New York City Department of Environmental Protection
Draft Scope of Work to Prepare a Draft Environmental Impact Statement for the Mid-Island Bluebelt Drainage Plans

A. INTRODUCTION

The New York City Department of Environmental Protection (NYCDEP), on behalf of the City of New York, is proposing new drainage plans for three watersheds within the Mid-Island (South Shore) area of Staten Island (see Figure 1). The proposed action would cover the following watersheds or drainage areas: Oakwood Beach (see Figure 2), New Creek (see Figure 3), and South Beach (see Figure 4). Each of these watersheds has surface water features, such as streams, ponds, and other wetlands, which would be used for stormwater management. Those features are contained within the Bluebelt system for each watershed, described in greater detail below. For the purposes of this action, Mid-Island is defined as the portion of Staten Island's South Shore between Great Kills Park on the west and the Staten Island Expressway on the east. The northern boundary runs along the higher elevations of central Staten Island and includes portions of the mapped, but not constructed Willowbrook Parkway right-of-way. The northern boundary is defined by Staten Island Greenbelt Parks including LaTourette Park, Richmond County Country Club and Reeds Basket Willow Swamp. The southern boundary is defined by the Raritan Bay shoreline.

The proposed action would amend the existing drainage plan for these three watersheds with new designs for the collection, conveyance, and management of stormwater to work with local topography and natural features. Under the proposed action, stormwater runoff would be collected and conveyed to stormwater management features, or Best Management Practices (BMPs). In total, the proposed action includes 27 BMPs, which would be contained within the Bluebelt system for each watershed on land that NYCDEP has acquired or is in the process of acquiring. Although most of the area is already serviced by sanitary sewers, the proposed action also includes new designs for additional and upgraded sanitary sewers, which will be a completely piped system, conveying sanitary waste to the Oakwood Beach Water Pollution Control Plant (WPCP).

An Environmental Impact Statement (EIS) will be prepared in order to support this action. The EIS will present an analysis of potential impacts from the proposed action and determinations of significance will be made based on the impact assessments described below. Currently, the proposed action is in the planning and conceptual design phase. As this environmental review process proceeds, the BMP designs may be modified to minimize environmental impacts or to reflect involved agency comments and coordination.

B. PROJECT DESCRIPTION

OVERVIEW

NYCDEP is the City agency responsible for the management and treatment of sanitary wastewater and stormwater in New York City, in accordance with adopted drainage plans. With respect to stormwater management, hard infrastructure, such as catch basins and collection pipes, has historically been used to collect, convey and discharge stormwater. The existing drainage plan for the area was developed about 40 years ago. It is called the Potter Plan (named for the Alexander Potter consulting firm which developed it) and it proposed a network of hard infrastructure throughout the project area, with sanitary and storm sewers and a completed street system. Implementing such a plan would have filled and significantly impacted the remaining wetlands in the project area. Stormwater management and environmental design strategies have evolved substantially since the Potter Plan was developed. Current strategies are more oriented toward the protection and restoration of remaining wetlands and natural features particularly in urban watersheds. These strategies are being implemented in the South Richmond area of Staten Island and at other locations in the City.

The objective for these three Mid-Island watersheds is to update and amend the drainage plans to work with local topography and natural features. This action proposes to create drainage plans that not only protect, but enhance existing natural resources through the preservation and improvement of existing streams and wetlands. Key to this plan is the use of special man-made drainage facilities, or BMPs, which are located at every storm sewer outfall in a Bluebelt wetland. These facilities, such as an outlet stilling basin or a constructed wetland, would minimize the impacts of urban stormwater discharges into natural areas. These BMPs would be sited on publicly-owned land including NYCDEP Bluebelt property, as well as City parkland and State-owned property. A number of segments of mapped, but not constructed streets are proposed for demapping to accommodate the construction of the proposed BMPs. Those street segments will be presented in the EIS. Future Uniform Land Use Review Procedure (ULURP) actions would be required to formally demap these streets.

In addition to providing environmental benefits including natural resource enhancement and protection, the proposed action is generally more cost effective than conventional, piped stormwater infrastructure. The proposed action would also preserve and restore wetlands without the wholesale filling required for subsurface storm sewers, and therefore would comply with State and Federal permitting requirements.

If approved, implementation of the proposed action (installation of sewers and BMPs) would commence in fiscal year 2013 (between July 1, 2012 and June 30, 2013). Installation of storm and sanitary sewers would be complete, throughout the three watersheds, in approximately 30 years. Thus, construction of the proposed action is expected to continue through 2043.

WATERSHED DESCRIPTIONS

Oakwood Beach. This watershed is approximately 1,329 acres in size (see Figure 2). Boundaries of the watershed are Great Kills Park in the Gateway National Recreation Area and Tanglewood Drive to the west, Oceanview Cemetery to the north, Peter Avenue to the east, and Raritan Bay to the south. Most of this watershed is zoned for low-density residential with some commercial uses on major roads. There are about 60.9 acres of NYCDEP Bluebelt property in this watershed (acquired or to be acquired), located mostly in low-elevation areas north and east

of the Oakwood Beach WPCP. There is also New York City Department of Parks and Recreation (NYCDPR) parkland in the watershed including a large wetland parcel between Kissam Avenue and Tysens Lane along the Raritan Bay shoreline and the mapped, but not constructed Willowbrook Parkway. The Parkway is still mapped indicating that the New York State Department of Transportation (NYSDOT) still has some interest in the right-of way. The Staten Island Railway runs east to west across the northern portion of the watershed.

The site of the Oakwood Beach WPCP is zoned M3-1. The northern and western portions of the watershed are also within the Staten Island Special Natural Area District (NA-1) and the Special South Richmond Development District (SSRDD), which are two City zoning designations that regulate development for the primary purpose of protecting natural resources. Portions of this watershed have been the subject of brush fires due to the extensive stands of phragmites.

Runoff within the watershed flows south into two tributaries to Raritan Bay. One is the West Branch, which generally runs within the Willowbrook Parkway right-of-way and continues south into Great Kills Park. That channel connects with another stream which begins at Hylan Boulevard and the mapped, but not constructed Adelaide Avenue. The other main tributary is a stream that flows south and west to a tide gate into Raritan Bay that is located immediately south of the Oakwood Beach WPCP. That tide gate controls the inflow of tidal waters from the bay, thereby preventing flooding. The second main tributary begins in the large park property between Kissam Avenue and Tysens Lane.

New Creek Watershed. This watershed covers approximately 2,249 acres and is northeast of the Oakwood Beach watershed (see Figure 3). The watershed is generally bounded by Miller Field and New Dorp Lane to the west. The northern boundary extends east to west through and incorporating portions of Richmond County Country Club and the Reeds Basket Willow Swamp Park. Seaview Avenue, the Staten Island University Hospital and Burgher Avenue form the boundary to the east and Raritan Bay is the southern boundary. The upper watershed is comprised primarily of rolling terrain with some very steep slopes. There are also other City park properties in the lower watershed (e.g., Last Chance Pond and Boundary Avenue), and furthermore the beaches fronting Raritan Bay are under NYCDPR jurisdiction. The balance of the land use in the watershed is comprised of residential and commercial uses along Hylan Boulevard and Richmond Avenue. The Staten Island Railway runs east to west through the center of the watershed. There are also 94.4 acres of Bluebelt properties, acquired or to be acquired, in the New Creek watershed. Portions of this watershed have been the subject of brush fires due to the extensive stands of phragmites.

