycle of certain species—Amphibians and turtles may be cut off from aquatic or upland habitat necessary for breeding or foraging (Evink 2002).

Design measures that would minimize the potential for roadways to result in significant adverse impacts to aquatic resources include:

- Collection and treatment of stormwater runoff from roadways;
- Low impact roadway management techniques (i.e., minimal width, minimal hydrology impacts);
- Road-side maintenance using Integrated Pest Management Plan (IPM) strategies prepared for the park to minimize the potential for adverse effects to stormwater runoff quality; and
- Maintain hydrologic connection between existing wetlands and surface water bodies using viaducts where feasible, and culverts designed to facilitate movement of aquatic organisms, and to minimize impairment of flow pattern.

Measures that would minimize the potential for roadways to result in significant adverse impacts to terrestrial wildlife include the following:

- Incorporating measures to mitigate potential impairments to wildlife movement by incorporating wildlife underpass features into culverts constructed under the park roads to maintain stormwater drainage and flow patterns, or to separate wildlife underpass features where feasible.
- Using viaducts to minimize impairment of wildlife movement under roadways.

Fresh Kills Park GEIS

- Incorporating wildlife crossing warnings in roadway signage.
- Monitoring wildlife/vehicle collisions to identify the need for additional measures (e.g., speed reduction) to minimize wildlife losses and adverse effects to motorist safety due to collisions.
- Using vegetation that does not attract wildlife in roadside landscaping and keeping vegetation adjacent to the road low to provide wildlife with unobstructed view of oncoming traffic.
- Establishing vegetation screens along roadway to reduce traffic noise in certain habitat restoration areas.

STORMWATER MANAGEMENT AND WATER QUALITY

Stormwater runoff from impervious surfaces proposed under this project can carry pollutants (i.e., suspended solids, nutrients, fecal coliform bacteria, petroleum hydrocarbons, metals, chlorides, insecticides, and herbicides) that can affect the water quality and aquatic habitats of the receiving waterbody.

Construction and operation of Fresh Kills Park would be covered by the NYSDEC State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges and a modified individual SPDES Stormwater Permit for the landfill. The proposed stormwater management system for the various phases of park development would complement and enhance the aesthetic and ecological purpose of the proposed park, and the overall stormwater management objective to improve upon the current hydrologic and water quality management provided by the stormwater management infrastructure developed for the Fresh Kills Landfill. The approach would include a mix of traditional conveyance and storage measures that would include Low Impact Development practices throughout each subcatchment.

HYDROLOGY ANALYSIS

A hydrologic analysis conducted of the proposed Fresh Kills Park stormwater management plan found that all New York State stormwater quality and quantity requirements would be met with the project before the implementation of Low Impact Development practices. For the portions of the park that would discharge to non-tidal waters, the proposed stormwater management plan would result in a decrease in the 10-year and 100-year, 24-hour storm event peak discharges. Therefore, the proposed stormwater management plan would provide peak control and water quality benefits above and beyond those required by NYSDEC. Additionally, the results of the pollutant loading conducted for the proposed stormwater management plan indicate that in general, the total annual loading of total suspended solids (TSS), total nitrogen (TN), and total phosphorus (TP) would decrease in 2016 and 2036 due to the overall decrease in impervious area that would occur within the project site as a result of the proposed project, and the proposed modifications to the existing stormwater basins. Therefore, the discharge of stormwater from the proposed project would not result in significant adverse impacts to water quality or aquatic biota of the Fresh Kills waterways or the Arthur Kill.

OVER WATER STRUCTURES AND SHADING

The proposed project includes elements that would provide access to the waters of the Arthur Kill, Great and Little and Fresh Kill, and Main and Richmond Creeks, as well as on-water recreational opportunities. Depending on the size and width of structures providing permanent

waterfront access structures has the potential to cause long-term impacts to fish and benthic macroinvertebrates due to shading of aquatic habitat. Proposed overwater project elements would feature floating docks and piers, including the proposed Fresh Kills road system with its proposed Signature Bridge, viaducts over wetlands, and new pedestrian/bicycle bridges over Main and Richmond Creeks.

Shading of estuarine habitats is a concern because decreased light levels can lower productivity of primary aquatic producers and adversely affect fish and invertebrates that use these areas to provide passage for various life stages, and as important areas for feeding, refuge and spawning. Alteration of light regimes by overwater structures and activities such as docks, floats, piles, and moored vessels can limit plant growth and result in altered animal behavior and assemblages.

Shading can adversely impact habitat for certain fish species because of the species dependence on sight and light for feeding, prey capture, schooling (due to dispersal under low light conditions), spatial orientation, predator avoidance, and migration (change in migratory route to deeper waters to avoid shaded areas). Design measures that would minimize the potential for overwater structures to adversely impact aquatic resources include:

- Locating overwater structures in sufficiently deep waters to avoid intertidal and shade impacts and minimizing the need for dredging;
- Designing overwater structures to be multi-use facilities in order to reduce the overall number of such structures; and
- Increasing ambient light transmission under piers and docks.

WIND TURBINES

Under consideration is the potential placement of six wind turbine structures in the park. This could increase the potential for wildlife mortality, specifically for migrating and resident wildlife. As the proposed project would be sited within a major migratory flyway, hundreds of migratory bird and bat species (each with the number of individuals varying from thousands to millions) would be expected to pass through the project area each year. Several species are also known to breed in the project area. Given that any wind turbine project at Fresh Kills is expected to be a franchise and subject to separate environmental review, a subsequent analysis should meet the requirements of recent NYSDEC draft *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects*. Potential measures for avian impacts include evaluating alternative locations to avoid wildlife collision risk, reducing the overall height, operational restrictions, and fewer turbines.

HUMAN ACTIVITY

Human activity includes vehicular traffic on designated roadways, upland and on-water recreation. Based on the current low-levels of human activity at the project site, increased human activity as a result of the proposed project would be expected to have some effect on wildlife populations. The degree to which significant adverse impacts would occur with respect to human activity is proportional to the degree of access afforded into wildlife habitat, as well as any reduction in the ability of wildlife to move unimpaired from one habitat area to another. Impacts to wildlife that would be expected to occur with the proposed park would include noise, motion, and other direct effects on wildlife behavior as a result of pedestrian and non-motorized vehicle activity, increased interspecific predation rates in proximity to trail edges, and rare mortality associated with wildlife collisions with non-motorized vehicles (i.e., kayaks, bicycles, horses).

Fresh Kills Park GEIS

At Fresh Kills Park, it would be reasonable to expect that increased levels of habitat segmentation driven by physical barriers (e.g., roads) coupled with increased human activity throughout the entire park could have some impact on wildlife populations in both existing and proposed habitats. One strategy to minimize such effects, while still allowing for public access, would be a trails management plan. Another would be to design trails to allow for wildlife access to nearby cover, effectively increasing tolerance of wildlife to human presence.

VEGETATION AND WILDLIFE MANAGEMENT

The ultimate goal of the various enhancement projects over the 30 year build period would be the development of a suite of self-sustaining ecosystems. These ecosystems would ideally require minimal management effort (e.g., mowing, continued plantings, etc.) to maintain the desired communities over time, and would target complex wildlife-habitat relationships, such as the creation of grassland habitat, to encourage development of grassland-breeding bird communities. The overall vegetation and wildlife management plans include:

- Managing of invasive or introduced plant species through mechanical removal (e.g., mowing) and other methods (e.g., herbicides) to allow enhanced communities to recolonize areas and compete with existing monocultures of dominant vegetation (mugwort, *Phragmites*, etc.);
- Allowing existing desirable communities (i.e., maturing forests, clay barrens, etc.) to progress with minimal intrusion or manipulation other than invasive species management; and
- Employing Integrated Pest Management (IPM) practices in controlling invasive or introduced plant species, the Asian Longhorned Beetle, and in controlling vector species such as mosquitoes.

These activities would result in positive benefits for the local and regional environment.

Wetland Impacts and Restoration Activities

Closed landfill sites are excellent candidates for habitat management projects to promote ecological diversity and wildlife habitat through habitat restoration or creation. At Fresh Kills Park, several upland and wetland habitat restoration projects have been proposed for the 2016 and 2036 analysis years. These habitat changes are summarized in Table S-4 with respect to wetlands.

Table S-4
Potential Long-Term Impacts to Wetlands and Aquatic Habitats from Project Roads and Bridges
2016 and 2036 Analysis Years

Project Element	Area of Wetlands Filled Direct Impacts (Acres)		Area of Potential Indirect Impact (Wetlands or Aquatic Habitat Shaded Acres)		Proposed Wetlands Enhancement (Acres) ¹	
	Freshwater	Tidal	Freshwater	Tidal	Freshwater	Tidal
2016 Analysis Year						
Forest Hill Road Connection of Southern Park Road			1.10		North Park— 9.5 acres	North Park— 40 acres
Loop Park Road, North Segment		0.3			South Park— 14 acres	South Park— 4 acres
Loop Park Road, South Segment		0.4			Confluence, The Marsh— 4 acres	Confluence, The Marsh— 0 acres
Northbound West Shore Expressway Service Road—Loop Park Road to Wild Avenue	0.02				Confluence, The Terrace— 1 acre	Confluence, The Terrace— 0 acres
Northbound West Shore Expressway Service Road—Arden Avenue to Loop Park Road	0.20				Confluence, Creek Landing— 1 acre	Confluence, Creek Landing— 1 acre
Main Creek Pedestrian/Bicycle Bridge				0.3		
Richmond Creek Pedestrian/Bicycle Bridge				0.4		
Marine Infrastructure	0.0	0.0	0.0	0.2		
Subtotal (Acres)	0.22	0.7	1.1	0.9	29.5	45
2036 Analysis Year						
Park Road North—Richmond Road Connection	4.3				East Park— 24.5 acres	East Park— 28 acres
Signature Bridge		0.03		1.7	Confluence, The Point— 2 acres	Confluence, The Point— 3 acres
Marine Infrastructure	0.0	0.0	0.0	0.4		
Subtotal (Acres)	4.3	0.03		2.1	26.5	31
Note:						
¹ See Figure 1-13a in Chapter 1, "Project Description."						