The watershed is predominantly zoned R3-1, R3-X and R-5. The northern portion is also within the Staten Island Special Natural Area District (NA-1). The New Creek watershed has a number of stream reaches, three of which are preserved in the New Creek Bluebelt. The main channel starts at Last Change Pond, the West Branch at Midland Avenue, and the East Branch at Dongon Hills Avenue. Other watercourses begin in the upper elevation parklands of the watershed (above Richmond Hill Road) and certain segments are piped (i.e., where the streams pass through the more developed central areas of the watershed.) These other streams pass through Reeds Basket Willow Swamp and the Richmond County Country Club. This watershed also includes a tide-gate controlled outlet to Raritan Bay at Naughton Avenue.

South Beach Watershed. The easternmost of the three watersheds is the South Beach Watershed (see Figure 4). This watershed, which is adjacent to and east of the New Creek Watershed, occupies about 1,267 acres. This watershed is generally bounded by Hillcrest and Fingerboard Streets to the north, Narrows Road and the Staten Island Expressway to the east, the

Staten Island University Hospital property and Burgher Avenue to the west and Raritan Bay to the south. Most of this watershed is developed with low-density residential uses and is predominantly zoned R3-1, R3-X, and R3-2A. The Staten Island Railway runs east to west through the northern portion of the watershed.

Surface water features in this watershed include Brady's Pond and Cameron's Lake in the upper reaches of the watershed just south of the Staten Island Expressway. Brady's Pond is privately owned while Cameron's Lake is owned by NYCDEP as part of the Bluebelt. Whitney Woods is a small wooded site, west of Cameron's Lake, where stormwater collects and is in the process of being acquired for inclusion in the Bluebelt. The main assemblage of Bluebelt properties is in the lower watershed where 40.1 acres of wetlands are vested or in the process of being vested. These properties are generally bounded by Quintard Street on the west, Father Capodanno Boulevard on the South, Sand Lane on the east, and various streets on the north (see Figure 4). Some of the wetland properties are under the jurisdiction of NYCDPR. There is a tide-gate controlled outlet to Raritan Bay from Sand Lane. Portions of this watershed have been the subject of brush fires due to the extensive stands of phragmites.

STORMWATER COLLECTION SEWERS AND BEST MANAGEMENT PRACTICES (BMPS)

Preliminary BMP locations and design objectives for each watershed are presented in Table 1 and will be described in greater detail in the EIS. As stated above, the objective of these drainage plans is to provide a storm sewer design that takes into account runoff from both existing land cover, and projected future runoff under the current zoning regulations. In addition, the plans make every effort to avoid negative wetland impacts due to storm sewer construction, while providing appropriate stormwater drainage for all city streets.

Under the proposed drainage plans, stormwater collection lines outlet to BMPs. Storm sewer lines are typically proposed in mapped and built city streets. Any easements or other acquisitions necessary for storm sewer construction as part of the proposed action will be described in the EIS. BMPs are stormwater management features that are designed to provide a number of functions, which may include improved stormwater conveyance; attenuation of stormwater velocities; management and control of stormwater volumes; and pollutant removal. In this way, BMPs reduce adverse runoff impacts on receiving waters by controlling runoff velocity and reducing pollutant loads due to sediment, nitrogen, phosphorous, organics, and coliform bacteria. A principal objective of these drainage plans is to provide BMP designs that will address current and projected runoff volume and rates for the purposes of protecting private property and public streets from local flooding, as well as to reduce pollutant loadings. These design objectives will also protect natural resources including wetlands and aquatic habitats. BMP site selection and design are important considerations in meeting these objectives and in minimizing potential adverse development impacts on existing natural systems (i.e., avoiding disturbance of existing high quality wetlands and restoration and enhancement of lower quality habitats).

Final BMP site selection and design may, in certain cases, be influenced by this environmental review process and as a result may be modified during the course of this review, particularly if significant environmental impacts are identified that could be avoided through alternative BMP site locations or designs.

Table 1
Mid-Island Bluebelt Watershed—Prelimimary BMP List

BMP Number	BMP Name/Location	Approximate BMP Footprint (acres)	BMP Conceptual Design (Preliminary)	Ownership/Jurisdiction
New Creek				
NC-1	Merrick Ave	0.1	Velocity attenuator and slope stablization	NYCDPR Parkland (Reeds Basket Willow Swamp Park)
NC-2	Ocean Terrace	0.1	Drop pipe and velocity attenuator	NYCDPR Parkland (Reeds Basket Willow Swamp Park)
NC-3	Annfield Court	0.2	Extended detention wetland and stream stabilization	NYCDPR Parkland (Reeds Basket Willow Swamp Park)
NC-4	Whitlock Avenue	0.3	Extended detention wetland	NYSDEC (Richmond County Country Club Golf Course)
NC-5	Todt Hill Road	0.9	Extended detention wetland	NYSDEC (Richmond County Country Club Golf Course)
NC-6	Boundary Avenue	3.0	Extended detention pond and wetland	NYCDPR Parkland
NC-7	Grimsby Street	4.7	Extended detention, flood plain creation and stream relocation	NYCDEP Bluebelt
NC-8	Freeborn Street	0.7	Extended detention, flood plain creation and stream relocation	NYCDEP Bluebelt
NC-9	Graham Boulevard	4.4	Extended detention, flood plain creation and stream relocation	NYCDEP Bluebelt
NC-10	Jefferson Ave	4.5	Extended detention wetland and ocean outfall	NYCDEP Bluebelt
NC-11	Last Chance Pond	8.6	Extended wetland detention	NYCDPR Parkland/NYCDEP Bluebelt
NC-12	Joyce Street	0.1	Outlet stilling basin	NYCDEP Bluebelt
NC-13	Hylan Boulevard	1.5	Pocket wetland	NYCDEP Bluebelt
NC-14	Meadow Place	0.2	Outlet stilling basins	NYCDEP Bluebelt
NC-15	Laconia Avenue	0.1	Outlet stilling basin	NYCDEP Bluebelt
NC-16	Olympia Boulevard	12.0	Extended detention	NYCDEP Bluebelt
NC-17	Slater Boulevard	9.7	Extended detention wetland	NYCDEP Bluebelt
NC-18	Patterson Avenue	4.2	Extended detention wetland	NYCDEP Bluebelt
NC-19	Buel Avenue	0.1	Outlet Stilling Basin	NYCDEP Bluebelt
South Beach				
SBE-1A, 1B & 1C	South Beach	41.6	Extended detention wetland	NYCDEP Bluebelt/NYCDPR Parkland
SBE-2	Cameron's Lake	0.2	Conveyance and water quality improvement	NYCDEP Bluebelt
SBE-3	Whitney Woods	0.6	Conveyance with velocity attenuation	NYCDEP Bluebelt
Oakwood Beach				
OB-1	Kissam Avenue	TBD	Extended detention wetland	NYCDPR Parkland
OB-2	Tysens Lane	TBD	Extended detention wetland	NYCDPR Parkland
OB-3	Falcon Avenue	TBD	Outlet stilling basin and pocket wetland	NYCDEP Bluebelt
OB-4	Adelaide Avenue	TBD	Extended detention wetland	NYCDEP Bluebelt
OB-5	N. Railroad Avenue	TBD	Retrofit of basin and flow conveyance	NYSDOT/NYCDPR Parkland

Note: NYCDEP Bluebelt refers to lands owned by NYCDEP or pending acquisition.
Source: NYCDEP, February 2010.

In addition to the proposed BMPs, this action would include three new outfalls to Raritan Bay. These outfalls are proposed to convey stormwater runoff out to the bay for the purposes of reducing local flooding in the lower elevations of the watersheds. The proposed outfalls include:

- A new outfall and tide gate connection downstream of BMP OB-1 between Kissam Avenue and Fox Lane in the Oakwood Beach Watershed;
- An outfall downstream of BMP NC-10 between Jefferson and Hunter Avenues in the New Creek Watershed; and

- An outfall from McLaughlin Street associated with BMP SBE-1C in the South Beach Watershed.

BMPs require periodic maintenance to ensure proper operation. The EIS will describe the general BMP maintenance program, including the need for regular monitoring and inspections, removal of debris and sediment, and general maintenance needs. The following routine maintenance operations are anticipated:

Forebays

- Remove trash and debris at least four times per year from the forebays and micropools and as often as needed.
- Remove sediment at least once every five years, or when the sediment depth exceeds 50 percent of the capacity of the micropool or forebay. A backhoe may be required to clean out the sediment; however, in most cases, hand tools would be adequate.

Constructed Wetlands and Extended Detention Basins

- Annually remove and dispose of accumulated trash and visually inspect outlet structure. The removal of trash may require hand tools.
- Annually replenish vegetation as required within the land adjacent to the basin and in the vicinity of the stabilized outlet. In addition, where possible, control the proliferation of invasive exotic vegetation.
- Every 20 years, or when the sediment depth exceeds 50 percent of the basin depth, clean out the detention basin. A backhoe is likely to be required to remove sediment.

Outlet Stilling Basins

- Remove trash and debris from the basin approximately four times a year.
- Remove sediment from the basin once every three years, or when the sediment depth exceeds 50 percent of the basin depth. Removal of sediments may require the use of hand tools.

Stream Channels

- Replace dead or dying vegetation using hand tools. On average, this would occur approximately once a year.
- Remove accumulated debris as necessary.

Fire Protection

- Elements of the drainage plan and the BMP design would provide maintenance accessways which would also allow better access for fire protection. The BMP designs are going to remove vast expanses of phragmites and replace them with permanent open water features to store stormwater, which would also reduce the risk of fire caused by burning phragmites.

A number of segments of mapped, but unbuilt streets are proposed for demapping to accommodate the construction of the proposed BMPs. Those street segments will be presented in the EIS. Future Uniform Land Use Review Procedure (ULURP) actions would be required to formally demap these unbuilt streets.

SANITARY COLLECTION SEWERS

The three watersheds are predominantly serviced by sanitary sewers. However, any additional sanitary collection necessary to complete the sanitary sewer network will be described in the EIS. Once installed, lateral connections would then be made by lot owners, eliminating septic systems and package treatment plants in the watersheds. Finally, the location of any pump stations, easements and other acquisitions related to proposed sanitary collection system improvements will also be described. Easements may also be required for the stormwater management system.

REQUIRED PERMITS AND APPROVALS

In order to implement the proposed action, a number of approvals are required from Federal, State, and City agencies. These approvals are primarily related to construction activities in freshwater or tidal wetlands and adjacent areas, protection of waters, and access requirements for construction activities on public lands (e.g., parks and public streets). Based on the current preliminary designs and BMP locations, it is expected that the following permits and approvals are necessary for the proposed action:

- U.S. Army Corps of Engineers (USACE) permits for dredging and filling activities in wetlands (Title 33 Code of Federal Register, Parts 320-330).
- New York State Department of Environmental Conservation (NYSDEC) permits under Article 24 6NYCRR 663 freshwater wetland permits; Article 15, Title 5 6NYCRR 608 Protection of Waters; Section 410 Water Quality Certification; Article 25 activities in tidal wetlands or adjacent areas; and a variance under Part 505 Coastal Erosion Management along the Raritan Bay shoreline.
- The lands at Richmond County Country Club are also under the jurisdiction of the NYSDEC. Therefore, construction of any BMPs on this property would require approval from NYSDEC. In accordance with applicable regulations, concurrent use and occupancy agreements would be necessary for any activities that occur in lands under the jurisdiction of NYSDEC.
- New York State Department of Transportation (NYSDOT) approvals for any work in the right-of-way of the Willowbrook Parkway since the parkway has not been demapped. A NYCDPR permit would also be required because NYCDPR has an interest in the right-of-way as well.
- New York Metropolitan Transportation Authority (MTA) for any work to be performed within the right of way of the Staten Island Railway.
- New York City Planning Commission (CPC) and Department of Health Drainage Plan Approval.
- CPC Waterfront Revitalization (Coastal Zone) Consistency Determination.
- CPC authorization for work within the SSRDD or the SNAD, requiring tree removal or topographical modification.
- CPC Uniform Land Use Review Procedure (ULURP) actions for future street demappings, tree removal and topographic modifications.
- License agreements or approvals for any work or temporary use of private lands.

- NYCDPR permits and approvals for work within City parkland.
- NYCDOT approval for any in-street work.

C. SCOPE OF WORK

METHODOLOGY

Each watershed will be examined according to the methodologies of the 2010 *CEQR Technical Manual* (CEQR). Each impact analysis, performed according to CEQR, will follow a three-step approach that includes 1) an inventory of the existing conditions; 2) a determination of future conditions without the proposed action (No Action condition); and 3) an impact determination of the proposed action. No Action conditions are projected for each technical analysis through the proposed build year, or the year when the proposed action, if approved, are assumed to be fully carried out. For this action, the proposed build year is 2043. By examining the potential environmental impacts for each CEQR technical chapter, these potential impacts of the proposed action are examined cumulatively and comprehensively. The proposed sewer and BMP installation is expected to take many years to complete. Based on NYCDEP's experience conducting environmental reviews for other Bluebelt plans in South Richmond, a screening level is proposed for the following technical areas, since no significant environmental impacts are expected:

- Socioeconomic Conditions;
- Community Facilities;
- Shadows;
- Solid Waste and Sanitation Services;
- Energy;
- Transit and Pedestrians;
- Air Quality;
- Noise; and
- Public Health.

TASK 1: PROJECT DESCRIPTION

The project description chapter is important for understanding both the proposed actions and project impacts and provides the public and decision-makers background information to understand the potential environmental impacts of the proposal. The EIS, as a full disclosure document, will aid decision-making and support the discretionary permits and approvals that may be issued by both the Lead Agency (NYCDEP) and the involved agencies.

In general, this chapter provides the following:

- Project identification;
- Description of the watershed locations and boundaries;
- Statement of purpose and need for the proposed action;
- Description of the required actions and approvals necessary for project implementation;

- The roles of the involved and interested public agencies; and
- Relevant CEQR and SEQRA processes.

The major project elements to be described in this chapter include:

A. Location map showing regional context for the three watersheds;

B. Watershed and sewer service area descriptions;

C. Purpose and need for the proposed project and actions, and summary of existing studies that establish the purpose and need for the proposed project;

D. Conceptual designs for proposed BMPs (see Table 1 and Attachment A) including area of disturbance and description of proposed BMP functions (e.g. extended detention, flow attenuation, conveyance, stream restoration);

E. Justification for proposed use of open spaces, including NYCDPR and NYSDEC lands for BMP development;

F. Description of BMP maintenance operations;

G. Description of typical construction activities including excavation and fill operations;

H. Description of typical stormwater and erosion and sediment controls; and

I. Project timing and phasing.

The chapter will also include a Framework for Analysis section. The purpose is to establish the structure of the EIS impact analyses. This framework will include a description of the basis for the three analysis conditions. The framework will also include a description of other proposed projects and plans expected to be completed through the project analysis year in the three watersheds.