Wetland Impacts and Restoration

Wetland restoration would include tidal wetlands and freshwater wetland enhancement and creation. As shown in the table, all proposed construction effects that would result in wetlands impacts would be mitigated. Under the proposed project there is a net wetland gain in acreage and significant benefits from the proposed enhancements. Any wetland impacts during restoration activities would generally be short-term, relating to temporary impacts from equipment use and grading (as described above). Wetland restoration and mitigation would be of two types:

- Tidal—Tidal wetland restoration would include enhancement and expansion of the existing tidal wetlands. Methods would include removal of invasive species and restoration of the native intertidal and high marsh plant communities. Tidal restoration would include enhancing and creating the following: mudflats (5 acres), low salt marsh (20 acres), and high salt marsh (15 acres).

Fresh Kills Park GEIS

- Freshwater—Restoration and expansion of the existing freshwater wetlands includes the possible creation of additional wetland habitats within existing low-lying areas and possible enhancement of stormwater management basins. The initial freshwater wetland restoration would include approximately 12 acres of freshwater swamps and other freshwater wetland habitats.

Upland Habitats

Upland habitat improvements at Fresh Kills Park would include preserving existing native vegetation where possible, planting and seeding native plant species, and encouraging natural succession of healthy habitats. Long-term monitoring of vegetation conditions and management and maintenance of native communities including control of invasive species, supplemental planting, and other maintenance activities would be performed as part of the habitat management plan. Soil stabilization measures would comply with standard erosion and sediment control regulations, and would include the use of silt fences, sediment traps, swales, temporary seeding, phased grading, and permanent cover establishment via native plantings.

Upland grassland restoration projects have been known to be successfully reestablished or previously reestablished on degraded landscapes in short time periods and enhancement of the tidal hydrology. This type of habitat restoration is particularly important because grasslands composed of native species are exceedingly rare in urban centers and are some of the rarest ecosystems in North America. In addition, these areas can provide important coastal wildlife habitat refuge, which is needed in the New York Harbor area.

In addition to grasslands, scrub-shrub forest restoration is proposed in upland areas. This type of habitat is proposed to provide variety in the upland landscaping, but would only be implemented if it could be demonstrated that such programming would not adversely impact landfill infrastructure and the final cover.

If scrub-shrub forest is implemented, it would be planted on low or gentle slope areas with species prevalent in upland hardwood forest (e.g., white, red, post, and scarlet oaks, black cherry, tulip poplar) and lowland mesic forest (e.g., Silver maple, American sycamore, Eastern cottonwood, Sweetgum). At maturity, tree heights would generally range from 4 to 12 feet for smaller shrubs, and 16 to 30 feet for understory species.

It would also be necessary to design a planting program that deters Asian Longhorned Beetles.

Integrated Pest Management (IPM)

It is anticipated that the New York City DOHMH, Office of Vector Surveillance and Control, would conduct larval mosquito surveillance of the freshwater and tidal water bodies that are existing or created throughout the 30-year development of Fresh Kills Park, as well as adult mosquito surveillance to detect the presence of mosquito-borne pathogens and assess the effectiveness of control measures. As with other areas of the city, known mosquito-breeding locations within Fresh Kills Park would be routinely inspected and treated with EPA-approved larvicides. The city's mosquito control program has undergone environmental review and determined not to result in a significant adverse impact to the environment (CEQR Number 00DOH0024). Therefore, the implementation of mosquito control measures within the park would not result in significant adverse impacts to aquatic or terrestrial resources.

Geology, Soils, and Groundwater

Development of the proposed park is not expected to result in significant impacts with respect to geology, soils, or groundwater. The majority of the project elements would be built at or above

grade and therefore would not affect local geology. In addition, it is proposed that approximately 2 feet of new soil be placed on top of the landfill sections and publicly accessible areas of the park. Thus, the proposed project would largely be bringing fill to site, although there would also be areas of some limited grading of existing soils to achieve level grades for parking areas, structures and recreational facilities, as well as excavation for the installation of utilities. Placement of this soil would somewhat modify topography, but would not be expected to result in significant adverse impacts to groundwater. In addition, few structural elements of the proposed project are expected to reach into groundwater.

Floodplains

Implementation of the proposed stormwater management measures discussed above would minimize potential increases in stormwater flow rate and volume. Development of the proposed park requires activities in the floodplain including vegetation clearing, placement of fill, and constructing project elements that provide water access and roads, and parking. To the extent that habitable buildings can be provided outside or above the floodplain, these structures would avoid the 100-year floodplain. This would include development of structures at an elevation of at least one foot above the floodplain elevation and, since the proposed project has a long-term buildout, incorporating any future amendments to the Federal Emergency Management Agency (FEMA) floodplain maps and use of those maps and current site topography in developing future site and building plans. The resulting impacts of these project elements on flood plains would be negligible. Project designs would ensure that any filling activities within the floodplain would be limited and not significantly alter local hydrology or flooding conditions.

Aquatic Resources

Implementation of post-construction stormwater management measures prepared for each capital project park would minimize the potential for significant adverse impacts to water quality and aquatic biota.

Both the water access and road projects require activities in and along the water. However, these structures would have a small footprint and would require a limited number of piles. Therefore, the loss of bottom habitat is expected to be small and would not result in significant adverse impacts to aquatic resources. Where road projects intrude into tidal or freshwater wetland habitat, mitigation would be proposed (see Table S-4 above). Therefore, in-water construction activities associated with the recreational facilities would not be expected to result in significant adverse impacts on water quality or aquatic biota.

Terrestrial (Upland) Resources

Park development would result in the limited clearing of some existing vegetation to construct structures and roads for habitat enhancement. This would have the potential to temporarily disturb wildlife individuals currently using the site. Temporary adverse impacts due to clearing and grading would occur to some individual birds and other wildlife currently using the limited terrestrial habitats at the site. Upland areas at the site are primarily of limited habitat value beyond shelter, nesting substrate for some passerines (e.g., sparrows and marsh-dwelling birds), and various native and non-native rodents. Loss of this habitat until the proposed habitat restoration becomes established would not represent a long-term significant adverse impact to local wildlife species. In addition, the habitat projects would be staged over time, so that similar habitats would be available at the project site and in the secondary study area during the grown-in period.

Fresh Kills Park GEIS

Threatened or Endangered Species

The proposed park would not be expected to result in significant adverse impacts to colonial waterbird nesting activity on Isle of Meadows, or inhibit the re-establishment of such activity in the future.

Fresh Kills Park is expected to provide overall habitat improvement for barn owls and northern harriers. This would include expanded foraging habitat for both species, which predominantly feed on small mammals in grassland habitats and are known to rapidly recolonize habitats (e.g., meadow vole). Therefore, no potential negative impacts to these species are expected. (Construction-period impacts are presented below.)

The state-threatened Northern diamondback terrapin was captured and observed in Main Creek in the vicinity of the William T. Davis Wildlife Refuge in 1995, and again in 2005. Therefore, low shoreline areas adjacent to open sand or other unvegetated soils could potentially support nesting diamondback terrapins and foraging adults. This would necessitate construction period mitigation. In the long term, the proposed shoreline and wetland restoration projects (i.e., *Spartina* marsh restoration, *Phragmites* removal) would be expected to increase the suitability of these sites as both foraging and nesting sites for terrapins.

Significant Coastal Fish and Wildlife Habitat

The proposed park would not conflict with the Fresh Kills Significant Coastal Fish and Wildlife habitat. In fact, it would protect the tidal creek systems as well as expand, enhance and provide spawning and nursery habitat for anadromous, estuarine, and resident fish. Moreover, it would continue to be used by wading birds, waterfowl, shorebirds, raptors, and passerines.

PROPOSED PARK ROADS AND WEST SHORE EXPRESSWAY CONNECTIONS

Wetlands

Implementation of post-construction stormwater management measures included in the SWPPPs prepared for the road would minimize the introduction of roadway pollutants into stormwater runoff and the potential for significant adverse impacts from stormwater discharge. Constructed wetland BMPs would also be an integral component of the stormwater management practices that would be implemented throughout the park.

Development of the proposed roadways would, however, result in adverse impacts to both freshwater and tidal wetlands due to filling and shading. As described in the following sections, the proposed park roads and the West Shore Expressway service roads would result in the filling of approximately 0.65 acres of tidal wetlands, approximately 0.22 acres of freshwater wetlands, and the shading of 1.1 acres of freshwater wetlands. The cumulative impact on these wetlands would be offset through the implementation of appropriate mitigation and conservation and enhancement of wetlands in the other park areas.

The Forest Hill Road Connection crosses over a portion of the freshwater wetlands on the east side of Landfill Section 6/7. It is anticipated that the crossing of this wetland would be achieved with a viaduct. As currently contemplated, this viaduct would be approximately 665 feet long and about 60 feet wide, and would span the existing freshwater wetlands.

The proposed viaduct has the potential to result in temporary impacts to wetlands during construction and some long-term impacts due to the footprint of the viaduct structure. However, the hydrology of the wetland system would be maintained through the viaduct design.

Although the viaduct has been designed to avoid to the extent possible and minimize the placement of fill within the freshwater wetlands (with the exception of the support footings), it would result in shading of approximately 1.1 acres of wetlands beneath the structure. While the 14 foot height of the viaduct would allow sufficient light to penetrate under the structure for a short distance from either edge, it is likely that the amount of light would not support plant growth, thereby resulting in significant adverse impacts to wetlands. However, spanning the wetland would avoid impacts on the hydrologic characteristics of the wetland system, and allow for the primary functions of the wetland to be maintained while minimizing adverse impacts to wildlife and allowing the continued free movement of wildlife through the wetland. Operational measures would be instituted to control the application of road chemicals on the viaduct to minimize potential adverse impacts to wetland vegetation.