TASK 2: LAND USE, ZONING, AND PUBLIC POLICY

This analysis will assess the proposed drainage plans and their potential to conflict with land use, zoning, and public policies in each of the watersheds. For this analysis, general land use, zoning patterns and neighborhoods in each watershed will be described. Any potential significant changes that may result from the proposed action, particularly at locations immediately adjacent to the individual BMPs, will also be described. The entire watershed would serve as the study area for this analysis.

Land uses will be verified by field surveys and subsequently mapped. The mapping will be based on field-verified City Geographic Information System (GIS) data. The location and acreages of open space will also be documented and described. Zoning, including the underlying zoning and the Special South Richmond Development District (SSRDD) zoning, will also be described and mapped.

Existing land use and zoning data are important for understanding not only the land use patterns of the watersheds, but also to support other technical analyses, such as natural resources and hydrology. For example, runoff rates vary between different types of land cover: runoff from open space or parkland is significantly less than that from developed residential or commercial land cover. In addition, zoning is used to assess projected runoff rates for underdeveloped or undeveloped vacant lands; parklands are assumed to remain as open space. Any pending zoning

modifications by the Department of City Planning (NYCDCP) will therefore be considered for their potential effect on these analyses and the drainage plans.

In conjunction with the collection of this field data, information will be gathered from the NYCDCP, the local Community Board(s), and other City and State agencies that may have active or proposed projects in the study area. Using this information, future development scenarios would be developed and described for the No Action condition.

Determining potential land use, zoning, and public policy impacts with the proposed action will be based on the following:

A. Compatibility of the action elements with adjacent land uses, and

B. Any potential direct or indirect impacts on land uses, such as indirect impacts on residential or commercial uses.

TASK 3: SOCIOECONOMIC CONDITIONS

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts are expected from the proposed action with respect to socioeconomic conditions. This task will, therefore, provide a CEQR screening level of analysis for assessing any potential for direct or indirect impacts on population, housing, employment, business or industries as a result of the proposed action.

TASK 4: COMMUNITY FACILITIES AND SERVICES

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts are expected from the proposed action with respect to community facilities or services. This task will, therefore, provide a CEQR screening level of analysis for assessing any potential for direct or indirect impacts on community facilities and services, including hospital and health services, schools, libraries, public day care services, and police and fire services. Community facility land uses will be mapped as part of the land use task, as previously noted. The EIS will also identify the beneficial impacts of the proposed project with respect to BMP designs that would provide maintenance accessways which would also allow better access for fire protection. The BMP designs are going to remove vast expanses of phragmites and replace them with permanent open water features to store stormwater, which would also reduce the risk of fire caused by burning phragmites.

TASK 5: OPEN SPACE

The proposed action would not generate any additional population or employees that would place demands on open space in the action area. However, certain BMPs are proposed to be sited in parkland. This task, therefore, will focus on any direct impacts related to the use of open space (either NYCDPR or NYSDEC open space). For the purposes of installation of the proposed sewers, BMPs or outfalls, the following subtasks will be included:

A. In conjunction with the land use task above, indentify all open spaces in the study area including their current programming, facilities and uses in accordance with the guidance of the *CEQR Technical Manual*. The baseline conditions will also identify natural resource conditions (see discussion below under Task 12: Natural Resources) and the current status of vegetative and wildlife conditions in local parklands.

B. Identify any No Build projects that may apply to inventoried open space, including any parkland improvements or habitat restoration projects proposed by NYCDPR or NYSDEC.

C. Review the proposed drainage plans for any impacts on open space uses and activities. The impact analysis will consider, for example, if a BMP or drainage facility would potentially displace a NYCDPR recreational facility, inhibit or reduce public access, or conflict with the overall function and purpose of the open space. If significant impacts are identified, mitigation will be provided. The assessment of construction-period impacts will be examined under Task 22: Construction Impacts.

TASK 6: SHADOWS

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts are expected from the proposed action with respect to shadows since no above-grade structures are proposed. This task will therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect shadow impacts.

TASK 7: HISTORIC RESOURCES

Potential impacts on historic resources, including archaeological and architectural resources, could result from in-ground construction. For example, previously undisturbed standing architectural resources thought or known to contain significant archaeological resources could potentially be impacted by vibrations. This impact assessment will concentrate on the areas of disturbance that would occur under the proposed action. Maps showing where in-ground disturbances would occur under the proposed action with consideration for depth of disturbance (including at BMP locations), will be reviewed. These sites will be plotted on a topographic map showing the existing topography and the locations of existing underground utilities. This analysis will then identify areas that have been previously disturbed, and areas that could be disturbed under the proposed action. As a result of this analysis, areas with previous disturbance are expected to be screened out from further analysis. Those areas without previous disturbance are more likely to be subject to further examination for archaeological sensitivity.

As the first step in this process, a determination will be sought from the City's Landmarks Preservation Commission (LPC) as to the potential for archaeological sensitivity in the areas of disturbance. If LPC determines that a particular watershed or area requires a Phase 1 investigation, a Phase 1 report will be prepared. A Phase 1 report contains documentary research used to assess the potential for archaeological sensitivity of a site or in an area. It includes records of previous subsurface disturbance, which will be investigated, including data from New York City Department of Buildings (NYCDOB), NYCDEP, and other utility providers, such as Con Edison. Documentary research will also be conducted to assess the potential presence of archaeologically sensitive areas in accordance with LPC guidelines and procedures. This research typically includes such sources as the Staten Island Institute of Arts and Sciences, the Map Division of the New York Public Library, the U.S. Army Corps of Engineers, and designation files of LPC. Local and regional histories (e.g., *Leng's Staten Island and its People: A History 1609-1929* and the Morris Memorial History of Staten Island, New York) and accepted source material for data on prehistoric settlements (e.g., R. Grumet, Kraft, Skinner, and Parker), census and City directory data, and land transfer records are also to be researched, as appropriate. In addition, a file search is to be conducted at the New York State Museum, the New York State Office of Parks, Recreation and Historic Preservation, and LPC (including the

sensitivity model for Staten Island). Soil borings previously taken in the area would be reviewed, as available.

Potential action impacts would then be assessed based on the potential for a site to possess archaeological sensitivity. If the analysis discloses the potential for significant impacts on archaeological resources (potential disturbances at project locations of medium or high sensitivity), mitigation will be described.

With respect to historic architectural resources, the proposed action would not result in any direct impacts on resources (e.g., demolition or alteration of a historic building or structure). Therefore, this analysis will focus on the potential for any potential indirect impacts to historic and architectural resources that could potentially occur from construction activities. Therefore, this analysis will be provided under Task 22: Construction Impacts. Construction activities in the vicinity of any historic resources would also be examined to determine if the potential exists for any indirect impacts (e.g., vibration) to these resources. A task outline for this analysis follows.