Confluence Loop Park Road

Construction of the Confluence Loop Park Road would result in the permanent loss of tidal wetlands along Main and Fresh Creeks due to the placement of fill. In addition, at the underpasses beneath the expressway, there would be permanent loss of tidal wetlands due to the proposed roadway expansion, bulkhead construction and placement of fill behind the bulkhead. The construction of the southern leg of the Loop Park Road under the West Shore Expressway would result in the permanent loss of tidal wetlands due to bulkhead construction and placement of fill behind the bulkhead needed to expand the roadway at this location. Mitigation for this impact is presented below.

West Shore Expressway Service Road

Construction of the West Shore Expressway Service Road would result in very limited impacts of ACOE freshwater wetlands associated with swales that handle highway runoff. Mitigation for this impact is presented below.

PEDESTRIAN/BICYCLE BRIDGES

The 2016 analysis year includes two pedestrian/bicycle bridges, one over Main Creek and one over Richmond Creek.

Construction of these bridges would include driving piles within the two tidal creeks and outer bridge supports. Installation of piles would result in the permanent loss of bottom habitat within the footprint of the piles. However, the loss of this area of bottom habitat would be limited and not result in significant adverse impacts to aquatic benthic habitat or resources. Any temporary increase in suspended sediment resulting from pile installation would be localized. Similarly, any contaminants released to the water column as a result of sediment disturbance would be expected to dissipate rapidly and would not be expected to result in significant long-term impacts on water quality. The proposed pile spacing would also not impede tidal action or result in long-term impacts to water quality.

These two pedestrian/bicycle bridges do have the potential to result in long-term adverse impacts to fish and benthic macroinvertebrates due to shading of aquatic habitat (see Table S-4). However, adverse impacts to aquatic resources due to shading would be offset through implementation of tidal wetland mitigation.

Richmond Hill Road Connection and Signature Bridge (2036)

Development of the proposed Richmond Hill Road Connection and the proposed Signature Bridge would result in adverse impacts to both freshwater and tidal wetlands due to filling and shading (see Table S-4). It is assumed that indirect impacts would be avoided and minimized by

Fresh Kills Park GEIS

using culverts that maintain hydraulic connections and minimize adverse impacts to the remaining wetlands in this area. This loss would result in significant unavoidable adverse impacts to wetlands resources that would be mitigated and offset by implementation of the proposed project's wetland enhancement and creation program both expanding and enhancing wetlands at the site. In addition, the resultant wetland complexes would be preserved in perpetuity and regulated by the ACOE and NYSDEC, to ensure that all federal, state, and local wetland management priorities are met to the extent practicable at Fresh Kills Park.

It is assumed that construction of the Signature Bridge would likely result in the unavoidable placement of fill or structural piers and footings within tidal wetlands that would require mitigation.

PEDESTRIAN OVERPASSES

Two pedestrian/bicycle overpasses have been proposed for 2036, one at Muldoon Avenue and the other at Forest Hill Road over Richmond Avenue. Both bridges would require inconsequential clearing of vegetation within the 100-foot diameter footprint of each bridge base. The approach for the Muldoon Avenue Pedestrian Bridge in South Park has the potential to result in adverse impacts to a small area of freshwater wetlands if it cannot be sited outside the stream channel and associated wetlands that run parallel and east of the West Shore Expressway. However, the potential adverse impacts to wetlands due to the bridge would be limited. Neither bridge would be located within the 100-year floodplain.

HAZARDOUS MATERIALS

According to the *CEQR Technical Manual*, soil and groundwater conditions can be impacted by hazardous materials as a result of historical or current uses and activities on a project site or in adjacent areas (generally defined as within 400 feet of the project site boundary). If these contaminants are not properly identified and handled, park development activities can potentially create a health risk to construction workers and residents. In addition, demolition of older structures that have asbestos-containing materials is another hazardous materials concern since this also has the potential to release contaminants to the environment if not properly managed.

Based on an extensive review of published reports and literature as well as historical aerial photography and topographic maps, available site testing data and a field walkover of North Park, it is concluded that most of the project site soils are likely to have been affected by hazardous materials or pollutants from a variety of on- and off-site sources. These sources include the four solid waste landfill sections, the Plant 1 and 2 areas, and waste cells where solid waste has been identified on the project site, but outside of the solid waste management unit area boundaries. There are also industrial uses in the surrounding area that may have affected the project site. Based on the research performed for this analysis, the types of contaminants that are typically found in urbanized areas as well as in and around municipal solid waste landfills are expected.

The proposed project would address these hazardous materials issues in two ways. As described above (see "Soil Management Strategy"), it is the objective of the proposed project to ensure that the previously closed landfill sections and the off-landfill sections that would be publicly accessible have a soil cover that meets the applicable NYSDEC Subpart 375 criteria for public access and a variety of uses. It is the objective of the City to provide a soil cover meeting these criteria for the purposes of providing a healthy environment and to protect public health and

safety at the open spaces proposed in the park. The applicable criteria to a particular park project would be determined as each capital project moves forward and would be based on the current site conditions and proposed programming at the park.

In addition to providing this soil cover, certain elements of the proposed project are expected to require excavation for the purposes of installing new utilities such as electricity, water and sewer connections as well as foundations for the proposed structures. These excavation areas, however, in the context of the overall project, are limited and the majority of the proposed project activities would occur at or above the existing grade (i.e., on the added cover soil). Therefore, recommendations for individual project-specific subsurface investigation and, if necessary, remediation, are proposed. With this approach, any impacts due to hazardous materials would therefore be mitigated or avoided during the long-term implementation of the project.

WATERFRONT REVITALIZATION PROGRAM

Because the proposed project is located within the City's Coastal Zone, it is subject to the policies of the *New York City Waterfront Revitalization Program (WRP)*, which establishes the City's policies for development and use of the waterfront and provides a framework for evaluating activities proposed in the Coastal Zone. The proposed project would be consistent with the City's 10 WRP policies and standards. The development of a significant public park on the project site is consistent with City goals for revitalizing and providing public access in the coastal zone. Conversion of Fresh Kills Landfill into Fresh Kills Park is an objective of the City's Coastal Zone Management Program and specifically, the Plan for Staten Island. The proposed project would support these goals, including the objectives of providing public access to the waterfront, reusing an underutilized water City property for the purposes of coastal open space and recreation, and providing an overall improvement in the coastal ecology through habitat enhancement and wetland restoration projects.

INFRASTRUCTURE

Although the proposed project would create new demands for water and treatment of sewage, the existing municipal services could handle these increases in demand and no significant adverse infrastructure impacts are expected to result from the proposed project. In addition, beyond the standard infrastructure systems typically installed in the City, the proposed project would initiate sustainability measures on-site with respect to on-site infrastructure systems. Potential impacts are as follows:

- The added water demands of the proposed project would not overburden the City's water supply system.
- There would be adequate wastewater treatment capacity at the City's Oakwood Beach and Port Richmond Water Pollution Control Plants (WPCPs) to handle the increased sanitary flows from the proposed project. Thus, it is concluded that no significant adverse impacts would occur on the City's wastewater treatment facilities.
- To avoid stormwater impacts from proposed increases in impervious surfaces, particularly with respect to the proposed roads, and to avoid impacts to receiving waters within and adjacent to the proposed park, as described above, the proposed project would have a comprehensive stormwater management plan.
- Because the proposed project has a long history as a municipal solid waste landfill, many project locations do not have direct access to the local infrastructure. Therefore, water

Although the proposed Fresh Kills Park project is not expected to impact local infrastructure, sustainability measures are being explored to reduce demands for water and wastewater treatment. For example, the proposed Fresh Kills Park has environmental sustainability goals for managing and reducing demands on water supply. To this end, it is anticipated that a set of sustainability strategies may be implemented that would reduce water demands and maximize water re-use within the park. These strategies include waterless urinals and composting toilets in remote comfort stations (no water supplied); water conservation measures and low flow fixtures throughout the park; greywater recycling systems in larger buildings; and rainwater harvesting on buildings. Rainwater harvesting could be implemented through the use of the building roofs to collect rainwater. This water could then be used for irrigation, toilet flushing, maintenance, and other custodial uses. Greywater systems could also be used in larger buildings and larger comfort stations. Finally, wastewater generation is directly linked to water use. By reducing water demand, the volume of wastewater produced is also reduced.

SOLID WASTE AND SANITATION SERVICES

Solid waste management and recycling services for the proposed project would be principally provided by DPR and DSNY. It is expected that a small amount of solid waste and recyclables would be handled by private carters at privately operated commercial facilities. The net increase in solid waste to be collected under the proposed project by 2036 would be about 12.6 tons per day, which is a minimal increase when compared to the estimated volumes of residential and institutional refuse and recyclables collected in the City. While the commercial waste would also increase due to the proposed project, this waste would amount to about 5.7 tons per day. This would represent an increase of less than one percent in the commercial waste stream of the City (which amounts to approximately 10,000 tons per day) and is also a minimal increase in the commercial waste stream. It is expected that this volume of solid waste could be handled by the private commercial solid waste management industry. Solid waste and recyclables generated by park activities would be handled by DPR.

Given that there is an extensive system of solid waste collection and disposal services available to the proposed project and that the added net increments of solid waste under the proposed project are minimal additions to the City's solid waste stream, the proposed project would not adversely impact solid waste and sanitation collection services.

With respect to the existing solid waste management facilities on the project site and adjacent areas, the City would ensure that all management and maintenance agreements and permit obligations relative to the closure and post-closure requirements that pertain to Fresh Kills Landfill would be met even with the construction of the proposed park. Protective measures would be taken to safeguard the landfill's infrastructure, including stormwater controls, landfill gas collection system, leachate treatment system, final cover, and monitoring. This would include any modifications to existing facilities or amendments to the post-closure monitoring and maintenance program for Fresh Kills Landfill. In addition, DPR would ensure the continued access to DSNY facilities at the Fresh Kills site as well as off-site, including the Staten Island Waste Transfer Station, Composting Facility, and Rock Crushing and Screening Facility, and the Borough Districts 2 and 3 garages and the repair shop, as well as use of the Fresh Kills Park

roads and roads, for the purposes of allowing DSNY to continue to provide sanitation collection and disposal services for Staten Island. The proposed park would be able to host one or more leaf and yard waste composting sites to produce an organic soil amendment for the park. For the reasons stated above, it is concluded that the proposed project would not adversely impact solid waste and sanitation services or the obligations of the City under its Solid Waste Management Plan.

ENERGY

The proposed project would increase energy demands with its proposed new recreational fields with lighting, park and street lighting, and lighting of the various commercial and cultural facility spaces. However, relative to the capacity of these systems within the City and the current levels of service within the grid, these added demands would be insignificant. Improvements for local site connections would be installed by Consolidated Edison, as necessary, with respect to the local electrical distribution system and necessary site connections. These improvements are expected to include typical local upgrades in electrical line connections, and no major improvements are anticipated. Moreover, the proposed project would have a sustainability program that would reduce energy demand from what would otherwise be expected in a conventionally designed energy system and would also provide the opportunity for renewable on-site sources for energy. For these reasons, it is concluded that the energy demands of the proposed project would not result in significant impacts on energy.

TRAFFIC AND PARKING

TRAVEL DEMAND

The proposed Fresh Kills Park would add a substantial number of vehicle trips in the study area in the years 2016 and 2036. In the year 2016, a number of the first phases of Fresh Kills Park would be completed, providing a mix of passive and active recreational facilities in North and South Parks. In 2016, the proposed project would generate approximately 126, 209, 191, 257, and 257 vehicles per hour during the weekday morning, afternoon, evening and weekend afternoon and evening peak hours, respectively. By the year 2036, the entire park would be created, resulting in approximately 363, 1357, 1548, 1939, and 1929 vehicles per hour during the weekday morning, afternoon, evening and weekend afternoon and evening peak hours, respectively. In addition to the vehicle trips generated by the various park components in 2016 and 2036, there would be significant volumes of diverted traffic resulting from the construction of new park roads providing new east–west connections between Richmond Avenue on the east and the West Shore Expressway on the west.

ROADWAY IMPROVEMENTS

As described above, the proposed Fresh Kills Park would create a network of four-lane internal park roads as well as improvements and proposed connections to Richmond Avenue at both Forest Hill Road and Richmond Hill Road and improvements to the West Shore Expressway corridor that would include modifications to service roads and ramps within the West Shore Expressway corridor between Arthur Kill Road and Victory Boulevard. These improvements would improve access to and from the park by providing new and extended service roads, additional ramps, and ramp relocations. In addition, new intersections would be created with Arden Avenue and the south leg of the new Confluence Loop Park Road as part of the proposed improvements.

TRAFFIC IMPACTS

The locations selected for traffic impact assessment for the proposed project include 30 major intersections. These include intersections along local roadways bordering the project site (e.g., Arthur Kill Road), as well as along arterials (e.g., Richmond Avenue) that would provide access to or from the site and would also be affected by project-generated and diverted traffic volumes. It should be noted that at the majority of locations in the study area, traffic congestion already exists in the future without the proposed project conditions—specifically in the year 2036. At these congested locations significant adverse traffic impacts would occur in both the 2016 and 2036 future build conditions.

The analysis results show that in the 2016 Build Conditions, the weekend midday peak hour would have the highest number of impacted intersections with eighteen (18), followed by weekday PM and weekday midday peak hours with fifteen (15) and thirteen (13) impacted intersections, respectively. The Saturday PM peak hour would have twelve (12) impacted intersections. The weekday AM peak hour would have the fewest number of impacted intersections under the 2016 Build conditions with eleven (11).

The analysis results also show that in the 2036 Build conditions, the weekday PM and weekend midday peak hours would have the highest number of impacted intersections with twenty four (24), followed by the weekend PM peak hour with twenty two (22) impacted intersections. The weekday AM and weekday midday peak hours would have the fewest number of impacted intersections under the Build 2036 conditions with twenty (20) each.

Mitigation for these impacts is presented below.

WEST SHORE EXPRESSWAY CORRIDOR

In addition, the traffic analysis included an examination of highway conditions along the West Shore Expressway Corridor using the CORSIM model that examined the potential impacts of the proposed project with respect to traffic flow conditions along the expressway. The analysis disclosed that certain segments of the expressway could experience congestion in the years 2016 and 2036 with the introduction of the proposed project's ramps and traffic that would use the expressway. DPR will continue to coordinate with NYSDOT to explore expressway access design alternatives that would maximize traffic operating conditions along the expressway with the proposed project in place while minimizing congestion.

PARKING

In total, the proposed Fresh Kills Park would provide approximately 3,400 parking spaces by the year 2036 (including 1,873 permanent spaces and up to 1,544 overflow parking spaces). The proposed parking would be sufficient to accommodate the project's parking demand in both the 2016 and 2036 future build conditions. Since sufficient on-site parking capacity would be available to fully accommodate all project demand in all peak periods, and there is overflow parking for events and above average parking demand days, no significant adverse impacts to parking conditions would result from implementation of the proposed project.

TRANSIT AND PEDESTRIANS

The proposed park would generate fewer than 200 peak hour transit, pedestrian, and bicycle trips during weekday and weekend conditions in both the 2016 and 2036 future years. This is because the transportation trips on Staten Island are largely assumed to be vehicular trips, and to provide

a conservative traffic analysis a 90 percent auto share was assumed for trip generation estimates. As a result, the number of pedestrian and transit trips generated by the park is below the *CEQR Technical Manual* recommended threshold of 200 peak hour trips for undertaking quantified analyses. Therefore, it is concluded that the proposed project would not adversely impact the pedestrian and transit conditions in the study area.

Currently, the proposed Fresh Kills Park site is not directly served by existing NYCT bus routes; however, as stated above, there are several existing NYCT bus routes that serve its periphery, as well as regional service along the West Shore Expressway and access to local park and rides (both existing and proposed). While it is not proposed at this time, in the future with the proposed park, NYCT could either expand bus services and routes to accommodate the park generated transit demand (especially during the weekend summer months) or amend the existing bus routes to include new stops within the park and along its exterior boundaries. It is anticipated by park planners that expanding the availability of bus transit in the future conditions could potentially reduce the number of project generated auto trips by shifting the patrons to mass transit. This could, over time, reduce vehicle trips and improve transit use at the local (boroughwide), citywide, and regional levels. Reduced traffic would also reduce demands on parking and enhance the overall park experience while potentially increasing park use through transit arrivals. Therefore, DPR would continue to coordinate with MTA/NYCT for the purposes of providing transit service to the park.

The proposed project would provide new pedestrian access points to the park on Richmond Avenue, Arthur Kill Road, and Wild Avenue. These pedestrian connections would provide new pedestrian facilities (sidewalks, crosswalks, and corners) at locations where these facilities do not currently exist, and would also improve the existing pedestrian facilities on Richmond Avenue intersections with Forest Hill and Richmond Hill Roads by providing wider, high-visibility crosswalks and sidewalks along the park periphery. Providing sidewalks on the park side of Arthur Kill Road is a project that would need to be coordinated with NYCDOT. Improving local pedestrian options would be a positive impact of the proposed park and would improve walk trip connections with the local Arden Heights neighborhood. These measures would enhance pedestrian safety at all the major access and egress points to and from the park. With respect to bicycle access, DPR and NYCDOT have a program for expanding bike access in the area. A project that is proposed in the future is the New Springville Greenway that would link the William T. Davis Wildlife Refuge on the North with LaTourette Park on the south. It is an objective of the proposed park to expand cycling opportunities into the park and to be a bike destination that would also advance biking as an alternative mode of travel to the park. Measures to improve local biking opportunities would therefore be a positive impact of the proposed park.

Based on the vehicle-pedestrian accident data obtained from the New York State Department of Transportation (NYSDOT), currently there are no high vehicle-pedestrian accident locations in the study area, and the proposed project is not expected to adversely impact pedestrian safety in the study area.

NOISE

The proposed Fresh Kills Park would not result in significant adverse noise impacts from increased traffic or stationary noise sources. The proposed project would not result in any predicted exceedances of *CEQR Technical Manual* suggested incremental thresholds at noise receptor locations.

Fresh Kills Park GEIS

Noise levels within Fresh Kills Park at certain locations would be above the *CEQR Technical Manual* noise exposure guideline of 55 dBA L₁₀₍₁₎ for outdoor areas requiring serenity and quiet. Although noise levels in the new park area would be above the CEQR guideline, they would be comparable to noise levels in several other New York City parks, including South Shore Golf Course Park, Arden Heights Woods Park, Latourette Park, and Willowbrook Park, and would not result in a significant adverse noise impact.

Therefore, there would be no predicted significant adverse noise impacts from the proposed Fresh Kills Park.

AIR QUALITY

An analysis was performed to determine if the proposed park would result in adverse impacts from vehicles (mobile sources) or heating systems (stationary sources). That analysis determined that no violations of air quality standards or significant increases in air pollutants or impacts would occur due to the proposed project. Thus, there would be no significant adverse impacts on air quality from the proposed project.

CONSTRUCTION

PROJECT IMPLEMENTATION AND PHASING AND COORDINATION WITH DSNY

Implementation of the proposed park must be coordinated with the obligations of the City through DSNY, to complete final closure in accordance with the schedule established with NYSDEC and to continue with the landfill post-closure monitoring and maintenance program. The proposed park phasing plan must therefore account for the phased opening of the project site for park users in some locations while final closure continues in other areas.