ARCHAEOLOGICAL RESOURCES

A. Based on LPC determinations, prepare a watershed level Phase 1A Archaeological Assessment for areas that would be physically disturbed by the proposed action in a direct way. The report will identify the locations where archaeological resources may be present in accordance with the methods described above.

B. Assess the effects of other projects that are expected to be built by the project build year in the absence of the proposed action. This analysis will be based on projects identified in Task 2: Land Use, Zoning, and Public Policy.

C. Assess any potential impacts related to the proposed action. Areas determined to be low sensitivity will be those where significant impacts are not expected.. Areas of medium sensitivity may be further evaluated to determine if potential significant impacts may occur, and areas of high sensitivity will be those where potentially significant archaeological impacts are expected to occur under the proposed action. For project elements where significant archaeological impacts are identified, mitigation will be presented (mitigation measures will also be summarized under Task 25: Mitigation Measures).

ARCHITECTURAL RESOURCES

A. Identify and describe any designated historic architectural resources, including historic districts in the study area. The study area for analysis will be defined as within 400 feet of the proposed BMP locations. Historic resources include any New York City Landmarks; properties pending New York City Landmark designation; sites listed on or determined eligible for inclusion on the State and/or National Register of Historic Places; and National Historic Landmarks.

B. Assess the effects of projects that are expected to be built under the No Build Condition. These projects will be identified in Task 2: Land Use, Zoning, and Public Policy described above.

C. Determine if the proposed action would have any direct (e.g., demolition) or indirect (e.g., vibration) impacts on architectural resources in the study area. To the extent of potentiality for impacts, these will be described under Task 22: Construction Impacts.

TASK 8: URBAN DESIGN AND VISUAL RESOURCES

Based on analyses developed for the prior South Richmond EIS, a more detailed analysis of potential urban design and visual resources is performed for larger or more visually prominent BMPs. Typically, impacts do not occur with smaller BMPs or the installation of sanitary or stormwater collection lines, since these would be below grade. For more detailed analyses, views of the larger BMP sites will be photographed and described. Although no significant adverse impacts are expected since all disturbed areas would be restored and landscaped as part of the proposed action, this impact analysis would be based on the following task outline:

A. Describe the elements of the proposed action that include more extensive or significant changes in the physical or natural conditions, such as topography and natural habitats (e.g., woodlands and tree canopy), particularly at locations that possess significant public views or are within significant public viewsheds.

B. Describe the potential changes in views of natural features, such as vegetation, particularly from or within public parkland, and determine if any significant impacts on public views, viewsheds, or corridors would occur under the proposed action. This analysis will take into consideration pre- and post-action conditions and the landscaping and restoration plans that are also proposed. If necessary, any significant adverse impacts and the need for mitigation will be identified.

TASK 9: NEIGHBORHOOD CHARACTER

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts on neighborhood character are expected from the proposed action. Neighborhood character impacts typically stem from impacts on socioeconomic conditions, historic resources, urban design, community facilities and traffic and noise, for example. Since no significant impacts are anticipated in these technical areas, no adverse impacts on neighborhood character are expected. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect impacts on neighborhood character.

TASK 10: SURFACE WATER AND GROUNDWATER HYDROLOGY

SURFACE WATER

Introduction

A key component for developing effective stormwater management plans is an in-depth understanding of the hydrology and hydraulics of the project watersheds. The proposed drainage plans are intended to reduce flooding in the Mid-Island region of Staten Island and bring the type of stormwater management techniques used with success in the South Richmond region of Staten Island to the communities of Oakwood Beach, New Dorp, Midland Beach, Todt Hill, South Beach and Arrochar. The hydraulic analysis for the proposed drainage plans would begin with an overview of the surface water regimes that characterize the New Creek, Oakwood Beach, and South Beach watersheds. The EIS will examine, in detail, the effects of the proposed drainage and sanitary sewer plans on surface waters, including the issues of stormwater flooding and erosion potential. The methodology includes use of modeling and standard engineering analyses to determine impacts.

An unsteady-flow hydraulic model that can account for the stormwater detention, some BMPs and provide a key component of the proposed flood protection, was selected in order to correctly simulate the behavior of the watersheds, including their sensitivity to the tidal cycle. In addition, a combination model that includes a hydrologic component (HEC-HMS) and a hydraulic component (HEC-RAS) will be used to examine existing and proposed conditions in the watershed. This model series was developed by the United States Army Corps of Engineers' Hydrologic Engineering Center, is robust and widely used, and is capable of modeling unsteady flow over a wide range of runoff models. It possesses an additional benefit of having modest data requirements. For example, it requires channel and floodplain cross sections and catchment characteristics such as the curve number. The HEC-HMS model simulates the surface water runoff response of the watershed to a storm event accounting for topography, land use coverage, infiltration, and storage in surface depressions. The HEC-RAS package model simulates the hydraulic reactions of the channels and culverts that convey stormwater runoff by accounting for flow into the channels, elevation changes along the channels, and the effects of surface roughness and channel geometry.

Modeling Methodology Overview

The output from the HEC-HMS model provides runoff flow rates at any point along the stream. Runoff flow rate is a function of the watershed area's rainfall intensity and duration, amount of infiltration and storage, and slopes. The output of the HEC-RAS model provides water surface elevations and flow rates along the stream at any point in time during the storm event. Therefore, conveyance capacity and flood levels can be evaluated at any point and time along the channel length to maximize the system's storage and conveyance capacity using stormwater BMPs. The HEC-HMS and HEC-RAS models will be integrated, so that the runoff generated by HEC-HMS is fed into HEC-RAS and used to simulate the hydrologic and hydraulic reaction of the project watersheds. The models will be run for the 5-, 10-, and 100-year storm events under existing conditions, future without the proposed action and future with the proposed action. The proposed stormwater management system will be designed to handle at least the 5-year, 24-hour duration storm, which is the design standard for NYCDEP.

Rainfall

The return periods (i.e., frequency) of various storm events was calculated from 23 years of rainfall data (1970 to 1993) as recorded at John F. Kennedy airport (see Table 2). This is considered to be the most appropriate and complete data set for the Mid-Island area. Using this information, design storms of record will be used in the model, in conjunction with observed tailwater tides, where available. The design storms chosen for modeling of future conditions both with and without the proposed action were a 10 year, 24-hour storm on April 16, 2007 (5.06 inches); a 5-year, 24-hour storm on September 21, 1966 (4.71 inches) and a synthetic SCS Type III storm 100-year, 24-hour event. Type III storm events are representative of a severe long-term weather event.

Table 2
Return Periods of Storm Events

Rainfall (in inches)	Return Period	Probability of Occurring in a Given Year
1.5	3 months	~100
2.1	6 months	~100
3.0	1 year	~100
3.5	2 year	50
4.5	5 year	20
5.1	10 year	10
6.1	25 year	4
7.0	50 year	2
8.1	100 year	1

Source: Hazen and Sawyer, February 2010.

Existing Conditions

Sub-drainage areas, or catchments, for each watershed will be defined for the models using existing grades and sewers, topographic maps, street elevations and discharge locations for overland runoff. The most hydraulically constrained conditions will be identified by the modeling. Extensive field data collected by NYCDEP, which includes several dozen channel and floodplain surveys, culvert surveys, flow and water surface elevation measurements, tidal water surface elevations at outfalls and 5-minute rainfall series data, will be used to calibrate the models. In addition, a GIS database will be compiled that includes available data, such as edge-of-pavement and structures layers, aerial topographical surveys and photos of various aspects of the watersheds. HEC-RAS modeling in the channels will use the collected information to create channel cross-sections and areas of flow for all hydraulic structures. In addition, roughness of channel banks and beds, conveyance structures, and channel slopes are to be determined. Runoff generated from the HEC-HMS model will be input to the HEC-RAS model, where appropriate.