Construction phasing for the proposed park has been, and will continue to be, planned to minimize disruption to the DSNY closure activities at both Landfill Sections 6/7 and 1/9. It is expected that park construction mobilization would begin in the third quarter of 2009 and would overlap with some of the closure construction at Landfill Section 6/7. In addition, the Fresh Kills Landfill Plant 2 is to serve as the principal contract support area for landfill closure construction of Landfill Section 6/7. However, it is expected that use of this area for staging would be substantially completed by 2012.

As the park moves forward, it is also expected that DPR and DSNY would create a “development plan” for the proposed project that would address coordination and levels of construction activity through the completion of construction to ensure that any conflicts between landfill closure and park construction are avoided or minimized. In addition, it should be noted that given the long period of project construction, there would be minimal overlap between the closure construction and the construction of the majority of the project. For example, there would be no overlap between a landfill closure construction and park construction activities in either East or West Parks or the Point since neither has park elements in the 2016 program. In addition, there would be no overlap of landfill closure construction with park or road construction activities at Landfill Section 1/9. However, there would be a continuing need for construction to fulfill the City’s duties carried out by DSNY under the Monitoring and Maintenance Program agreements.

As stated above, the proposed project is a major capital project that would be developed in multiple phases over several decades. It involves the construction of park facilities, ecological

habitats, and significant new park roads, ramps, and service roads connecting with the West Shore Expressway, and road connections and intersections with Richmond Avenue at both Forest Hill Road and Richmond Hill Road. In total, about 7 miles of new roadways are proposed with the project. However, the proposed project is a multi-year, multi-phase initiative that is not expected to be fully completed until 2036.

OPERATIONAL OBJECTIVES

Since the proposed project could occur over three decades, dedicated staging areas internal to the site would be important in reducing construction impacts on the external community over the 30 years of construction activities. It is also expected that individual capital projects, such as North Park (Phase A), for example, would have satellite construction staging areas depending on the type of construction activities that are proposed in any given capital project and the requirements of individual contractors. Some of the general construction principles that would apply to the proposed project are:

- Develop a staging plan that utilizes the internal build conditions at the project site, thereby minimizing impacts on local neighborhoods and roads at the periphery;
- Establish heavy support operations, such as soil making (if proposed) in an area central to the project site and away from local residential uses;
- Locate individual capital project staging areas in locations that have been previously disturbed or would be disturbed as part of project development and avoiding impacts to wetlands and natural features;
- Locate road construction staging areas in the proposed road corridor, clear of wetlands and landfill infrastructure;
- Although truck deliveries for imported soils are expected to be the principal mode in the short term, consider barging soil, if feasible;
- Use truck and access routes in use for closure construction since these allow for direct access to and from the regional highway while internalizing truck traffic and minimizing the use of neighborhood streets around the project site;
- Minimize the closing of existing streets by performing nighttime work along major corridors (e.g., to implement modifications at the two intersections with Richmond Avenue, at Richmond Hill and Forest Hill Roads, and the connecting ramps to the West Shore Expressway);
- Control worker access to the site by stipulating entry and exit points within each contract;
- Provide for worker parking on-site; and
- Utilize the construction staging area for worker parking.

POTENTIAL CONSTRUCTION PERIOD IMPACTS OF THE PROPOSED PROJECT

Land Use, Neighborhood Character and Open Space

To minimize impacts on the residential neighborhoods surrounding the project site, construction activities (e.g., staging, storage, operations) would be concentrated in the central portion of the site in the area of the former Plant 1 and Plant 2 operations. Thus, construction staging would not need any off-site locations and construction activities near these neighborhoods would therefore be limited to constructing the local parks and would be short in duration.

Fresh Kills Park GEIS

Certain types of construction activities at the periphery of the park (e.g., North Park, Phase A) are potentially noisy and intrusive to local residents and parks users at places such as Schmul Park, and construction activities would also be audible and visible from the local community and park. Generally, the intensity of the off-site impact decreases with the distance from the site. However, since these are neighborhood park-construction projects they would be short in duration (about 1 year) and the intensity of construction would not be a great.

In sum, no potential significant adverse construction period impacts on Land Use or Community Character are expected with the proposed project.

Historic Resources

Archaeology

Construction excavation may potentially disturb or destroy subsurface archaeological resources. Mitigation for these potential impacts is described below under "Mitigation." These mitigation measures are to be instituted prior to construction, but can also be part of the construction bid documents, if undertaken before construction proceeds.

Historic Resources

Some construction activity would involve heavy construction activities associated with road construction. To protect historic structures, vibration protection measures would be implemented as necessary, prior to new construction.

Natural Resources

The project site includes substantial water resources, including creeks, ponds, and stormwater basins. It will be critical for the project to avoid impacts to these systems, not only for the purposes of protecting natural resources and water quality, but also for the purposes of avoiding siltation impacts to the man-made constructs that provide stormwater detention at the site. In order to avoid these impacts, the proposed project includes a "Conceptual Site-Wide Erosion and Sediment Control Plan." This plan establishes the guidelines by which each phase of project construction, through implementation of the proposed techniques, would avoid impacts to natural features and in-place stormwater management systems. Implementation of these techniques would be ensured not only by DPR, but through the SPDES General Permit requirements.

Activities associated with construction could temporarily impact terrestrial and aquatic resources through the discharge of stormwater to tidal and freshwater wetlands and local waterways; deposition of fugitive dust into terrestrial and aquatic habitats; damage to vegetation; loss of habitat; and damage to existing landfill environmental control systems and the geosynthetic landfill cap and natural soil liner.

However, impacts to natural resources as a result of these activities would be minimized through the implementation of measures and guidelines discussed in the following sections. A natural resources protection plan would be prepared for each construction project. This plan would identify habitats, trees, sensitive habitats such as wetlands, and any other communities that have been identified for preservation and protection under the proposed project, and would establish the necessary protection zones around these resources so as to minimize the potential for adverse direct or indirect impacts to these resources. In addition, a construction monitoring program would be implemented during construction of the proposed park roadways to document that construction is consistent with the design such that the existing environmental monitoring

control systems and landfill caps remain intact and functioning during and after road construction to minimize the potential for adverse impacts to terrestrial and aquatic resources.

As such, although there would likely be short-term, unavoidable adverse temporary impacts on natural resources during construction of the proposed park, these impacts would be avoided and minimized to the extent practicable and the benefits provided by the resulting park habitats would more than offset these impacts.

Hazardous Materials

Because development of the proposed park would involve excavation and disturbance of the existing on-site soil that could result in temporary increases in exposure to contaminants for construction workers and workers on nearby sites, preventative measures would be taken to protect the public health and safety of these workers and community. Prior to construction of a capital project, site investigations (including sampling for hazardous materials) would be performed (as necessary) and a site-specific Construction Health and Safety Plan would be prepared. In addition, existing fill remaining on-site would be either covered by certified clean fill or capped with concrete or asphalt pavement, or permanent structures. With the proposed measures in place, the health and safety of construction workers and the visiting public would be protected from hazardous materials impacts during construction.

Solid Waste

All demolition and construction waste from construction activities on the project site would continue to be handled by private carters who would haul the materials to transfer stations or processing facilities for sorting and recycling as applicable, with disposal of residue outside New York City in full accordance with the applicable regulatory requirements. There would be the recycling of cut trees and vegetation for use as park mulch. The City's program to reduce solid waste generated by construction sites would be adhered to.

Energy Impacts

Energy impacts from construction are primarily a result of the energy required to manufacture, deliver, and install the materials at the construction site. Construction of the proposed project would not cause any significant adverse energy impacts.

Traffic and Parking

Construction activities would generate a modest amount of traffic during the peak hours during the construction of both the proposed park elements and the proposed roads. However, construction workers generally arrive before the peak morning community traffic period and depart before the peak afternoon traffic period, with limited weekend work, and therefore generally do not affect the local traffic network. In addition to the worker commutes, there would also be trucking activity associated with the delivery and removal of soils (particularly the delivery), and there would also be the delivery and removal of materials during the demolition of buildings, construction of buildings, and construction of proposed bridges and viaducts. Given the size of the project site, it is expected that delivery of all soils and materials expected to be necessary for the proposed project could reach the site via the West Shore Expressway and once on site could be stored or reach the work location for that particular phase of construction via the internal roadways, thus minimizing impacts on the surrounding neighborhood.

These truck movements would be spread throughout the day and would vary depending upon the period of construction. However, as described above, it is expected that 70 to 100 trucks per day,

or about 10 per hour, would be providing deliveries to the site during the more intense periods of construction, particularly with respect to the importation of soil.

Regarding the worker vehicles, conservatively assuming that all workers would travel to the site via automobile as single occupants, the maximum daily trip generation would be 50 to 100 vehicles during the more intensive periods of construction. With the proposed direct access to the West Shore Expressway, there would be limited use of local roads. In addition, as stated above, most of the truck trips would not coincide with the traditional commuter peak travel hours, as construction workers usually arrive between 6:00 and 7:00 AM and leave between 3:00 and 4:00 PM, which is outside the traditional peak hours.

With generally low background pedestrian activities in the immediate area of the project site, the limited amount of pedestrian traffic generated by construction workers walking between the plant and nearby on-street parking locations would not warrant a detailed study of operating conditions at the area's sidewalks, crosswalks, and corner reservoirs. It is also expected that the addition of project-related traffic would not significantly adversely impact pedestrian safety.

With the proposed construction program, limited activities are expected on local roads or the West Shore Expressway that would require traffic maintenance. Access to the site would be gate-controlled and some streets may be temporarily closed at the periphery of the site for the construction of new intersections (e.g., the re-construction of the intersection of Forest Hill Road and Richmond Avenue with the Forest Hill Road connection), as well as the installation of utility connections (e.g., water, sewer, gas, electric) at the periphery of the site. Major roads, such as Arthur Kill Road, would have at least one lane open to traffic at all times. The temporary closure of travel lanes on side streets is an unavoidable temporary impact on the local traffic network.