Future Conditions

The future without the proposed drainage plans will assume that current conditions hold. Any existing impacts to land, waterways and the harbor will be reiterated and expected to continue in the absence of the proposed action. The project watersheds are close to full build-out and constraints on current zoning exist, so major worsening of the conditions due to increased development is not anticipated. However, this section of the analysis will state that additional build-out or deterioration of existing conveyance systems may exacerbate existing flooding events.

Impacts of the Proposed Action

For determining impacts, runoff coefficients are to be adjusted to reflect the changes in time and volume of runoff as a result of pipe flows. Potential impacts from the proposed action on local flooding and stream bank erosion, as well as impacts on wetland hydrology, will be addressed. Impacts on the stream hydrology from changes in stream velocity and the quantity of flows will be assessed for the 5-, 10-, and 100-year storm events. In addition, a check will be made to ensure that the water surface elevations under the proposed action during the 100-year event will not exceed the 100-year floodplain elevation.

With the proposed action, changes in surface water hydrology are expected to be generally beneficial, with a reduction in local flooding. Potential impact analyses are to be based on:

A. Stormwater projections for 5-, 10-, and 100-year storms.

B. Determination of effects of potential changes in stream hydraulics, such as changes in extent and duration of stormwater inundation (or floodplain); changes in stream flow velocities (especially those resulting from slope changes that could lead to scouring and/or changes in sedimentation patterns); and changes in erosive strength. Streams of particular concern that will be assessed include the one in Richmond County Country Club and downstream of Reeds Basket Willow Swamp, both in the New Creek Bluebelt.

GROUNDWATER

If necessary, based on the proposed sewer plans, groundwater data will be gathered from the U.S. Geological Survey, soil boring data (as available), literature searches, and field reconnaissance to understand general groundwater conditions and the water table elevations in the Mid-Island region of Staten Island. Monitoring wells will be installed to determine the water table elevation at the sites of the proposed BMPs; this information will be used to ensure that the BMPs will provide sufficient stormwater detention. The monitoring will be done during different seasons of the year and during different times in the tidal cycle. As necessary, the influence of groundwater on surface water bodies, such as BMPs and ponds, will be determined. Potential changes in groundwater that could occur through implementation of the proposed action will be described. The potential changes in groundwater flow to streams and ponds, associated wetlands, and isolated wetlands will be estimated based on the information collected. One pond of particular concern is Brady's Pond in the South Beach Watershed. The proposed action calls for directing stormwater away from the pond. An assessment of that plan will be completed with a discussion of groundwater inputs into the pond.

TASK 11: WATER QUALITY

INTRODUCTION

The study areas for water quality will be the three drainage plan watersheds. To assess any potential impacts of the proposed action with respect to hydrology, a hydrologic/hydraulic analysis has been developed (as described above). A literature review will be conducted to assess the impacts of the proposed action on water quality.

EXISTING CONDITIONS

The primary water quality parameters of concern include dissolved oxygen, coliform bacteria, carbonaceous BOD, and nutrients (i.e., phosphorus and nitrogen.) The EIS will describe existing watershed conditions in order to provide a general baseline for identifying potential changes to water quality that may occur as a result of the proposed action. Water sampling will not be conducted since the State of New York has not assigned any stream classification to any of these water courses. A stream classification would have set certain standards for water quality parameters like dissolved oxygen and coliform bacteria that need to be attained. Despite the lack of State stream classifications, an integral part of the Bluebelt program is to make every effort to maintain or enhance surface water quality. Accordingly, every storm sewer discharge point will be equipped with a BMP to improve water quality.

FUTURE CONDITIONS

No Action conditions will be based on the changes expected in water quality in the absence of the proposed action. These changes could include additional development within the watershed, or continued degradation due to uncontrolled pollutant sources.

IMPACTS OF THE PROPOSED ACTION

This portion of the analysis will describe the potential impacts of the proposed action on relevant water quality parameters. Impacts from the proposed action will be estimated based on a literature review of pollutant removal efficiencies associated with the BMPs included in the proposed drainage plans. Data from monitoring studies, completed for existing Bluebelt BMPs in South Richmond, will also be utilized. In addition, impacts from installation of sanitary sewer lines will be disclosed where applicable.

TASK 12: NATURAL RESOURCES

OVERVIEW

The proposed action could have both potential beneficial and adverse impacts on natural resources. These natural resources include a variety of freshwater and tidal wetlands vegetative habitats, aquatic wildlife (e.g., fish and macroinvertebrates), upland vegetation communities, terrestrial fauna (e.g., mammals, reptiles and amphibians), and avian wildlife. In examining these effects, this analysis will consider both potential direct and indirect impacts on these resources. Direct impacts are defined as those impacts that directly affect habitats or environmental conditions during the construction of the BMPs or sewer lines. This could include, for example, wetland disturbance or the removal of vegetation to construct the BMPs. Indirect impacts are longer term, or secondary effects, that may result from altering the pollutant load or inundation periods that in turn could affect a vegetative community and its associated wildlife habitat over time. The potential for significant adverse impacts on wetlands, wetland-adjacent areas, and uplands, and their subsequent effects on habitat values and functions, as well as species populations and individual species will be assessed under this task. A more detailed description of the methodology follows.

METHODOLOGIES

Existing Conditions

Baseline data will be gathered for the watersheds for the purposes of identifying the key habitats within the watershed study areas, particularly with respect to the freshwater and tidal wetland habitats. This will include a text description and maps depicting the wetland habitats of the watersheds. It is assumed that the focus of this investigation will be the BMP sites, since the areas of the proposed sewers are predominantly constructed streets. Wetland data and mapping will be based on aerial photography, NYSDEC wetland sketch maps and descriptions, and U.S. Fish and Wildlife Service, National Wetland Inventory (NWI), freshwater wetlands maps, and field reconnaissance. As part of the acquisition process, actual wetland delineations have been done for many of the BMP sites. This information will be used. Watershed data are to be assembled through a review of published literature sources, including those developed by Federal, State, and local agencies and institutions, such as the NYCDPR Natural Resources Group and the Staten Island Institute of Arts and Sciences. This data will be supplemented by

BMP site-specific data gathered through field reconnaissance conducted in 2009 and 2010 in the spring and fall seasons. Compiling information for wetlands will include gathering information on previously mapped wetlands from a number of sources, including NYSDEC sketch map wetland delineations, aerial photographs, and field data.

Upland vegetation data and information on woodlands will also be presented based on existing sources of information, field surveys, and aerial photographs. Data will be presented for trees, shrubs, and herbaceous cover habitats. This data will be used to characterize the types of habitats within each area of disturbance. The habitat characterization will use the following as a guide: "Ecological Communities of New York State" by Edinger et al (2002). In addition, for wooded areas in parkland that would require more extensive grading and clearing (i.e., greater than one acre), an assessment of total tree populations will be determined for the BMP area of impact.