It is expected that parking for construction workers and vehicles would be provided on the project site to avoid any impacts on local parking conditions.

Air Quality

During construction of the proposed project, emissions from on-site construction equipment and on-road construction-related vehicles, and their effect on background traffic congestion, have the potential to impact air quality. The analysis of potential impacts on air quality from the construction of the proposed project includes a quantitative analysis of both on-site and on-road sources of air emissions, and the overall combined impact of both sources where applicable. Since ultra-low-sulfur diesel (ULSD) and best available retrofit technology pursuant to local law would be used for all diesel engines during construction, it is expected that emissions from construction would not result in a significant impact on air quality.

Construction activity in general, and large-scale construction in particular, has the potential to adversely affect air quality as a result of diesel emissions. The main component of diesel exhaust that has been identified as having an adverse effect on human health is fine particulate matter. In most cases, the incremental impacts on local air quality from the proposed park would be limited in extent, duration, and severity. The proposed park would also implement an emissions reduction program.

Localized elevated CO concentrations would be expected in a few limited cases. Construction on projected redevelopment sites would not exceed one year at any given location. Any impacts related to uncontrolled emissions from those sites would be limited to one year and would be altered geographically.

Noise

The City has recently revised its Noise Control Code, which is effective July 1, 2007. Thus, the construction associated with the proposed project would be subject to these requirements. These include preparation and implementation of a construction noise mitigation plan. While the construction noise associated with the type of anticipated construction varies, depending on the numbers and type of equipment employed at any time, noise levels associated with construction may occasionally be noticeable to nearby residents, particularly during the times when jackhammers and/or other pavement-breaking equipment are used. However, there are no cost-effective measures that can be implemented to effectively reduce the temporary noise increases of this type. In addition, construction of the road, for example, would largely take place on the interior of the site. Noise levels also increase/decrease exponentially over distance. Although elevated noise levels are considered a nuisance and would be intrusive to residents, these impacts would be short-term and are not considered a significant adverse impact necessitating mitigation. All construction equipment and vehicles must meet the regulatory requirements regarding noise emissions, and construction activities would be limited to weekdays between the hours of 7:00 AM and 6:00 PM. There is no effective noise reduction measure for these activities beyond the legally required muffling at the source.

Vibration

Pile driving using hydraulic pile drivers has the most potential for producing vibration levels that exceed perceptible limits. However, pile driving for the proposed project would only occur for limited periods, e.g., during construction at the proposed Forest Hill Road connection viaduct. While vibration levels produced during pile driving may be perceptible and annoying, due to the limited period of time that this operation would take place, the nearest sensitive receptor would be more than 200 feet from the pile driver, and vibration impacts due to pile driving would not result in significant adverse impacts on any nearby buildings or sensitive receptor. Protections would be installed to protect DSNY infrastructure as necessary.

Public Health

During construction, air and noise pollutant emissions from construction equipment and construction vehicles may temporarily impact health. Diesel emissions from construction-related activities are of particular concern regarding potential public health impacts such as increased asthma rates. In response to those concerns, the City has adopted Local Law 77 to significantly reduce air pollution from construction equipment throughout New York City. It is also expected that construction contracts would include provisions for a vector control.

PUBLIC HEALTH

The environmental control infrastructure associated with the closed landfill sections at Fresh Kills includes leachate management, landfill gas management, and final cover erosion controls and drainage systems. Various mitigation measures were incorporated into these systems and the proposed project to minimize potential exposures and protect public health. All of the measures presented below are intended to provide additional protections with respect to allowing public access onto the project site. Those measures include additional infrastructure protections, monitoring, training, and signage. A detailed evaluation was performed as part of this GEIS to evaluate access to the site and public health concerns with respect to air quality, groundwater, surface water, and sediments/soils and the potential contaminant pathways and possible public health effects. The principal conclusions of that analysis are:

Fresh Kills Park GEIS

- Air emissions: criteria pollutants from local stationary sources and mobile sources, including the landfill environmental control infrastructure would not be expected to result in any significant adverse air quality impacts on park users. Despite the fact that the maximum predicted annual concentration of tetrachloroethylene from local dry cleaning establishments exceeds the NYSDEC Annual Guidance Concentration of $1 \mu\text{g}/\text{m}^3$ on a very small portion of the project site, it is not expected to represent a significant public health concern based on regulatory guidance, including the required utilization of Best Available Control Technology. Therefore, with respect to tetrachloroethylene and other non-criteria air pollutants, modeling of point sources within and in the near vicinity of the proposed project did not identify any significant public health risks.
- Groundwater: while contaminated groundwater is known to exist within the boundaries of the proposed project area, the analysis performed as part of this GEIS suggests that it does not pose a significant public health risk to park users. This is based on the fact that groundwater is not currently, nor is it envisioned in the future, to be utilized as a supply of potable water. Leachate treatment systems for the closed landfill mounds will continue to be operational, reducing the likelihood of significant impacts to groundwater from this infrastructure. Contaminated groundwater from off-site sources or off-mound areas could affect surface water and/or sediments quality within the park, but is not expected to pose a risk to park users due to the lack of direct exposure pathways. Signage warning park users of the potential risks associated with consuming water and swimming represent appropriate mitigation measures to be included as part of the development process. Other mitigation measures include the periodic sampling of monitoring wells associated with the closed landfill, in accordance with applicable permit requirements, as this data can facilitate the identification and correction of potential problems associated with the environmental control infrastructure.
- Surface water: The proposed park would allow for surface water to be utilized in several possible ways, including recreational swimming, fishing, and boating. As stated above, surface waters in the vicinity of the proposed project are neither designated to be used as potable water nor expected to be used as potable water in the foreseeable future. In addition, no park use assumes use of surface water for irrigation. Moreover, water quality is not sufficient to support swimming within park boundaries, and consumption of shellfish and finfish would be actively discouraged by public health advisories warning residents of the potential hazards associated with these exposures. The proposed park would include management efforts and signage as additional measures to preclude swimming and the consumption of fish. Additionally, DSNY's surface water sampling requirements can be shared with park managers and ecologists, and sampling in surface streams and ponds that would be made publicly accessible on the site can possibly be expanded.
- Sediments: Sediments are a potential public health risk in that they serve as sinks for many environmentally recalcitrant contaminants including PCBs, pesticides, toxic metals, and other anthropogenic pollutants. Measures to avoid public health impacts from sediments include design and management elements based on roadway, parking, and park amenities locations that would limit potential interactions between sediments and users.
- Site Testing: Analytical site testing is recommended as capital projects move forward. Individual capital projects would develop a testing program based on areas where soil/groundwater disturbance may be proposed. Based on these site-specific designs, individual testing protocols, and, if necessary, remediation is proposed to avoid this impact.

- Soils: Exposure to potentially contaminated soils associated with the closed landfill sections and areas off the regulated landfill sections would be avoided through the use of soil criteria established at 6NYCRR Part 375 soil cleanup objectives based on specific park programs elements proposed for various areas of the site. Soils imported to the park and used in the cover and redevelopment of the site would be analyzed to verify consistency with these criteria.
- Management measures currently in-place at DPR and DOHMH are expected to protect future park users from local animals (e.g., raccoons) and West Nile Virus from mosquitoes.

C. ALTERNATIVES TO THE PROPOSED PROJECT

Four alternatives were selected for comparison with the proposed project. These include the No Action Alternative, the Two-Lane Park Road Alternative, an Alternative Road Alignment (west of Landfill Section 6/7), and a Lesser Impact Alternative. A summary of the impacts under each alternative follows.

NO ACTION ALTERNATIVE

The No Action Alternative provides a baseline against which impacts of the proposed project may be compared. It is assumed in the No Action Alternative that the proposed actions are not implemented, i.e., there would be no mapping of parkland and the corresponding amendments to the zoning map; no mapping of new roadways or demapping of unbuilt paper streets; no acquisition of private land for a proposed park road connection; and no capital funding for the construction of public facilities. This alternative essentially reflects conditions discussed as the “Future Without the Proposed Project” through the analysis years 2016 and 2036.

Similar to the proposed project, the No Action Alternative would not result in significant adverse impacts on land use, zoning, and public policy; socioeconomic conditions; community facilities; open space; shadows; historic resources; urban design and visual resources; neighborhood character; natural resources; waterfront revitalization program; infrastructure; solid waste and sanitation services; energy; transit and pedestrians; air quality, noise; construction; and public health.

The No Action Alternative, however, would not have the short-term construction impacts of the proposed project or adverse impacts on hazardous materials or wetlands that require mitigation. It would also not provide the significant land use, open space, natural resources, circulation and urban design benefits associated with the proposed project, nor would it fulfill the City’s goals for revitalizing the site and providing public access to the coastal zone.

TWO-LANE PARK ROAD ALTERNATIVE

DESCRIPTION

The two-lane park road alternative assumes a narrower roadway comprising two 12-foot travel lanes, with a 4-foot textured median, and 6-foot shoulders. The combination of median, lane, and shoulder widths under the two-lane road alternative would allow for passing stalled vehicles, such that a single stopped vehicle does not block an entire direction of travel. The shoulders would also contribute to improved sight distance along the inside of curved roadway segments and help keep the roadside clear of hazards.

Fresh Kills Park GEIS

Environmental impacts associated with the two-lane alternative would be less in magnitude than under the four-lane alternative. For example, the smaller road footprint would have less impact along the Richmond Avenue berm. While the base of the roadway embankment would be approximately 80 percent as wide as the four-lane at the basin crossings, along the berm the narrower two-lane width would still represent 50 percent less distance beyond the service road footprint and into the basins. Thus, less clearing of woodlands and impacts on wetlands would occur.