Wildlife data will be based on literature searches and field observations. During each BMP site visit, all observed avifauna (i.e., birds), herptofauna (i.e., amphibians and reptiles), and mammalian observations and evidence will be noted. Data on terrestrial and avian wildlife will also be presented from a literature search for the Staten Island South Shore coastal area and from field surveys. Lastly, data on rare, endangered and threatened species that may be present in the watershed study areas will be based on information from the New York State Natural Heritage Program and the National Marine Fisheries Services Protected Resources program.

The specific task list for the baseline conditions assessment is as follows:

A. Baseline vegetation and wildlife data will be described and mapped for the three watersheds of Staten Island.

B. Vegetative habitats and associated ecological characteristics and functions will be described at specific BMP locations wherever vegetation would be removed or otherwise impacted. At BMP locations, the general composition of the habitats (i.e., predominant species) will be described. For large areas that may experience woodland clearings, estimates of tree density will be made using a transect method. This methodology will be used for two BMP sites (NC-6 Boundary Avenue and NC-11 Last Chance Pond).

C. Wetland acreage and vegetation of each watershed and at specific BMP locations will be presented for the tree canopy species, understory, and herbaceous layers.

D. Upland and wetland, terrestrial, and wildlife habitats within each watershed and at specific BMP locations will be described with habitat value indicators.

E. Data and literature research of aquatic and terrestrial flora and fauna (including fish, macroinvertabrates, reptiles, and amphibians) will be provided, including wetland and in-stream aquatic wildlife that may be expected along the stream corridors and at specific BMP locations.

F. NYSDEC's Natural Heritage Program and the U.S. Fish and Wildlife Service will be contacted for information on the presence or absence of sensitive habitats or rare, threatened, or endangered species within the three watersheds.

G. An assessment of shoreline conditions along the reaches of the Raritan Bay where the outfalls are proposed.

H. Current issues with respect to phragmites fires and their impacts on local natural resources and habitats.

Future Conditions

A future No Action condition will be developed to identify any expected future changes in the natural resources communities in the absence of the proposed action. These changes could include proposed development or continuing trends and conditions with respect to stormwater runoff and pollutant loadings—including frequency of inundation and pollutant loadings—with the resulting consequences for natural resources.

Impacts of the Proposed Action

Impacts of the proposed action will be determined for both the installation of the sewers and the BMPs with a focus of the areas of disturbance for each of the BMPs. Impacts will be assessed cumulatively, i.e., the comprehensive changes in the watershed habitats with the proposed action.

The impact analysis will examine the areas where physical disturbance would occur, including areas that might experience changes in hydrology or frequency of flooding. Assessment of impacts will be based on areas of physical disturbance which will delineate the extent of the potentially impacted area.

In addition, the potential for indirect impacts on wetlands will be assessed based on the projected changes in hydrology and water quality. For example, hydrologic changes would be examined to determine how future water quality and runoff conditions could either positively or adversely impact wetland species known to occur at the sites. Indirect impacts would also be examined based on how changes in loadings of nitrogen, phosphorous, and sediments would positively or adversely affect established wetland communities.

The analysis will also examine the potential for direct and indirect hydrological impacts from the proposed storm sewers on existing wetlands. Indirect impacts of storm sewers could occur when the hydrologic regimes of the wetlands, currently fed by surface runoff, are modified as a result of storm sewers that redirect flows. That change is the consequence of surface runoff being intercepted by storm sewers in the wetland tributary areas, thus reducing the hydrologic support. Areas where storm sewers would have a direct impact on wetlands (i.e., sewer lines proposed across mapped wetlands) will also identified. The first step in this analysis will be to review maps showing the existing wetlands in relation to the proposed storm sewers. The potential for indirect impacts will then be determined based on the anticipated changes within the tributary areas for the identified wetlands. For purposes of this analysis, it is conservatively assumed that the subject wetlands are sustained only by surface water.

If the proposed storm sewers divert source flows from existing wetlands, the amount of surface water intercepted by the proposed storm sewers will be determined and the loss of wetland acreage will be estimated in proportion to the reduction in surface water inflow. Anticipated runoff changes within each wetland basin will be determined based on topography and land use. Inflow under existing and proposed conditions will be calculated based on the changes in impervious surfaces (e.g., road/streets, roofs and driveways) and porous surfaces (e.g., undeveloped land, grassed areas and lawns) within the wetland tributary areas. The analysis will be conducted utilizing the 1-year storm event, which is assumed to be the frequent storm event necessary to routinely support wetland vegetation and soils. This storm event contributes the equivalent of about 60 percent of the total stormwater volume that is absorbed by the wetlands. Any impacts on vegetation will be presented.

Impacts on wet woods and upland woods will be assessed based on the proposed sewer routes and the proposed clearing and grading plans for the proposed BMPs. For sewer routes, the potential loss of upland vegetation will be determined based on the length of affected (cleared) area and assumes an approximately 20-foot-wide construction corridor. In BMP areas, impacts will be determined based on tree characterizations and density analyses using the transect method, prepared as part of the site inventory and the area affected by the proposed BMPs. The acreage to be cleared for stormwater management (e.g., BMPs) will also be assessed for impacts. Likewise, changes in hydrology (see Task 10: Surface Water and Groundwater Hydrology) will be used to determine the indirect impacts (i.e., areas that may experience changes in inundation.)

The wildlife impact assessment will be based on the projected changes in vegetative cover and habitats. In wetlands and adjacent areas, potential impacts to wildlife habitats or individual species could occur due to changes in hydrology, water quality (due to pollutant loadings), or vegetation coverage or composition. In upland areas, potential impacts could occur due to changes in the vegetation complex, such as the loss of tree canopy or understory. Wildlife impacts could consider direct habitat loss, as well as potential for indirect impacts over time as a result of more gradual changes in habitat. As with the vegetation impact assessment, wildlife impacts will be examined for each element of the proposed action as well as a cumulative assessment for the projected changes throughout the three watersheds. Potential impacts on natural resources will be determined based on the following:

A. The nature and extent of the physical alteration of the affected areas, including the acreage of affected vegetation, or changes in wetland boundaries.

B. Impacts on any natural resources habitats. This will include the site-specific effects resulting from the loss of habitat and wildlife, as well as any cumulative effects of the proposed action. This will include direct loss or addition of wetland acreage and the direct loss of terrestrial habitat. Direct impacts include the potential impacts on both vegetation and on wildlife habitat.

C. The potential impacts from changes in the frequency and duration of inundation and soil saturation, changes in water quality and pollutant loadings (see Task 11: Surface Water and Groundwater Hydrology) and the potential for impacts from sediments. This would include an assessment of the potential impacts on resident species resulting from the habitat changes described above. An analysis of groundwater contribution to wetlands and potential impacts from any changes to groundwater is also proposed. Secondary benefits of the proposed project with respect to expanding open water habitat and supporting the control and containment of local brush fires will also be described (see also Task 4: Community Facilities).

TASK 13: HAZARDOUS MATERIALS

Areas of potential subsurface disturbance (e.g., BMP locations) will be assessed for potential hazardous material impacts. A preliminary survey of land use maps and of Federal and State database listings will be conducted for each watershed to determine areas of concern regarding hazardous materials contamination, including existing or past industrial and/or commercial uses in the area, or vacant lots on which illegal dumping may have occurred. A visual survey near any proposed in-ground disturbance will also be conducted. Available historical land use maps dating back 50 years will be reviewed to determine historic land uses. The Phase I, and in some cases Phase 2 Environmental Site Assessments, done in connection with the property acquisition

process, will also be summarized in this task. Specifically, this task will include the following at a watershed level:

A. Perform a land use and documentary search to determine previous uses in the watershed with the potential to have caused contamination. This will include gathering data from a database search; historical maps; buried or leaking tanks; and historical aerials and maps.