TRAFFIC OPERATIONS

Overall, traffic levels within the park are projected to be moderate. Thus, as with the four-lane proposal, traffic operations under the Two-Lane Park Road Alternative are expected to be satisfactory, and roads could be designed to accommodate the anticipated traffic volumes.

The traffic analysis shows that the park roads under this alternative would have similar impacts as the four-lane road with respect to functionality and impacts on the surrounding street network. Thus, the traffic analyses indicate that the Four-Lane design provides no greater relief to local traffic congestion than the Two-Lane Alternative.

COST

Preliminary costs were developed for the proposed park roads as well as improvements to the West Shore Expressway. The cost of the two-lane park road alternative is 36 percent (or \$64 million) less than the cost of the four-lane road proposal. The cost of the park roads under the Two-Lane Park Road Alternative is estimated at approximately \$179 million (in 2016 dollars), with an additional \$58 million cost for the West Shore Expressway service road and ramp improvements, which yields a total estimated park road cost of \$237 million. The cost of the park roads under the four-lane proposal is estimated at approximately \$243 million (in 2016 dollars). Both designs also require an additional \$58 million for the West Shore Expressway access and ramp improvements, which yields estimated total road system costs of \$237 million for the Two-Lane Alternative and \$300 million for the Four-Lane design.

A significant portion of this cost, \$34 million, is attributed to the proposed viaduct along the Forest Hill Road connection. A combination of embankment and strategically placed structures could result in acceptable impact on the wetlands and substantial cost savings. This potential is being explored in the preliminary design phase.

LANDFILL IMPACTS

With regard to the landfill closure cover system, the horizontal extent of the road embankments under the Two-Lane Alternative would be less than under the Four-Lane design. Under the Four-Lane design the wider embankments would apply more weight to the landfill cover and the underlying waste and soils, which could result in a lower degree of stability and increased stress on the closure system's geomembrane layer.

Both alternatives cross the leachate management system four times as they traverse Landfill Section 6/7, and both alternatives would encroach on the stormwater basin at the north end of the Richmond Hill Road Connection in 2036. However, the Four-Lane design affects an additional length of cutoff wall and leachate collection trench at the north end of the Richmond Hill Road Connection. This Two-Lane Park Road Alternative requires the least extensive protective measures due to its narrower footprint and would also require a smaller bridge, with a smaller

pier penetrating the waste, at the two grade-separated leachate system crossings along the east edge of Landfill Section 6/7.

Impacts on the landfill gas management system are on the whole relatively minor, but are slightly greater for the Four-Lane design as compared with the Two-Lane Park Road Alternative. Similarly, both require adjustments to the stormwater management system to accommodate the loss of capacity in basins B1, C2, F, and Q, but the differences are pronounced only at Basin B1, where the Four-Lane Design intrudes more extensively. There are no significant differences among the alternatives in terms of impacts to the environmental monitoring system.

ENVIRONMENTAL IMPACTS

All of the proposed roadway alignments encroach on both regulated and unregulated freshwater and tidal wetlands. The entire eastern edge of the site is bounded by wetlands. Therefore, in order to enter the site from Richmond Avenue, it is necessary to cross them. The project design proposes to mitigate limited habitat losses by creating an extensive system of expanded and improved wetlands, meadows, and woodland. However, the acreage impacts of this Two-Lane Alternative with respect to wetlands is less than the Four-Lane design, as follows:

- The Four-Lane Design impacts approximately 8.56 acres of wetlands.
- The Two-Lane Alternative impacts approximately 5.55 acres of wetlands.

In addition, since the bridges are narrower and the added pedestrian bridges at Richmond and Main Creeks are not necessary under this alternative, impacts of structures over water are also reduced under this alternative when compared with the Four-Lane design.

PARK IMPACTS

The Two-Lane Park Road Alternative succeeds to a greater degree in limiting the visual and physical intrusion of the road in the landscape when compared with the Four-Lane design. In so doing, the two-lane road is more consistent with park design intentions to provide access to the site and its features, while prioritizing bike, pedestrian, and boater experiences. In addition, the two-lane alternative affords opportunities for a greater degree of grade separation between pedestrian/bicycle paths and the roads, as well as providing more room on side slopes for a habitat corridor with native plantings and beneficial stormwater management functions.

Given that the projected traffic volumes do not indicate a need for a wider roadway, there is no advantage to the Two-Lane or the Four-Lane design from a park perspective, and given the intention to limit the physical presence of roadways and interference with wetlands, the Four-Lane Design is less desirable from a park perspective.

ALTERNATIVE ROAD ALIGNMENT (WEST OF LANDFILL SECTION 6/7)

Three alternative alignments were examined for the proposed Richmond Hill Road Connection. All these proved to be less desirable than the eastern corridor alignment analyzed in this GEIS for the following reasons:

- The on-landfill alignment pushes the road well up the landfill, conflicting with views from North Park and William T. Davis Wildlife Refuge, which is a condition that runs counter to the park goal of leaving this northern section pristine and natural.

- The on-service road scenario proves to be the least desirable, as it consistently conflicts with critical landfill infrastructure and seriously compromises maintenance and operation requirements. It rises to approximately elevation 90, traversing some of the thickest, most unconsolidated layers of waste that are presently being covered. This would result in significant initial and long-term settlement that would not adequately respond to preloading and other foundation improvement measures. Initial construction and the large initial settlement would require landfill cover. Moreover, differential settlement would continue in the longer term, resulting in undesirable levels of degradation for both the road and the landfill, requiring excessive intervention.
- The off-landfill alignment at the base of the landfill section would potentially impact 14 acres of tidal wetlands and adjacent areas, of which about half is assumed to be tidal wetlands of Main Creek and associated with William T. Davis Wildlife Refuge.

LESSER IMPACT ALTERNATIVE

This alternative examines the potential impacts of less intensive programming for the park and a reduced roadway network. Under this alternative, the park would not include any recreational areas, amenities, cultural/educational facilities, banquet halls, restaurants, etc., and would consist of completing the closure of the landfill and subsequently landscaping the project site. The roadways proposed with the proposed project would also not be constructed.

Similar to the proposed project, the Lesser Impact Alternative would not result in significant adverse impacts on land use, zoning, and public policy; socioeconomic conditions; community facilities; open space; shadows; historic resources; urban design and visual resources; neighborhood character; natural resources; waterfront revitalization program; infrastructure; solid waste and sanitation services; energy; transit and pedestrians; air quality; noise; construction; and public health. The Lesser Impact Alternative would also not have the short-term construction impacts of the proposed project or adverse impacts on hazardous materials or wetlands that require mitigation. However, this alternative would also not provide the significant public open space, active recreation, and roadway circulation benefits associated with the proposed project. It would also not provide the project goals of opening Fresh Kills Park to waterfront access for the public and redeveloping an underutilized City waterfront property as a significant recreational and cultural amenity for the community.

D. IMPACT AVOIDANCE MEASURES AND MITIGATION

The potential for significant adverse impacts to occur in each of the analyzed technical areas has been summarized above. In many cases the proposed project has developed impact avoidance measures that have been written into the project design. Where significant impacts have been identified that extend beyond these impact avoidance measures, or where mitigation requires the approval of other agencies, in accordance with the *CEQR Technical Manual*, mitigation measures have been recommended and are presented below. Technical areas in this GEIS that require neither impact avoidance measures nor mitigation include socioeconomic conditions, community facilities, open space, shadows, air quality, and noise.

IMPACT AVOIDANCE MEASURES

- **Landfill Protections.** The proposed project would provide the public with the opportunity to more closely approach the surface features associated with the leachate management system,

and park development may induce new loading conditions on the subsurface features. Preliminary conceptual measures could be adopted as part of the park design to provide an added layer of protection for public health and the environment.

For the leachate system, such measures would include developing park designs sensitive to the systems in place; monitoring the systems; installing locks, security fences, and manhole covers; and providing personnel to protect the system.

With respect to the landfill gas management system, measures would include developing park designs with DSNY and DPR coordination to avoid conflicts with the landfill gas management system features; redesigning and retrofitting the system within securable subsurface vaults; posting appropriate signage; installing venting layers covered by park features, vapor barriers beneath park structures, and methane monitors; installing security fences and lockable manhole covers; and providing personnel to protect the system.

With respect to the stormwater management systems, measures would include methods to accelerate settlement; monitoring of landfill cover; minimization of load on the landfill mounds; landscape features that cover sensitive system features; use of appropriate signage; and provision of personnel to protect the system.

Security measures would be necessary to protect important landfill infrastructure. Among the landfill structures that would need to be physically separated from landfill systems are the leachate control plant; gas collection and treatment plant; flare stations; and above-ground transformers and pumping stations.

- **Soil Conditions.** For those areas of the park in which the proposed recreational use provides limited potential for soil contact, the Part 375 Commercial Standard would be met. For areas where proposed uses have a higher likelihood of direct soil contact, the Restricted Use, Residential soil standard may be used. For areas of the site in which natural resource protection or enhancement is the primary objective, the Protection of Ecological Resources overlay would be considered. Other standards may be applicable in some areas of Fresh Kills Park where there is no potential for the public to have soil contact.
- **Land Use, Zoning and Community Character.** Ensure adequate buffers and secure buffers between open space uses and DSNY facilities on-site (flare stations, leachate treatment plant, and landfill gas plant) and off-site (District 2 and 3 garages and the Staten Island Waste Transfer Station, Yard Waste Composting Facility and Rock Crushing/Screening Fill Material Transfer Station Facility).
- **Historic Resources.** Final future designs and capital projects would ensure that West Park would not disturb the materials or compromise the setting, thus avoiding impacts to the area potentially eligible for listing on the S/NR. It is expected that future review of these designs would involve, at a minimum, coordination with DPR, LPC, SHPO and the general public.
- **Urban Design and Visual Resources.** In addition to physical separations (adequate and secure buffers between open space uses and DSNY facilities) there would also be decorative and landscaped separations to avoid any visual impacts.
- **Natural Resources.** There are a number of elements of the project that could be proposed to avoid impacts on natural resources. These include the following.
 - **Nighttime Lighting.** Careful design and planning of lighting arrays would minimize many significant adverse impacts associated with the proposed project in relation to wildlife activity.

- Park Roads. Measures to reduce the potential for long-term adverse natural resources impacts include collection and treatment of stormwater runoff from roadways; low-impact roadway management techniques; using Integrated Pest Management Plan (IPM) strategies; maintenance of hydrologic connections between water bodies; implementation of roadway operations and maintenance plans that include alternative strategies for de-icing and other techniques; incorporating wildlife underpass features; using viaducts where feasible to minimize impairment of wildlife movement under roadways; incorporating wildlife crossing warnings into roadway signage; monitoring wildlife/vehicle collisions to identify the need for additional measures; and managing access to avoid impacts to natural areas (e.g., Isle of Meadows, William T. Davis Wildlife Refuge).
- Marine Structures and Overwater Shading. Measures to avoid impacts from shading include designing overwater structures to be multi-use facilities (to reduce overall number); locating them deep enough to avoid intertidal and shade impacts; and increasing ambient light transmission under piers and docks.
- Wind Turbines. Measures for impact avoidance could include an evaluation of alternative locations to avoid wildlife collision risk by reducing the elevation of turbines, reducing the overall height of turbine structures or rotor heights, determining whether the proposed project could cease to operate at times (daily and seasonal) when birds and bats are placed at highest collision risks, and the consideration of locating fewer turbines within Fresh Kills Park.
- Flood Hazard Areas. All habitable structures within the Fresh Kills project site that would be located within a special Flood Hazard Area, would have their first-floor flood elevations at least one foot above the 100-year flood level.
- Hazardous Materials. Vapor barriers and seals would be installed to avoid impacts from methane gas leaking into structures. The proposed project may also include utility seals for all utility conduits to prevent gas migration, as necessary.
- Infrastructure. To avoid stormwater impacts from increases in impervious surfaces and to protect receiving waters, individual stormwater best management practices (BMPs) would be used to enhance proposed park features, and provide water quality treatment and quantity management.
- Traffic and Parking. To avoid future impacts at all the locations that would provide access to the project site and to ensure that proper traffic patterns and intersection designs are implemented, DPR will continue to coordinate with NYCDOT. In the short-term (2016 conditions), this would include site designs would be coordinated with NYCDOT for specific park capital projects and a Preliminary Design Investigation (PDI) would be prepared for the proposed road projects, specifically with respect to improvements along Arthur Kill Road. DPR would also actively participate in the Staten Island Task Force, which was created to address traffic issues on Staten Island. By 2036, with the completion of the Confluence and the Point there would be event facilities, including an amphitheater. Since these are long-term components of the project, DPR would address transportation issues related to major events with NYCDOT, NYCT, and NYSDOT. DPR would also institute a traffic monitoring program.
- Transit and Pedestrians. NYCT could modify its existing bus routes to take advantage of the proposed Forest Hill Road connection into the park, and could amend the existing bus

service and expand bus routes to include new stops within the park boundaries and Arthur Kill Road and Richmond Avenue. DPR would work with NYCDOT to ensure that adequate sidewalk conditions are provided along the perimeter of the park, as well as to ensure that adequate street conditions exist along the roads that lead to the park, particularly the major park entrances and those specifically located along Arthur Kill Road.

- Construction. Measures to avoid impacts during construction would include:
 - Coordinate with DSNY Closure Activities at Landfill Sections 6/7 and 1/9;
 - Protect DSNY infrastructure during construction;
 - Use a Construction Protection Plan to protect the Sleight Family Cemetery;
 - Use a Stormwater Pollution Prevention Plan;
 - Implement strategies to limit wildlife impacts, including a Site-Specific Erosion and Sediment Control Plan (ESCP) and a Natural Resources Protection Plan;
 - Implement a Construction Monitoring Program that would minimize potential impacts during in-water construction, protect groundwater and surface water, and enforce protections for rare, threatened, and endangered species;
 - Perform project-specific subsurface investigations and, if necessary, remediation to avoid impacts from hazardous materials during construction;
 - Use a Construction Health and Safety Plan;
 - Perform environmental surveys during construction in accordance with applicable federal, state, and local regulations and guidelines;
 - Minimize solid waste during construction;
 - Use regional roads during construction, possible barging of soils, and possible nighttime construction to avoid traffic impacts;
 - Use Ultra-Low Sulfur Diesel fuel, electric engines, and new equipment; locate large emission sources away from sensitive uses, implement dust control measures to avoid air quality impacts during construction; shield noisy equipment from local neighborhoods, perform proper maintenance on construction equipment, and general adherence to the City Noise Control Code to avoid noise impacts during construction.
- Public Health Protections. Appropriate sub-slab venting systems and/or vapor barriers would be used in the design of all buildings and structures at the project site. Modifications to the post-closure monitoring and maintenance plan or an additional monitoring plan developed by DPR may be necessary. Increased signage would also be an important component of the park's public health protection program. An integrated pest management approach that would take into consideration park usage and consider the least-toxic methods of controlling pests would be used. To avoid impacts from the West Nile Virus, DPR would begin coordination efforts with DOHMH relative to the control of mosquitoes in accordance with that plan at sites within the proposed Fresh Kills Park.

MITIGATION MEASURES

The measures below are presented as mitigation measures, as they require additional regulatory approvals or are outside the jurisdiction of DPR to implement.

Archaeological Resources

A Phase 1A study prepared for this project concluded that portions of the project site are sensitive for pre-contact and historic-period archaeological resources. As project design progresses, it is recommended that individual construction projects be reviewed by an archaeologist to determine if the project could impact any archaeologically sensitive areas identified in the Phase 1A. If it is determined that impacts are possible, further investigation such as Phase 1B archaeological testing would be necessary to identify the presence or absence of archaeological resources.

Natural Resources

The project would include activities in wetlands such as park roads, viaducts, and bridges that would directly impact wetland as either direct impacts (e.g., filling a portion of the Fresh Kills to widen the roadway under the West Shore Expressway), or indirect impacts (e.g., shading of Main Creek beneath the proposed pedestrian bridges).

The Fresh Kills Park plan proposes to protect and enhance the condition and value of the wetland systems under both present and proposed future conditions, while mitigating the adverse impacts to wetlands resulting from construction of park roads and bridges. Table S-4 identifies the areas of wetland and aquatic habitats that would be permanently and adversely impacted as a result of the construction of the proposed park roads and bridges for the 2016 and 2036 Build years, and the areas of proposed wetland restoration as part of the offsets for these unavoidable adverse impacts.

Proposed project wetland activities include enhancement of degraded wetlands, restoration of significantly altered wetlands, and creation of new wetland habitats. Tidal wetland restoration would include enhancement and expansion of the existing tidal wetlands. Restoration and expansion of the existing freshwater wetlands present within the project site would occur, with possible creation of additional wetland habitats within existing stormwater management basins. Conditions of existing but degraded wetlands would be enhanced.

Traffic and Parking

2016

The traffic analysis results show that in the 2016 Build Conditions, the weekend midday peak hour would have the highest number of impacted intersections with eighteen (18), followed by weekday PM and weekday midday peak hours with fifteen (15) and thirteen (13) impacted intersections, respectively. The Saturday PM peak hour would have twelve (12) impacted intersections. The weekday AM peak hour would have the fewest number of impacted intersections under the 2016 Build conditions with eleven (11). A traffic mitigation plan was therefore developed to address these impacts.

For the 2016 analysis year, the proposed mitigation would mitigate the majority of the traffic impacts that are expected with the proposed project. The remaining intersections would have lane groups that would remain unmitigable.

2036

The traffic analysis results also show that in the 2036 Build conditions, the weekday PM and weekend midday peak hours would have the highest number of impacted intersections with twenty-four (24), followed by the weekend PM peak hour with twenty-two (22) impacted intersections. The weekday AM and weekday midday peak hours would have the fewest number

of impacted intersections under the Build 2036 conditions with twenty (20) each. A traffic mitigation plan was therefore developed to address these impacts.

For the 2036 analysis year, the proposed mitigation would mitigate most of the traffic impacts that are expected with the proposed project. The remaining intersections would have lane groups that would remain unmitigable.

UNAVOIDABLE SIGNIFICANT IMPACTS

Although most of the potential significant adverse impacts of the proposed actions could be avoided or mitigated by implementing a number of measures, there would be 5 intersections in the 2016 Build conditions and 11 intersections in the 2036 Build conditions that would have lane groups that experience unavoidable adverse impacts. Between the Draft and Final GEIS, DPR will explore the feasibility of additional mitigation measures at these locations with NYCDOT and NYSDOT.

GROWTH-INDUCING ASPECTS OF THE PROPOSED PROJECT

The goal of the proposed project is to create a large open space on the site of Fresh Kills Landfill, which would otherwise remain a closed municipal landfill and would continue to preclude public access to the waterfront. In addition, the proposed project includes roadway improvements and would generate a net increase in economic activity on the site in the form of new employment within the park. Dedicating the site as parkland will preclude other development, thereby greatly limiting growth on the site itself.

The proposed project would enhance the surrounding area; however, the vast majority of the surrounding area is already developed with residential, commercial, and industrial uses or is dedicated to large open spaces. While there is some vacant land in the study area which may become more attractive for development as a result of the proposed park, any substantial residential or commercial growth in this area would likely require a rezoning and would be subject to a separate environmental review.

ENVIRONMENTAL JUSTICE

The study area as a whole is not considered a potential environmental justice area and there are no block groups within the study area that exceed NYSDEC thresholds for minority or low-income communities. Approximately 80 percent of the study area is comprised of non-minority populations, and 94 percent is made up of non-low-income populations. Therefore, the proposed project is not expected to result in any disproportionate significant adverse impacts on minority or low-income populations. *