B. Inspect and examine BMP sites for evidence of potential site contamination. The site inspection would target items such as visible spills and stains, stressed vegetation, the presence of drums or other containers containing hazardous materials, dumped materials on vacant lots, areas of landfill, the presence of suspected asbestos-containing material, and underground tanks.

C. Information on subsurface conditions and previous soil borings from the area will be obtained from the U.S. Geological Survey.

D. Records maintained by the U.S. Environmental Protection Agency (EPA) and NYSDEC on properties of environmental concern will be reviewed, including records of known suspected hazardous waste disposal sites, hazardous waste generators or treatment facilities, hazardous substance releases, and chemical and petroleum storage facilities.

E. Compile the baseline information into a watershed level report and summarize the data into the Existing Conditions section of the EIS.

F. Assess the potential for contamination in each watershed based on the baseline condition data and the areas of disturbance under the proposed action. If necessary, identify locations where further additional investigations, including Phase II testing, may be necessary as mitigation, or to avoid impacts. As appropriate, determine and describe appropriate remediation measures that will avoid significant adverse impacts to human health and the environment.

TASK 14: WATERFRONT REVITALIZATION PROGRAM

All three watersheds are within the City's coastal zone. Therefore, a Coastal Zone Consistency determination will be conducted for the proposed action with respect to the policies of the City's Waterfront Revitalization Program (WRP). The City's 10 policy WRP will be used as the basis for this evaluation.

TASK 15: INFRASTRUCTURE

No significant adverse impacts are expected from the proposed action with respect to infrastructure since there are no additional water supply or sanitary sewer service demands on these services with the proposed action. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect impacts on infrastructure. Any added demands on the Oakwood Beach WPCP from expanded sanitary collection lines will be presented in this screening level of analysis.

TASK 16: SOLID WASTE AND SANITATION SERVICES

No significant adverse impacts are expected under the proposed action with respect to solid waste and sanitation services since there are no added demands on these services. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect solid waste and sanitation services impacts.

TASK 17: ENERGY

No significant adverse impacts are expected under the proposed action with respect to energy since there are no added demands for energy with the proposed action. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect impacts on energy usage.

TASK 18: TRAFFIC AND PARKING

Neither the proposed BMPs nor the proposed sewers would generate new vehicular traffic since those facilities would largely serve existing development. The proposed action does call for the demapping of many segments of mapped but not built streets in order to site BMPs and maintain the connectivity of the Bluebelt land systems. This traffic analysis will characterize the traffic patterns in the area, and examine the potential for any significant traffic impacts that may result from these changes. Since traffic in much of the area is light to moderate, it is expected that this analysis will be largely qualitative.

Likewise, it is not expected that the proposed action would result in any impacts with respect to local on-street parking. In the event that any parking analysis is necessary, this, too, is expected to be largely qualitative.

TASK 19: TRANSIT AND PEDESTRIANS

The proposed action would also not generate any additional transit or pedestrian trips. Therefore, no significant adverse impacts on transit and pedestrian services and facilities are expected.. In the event that any bus or rail service is affected permanently by the siting of a BMP, any modifications to these services will be described. This task will also address any need for potential coordination with the MTA with respect to the Staten Island Railway property and operations.

TASK 20: AIR QUALITY

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts on air quality are expected from the proposed action since there are no added vehicles or stationary sources of air emissions. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect impacts on air quality.

TASK 21: NOISE

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse noise impacts are expected from the proposed action since there would be no added vehicles or stationary sources of noise emissions. This task will, therefore, provide a CEQR screening level of analysis for assessing potential direct or indirect noise impacts.

TASK 22: CONSTRUCTION IMPACTS

This task will examine the potential for impacts during the construction period. It will provide a description of the construction program for the proposed sewers and BMP construction programs including:

A. Phasing, scheduling and anticipated duration of activities;

B. Directly impacted areas, including staging areas;

C. Traffic management during construction;

D. Construction activities, with a focus on those activities in areas of natural resource significance, such as wetlands and in-stream locations; and

E. Measures required by the City's code to reduce impacts during construction, or techniques to be implemented by NYCDEP (e.g., soil erosion and sediment control, dust suppression, air emission and noise controls). These environmental protection measures will be described under this task along with any additional measures that may be necessary in order to mitigate construction period impacts.

Potential impacts during construction will then be assessed based on analyses presented in prior environmental reviews prepared for South Richmond Bluebelt projects. Based on prior reviews, the analysis of construction period impacts is expected to focus on construction generated traffic, sedimentation and erosion control, water quality and natural resource protection, dust suppression, archaeological resource protection, and noise and vibration minimization.

TASK 23: PUBLIC HEALTH

Based on the conclusions of prior environmental reviews for the South Richmond watersheds, no significant adverse impacts on public health are expected from the proposed action. As needed, any measures necessary to avoid impacts due to hazardous materials (e.g., site testing) will be

TASK 24: GROWTH-INDUCING IMPACTS

This task will present and analyze the potential for the proposed action to induce new development within the watersheds that would otherwise not occur. Induced growth can potentially result from new or expanded sewer service, which may lead to the development of properties, or increased developmental density. To determine if growth could be induced from the proposed action and, if so, the extent to which it might occur, this analysis will:

A. Briefly summarize the baseline land use and zoning conditions in the watershed to determine if there are large tracts of vacant property and the potential for growth-inducing impacts.

B. Describe existing demographic characteristics of the watersheds using U.S. Census data from 1980, 1990, and 2000. Characteristics will include trends in total population, households and household sizes, age cohorts, and housing units, as well as any potential or projected changes in local socioeconomic characteristics. This would also be based on the data developed for the land use section.

C. If necessary, undertake a thorough evaluation of the environmental features on the vacant properties. Data would be gathered on wetlands, steep slopes, or protected open spaces that may limit potential development, or require additional discretionary actions.

D. Identify future development that is expected to occur in the No Action condition (i.e., absence of the proposed action) and additional development that may result from the proposed action.

E. If necessary, analyze the potential impacts of growth that may be induced as a result of the proposed action, such as increased demand on community facilities, or increased traffic and transportation demands.

TASK 25: MITIGATION MEASURES

If it is determined that significant adverse impacts could result from the proposed action, such impacts would be disclosed and mitigation measures that would successfully eliminate or reduce impacts will be presented.

TASK 26 UNAVOIDABLE ADVERSE IMPACTS

To the extent that significant adverse environmental impacts would occur for which there is no mitigation, and where impacts could not be avoided while meeting project objectives, these unavoidable adverse impacts will be summarized in this chapter.

TASK 27: ALTERNATIVES

Alternatives to be evaluated and compared with the proposed action include:

A. A No Action Alternative.

B. Implementation of the existing drainage plan (i.e., the Potter Plan).

C. Alternatives that may reduce or eliminate impacts.

D. Alternative BMP designs that meet the overall goals and objectives of the proposed action and drainage plans.

TASK 28: IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the proposed action will require the expenditure of both human and material resources that will irreversibly and irretrievably be committed to the action. These resources will be summarized in this section of the EIS.

APPENDICES

EIS appendices will be included as necessary, containing the background to technical analyses provided for public review. ✷