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## A. PROJECT DESCRIPTION

### INTRODUCTION

The New York City Department of Environmental Protection (NYCDEP) is proposing a project known as Hendrix Street Canal Interim Dredging. The purpose of this project is to remove accumulated combined sewer overflow (CSO) sediment from the upper portion of the canal to provide odor abatement for the surrounding community in accordance with the CSO Consent Order with the New York State Department of Environmental Conservation (NYSDEC). This report addresses the technical analysis of the proposed action following the methodology set forth in the *City Environmental Quality Review (CEQR) Review Manual*, dated October 2001.

The Hendrix Street Canal is a small, shallow tributary of Jamaica Bay located in Brooklyn, NY and is approximately 7,000 feet long as shown on Figure A-1. The upstream 4,000-foot section of the canal ranges in width from 150 to 250 feet and ranges in depth from zero to six feet. A CSO discharge is located at the north terminus of the canal. The downstream 3,000-foot section of the canal increases in width to 300 feet and ranges in depth up to 15 feet. It is estimated that the canal was last dredged in 1937 when the canal and CSO outfall were constructed. The head end of the canal now contains CSO sediments that have accumulated since that time. CSO sediment is composed of material from combined sewer overflow (stormwater and untreated wastewater) which occurs during certain conditions of wet weather events. In general, CSO sediment is high in organic material, yet variable in composition due to natural and man-made inputs to the combined sewer system.

The 26th Ward Water Pollution Control Plant (WPCP) and Pennsylvania Avenue Landfill, which is currently being restored by NYCDEP, border the Hendrix Street Canal to the west. Open space, Gateway Estates and the Fountain Avenue Landfill, which is also being restored by NYCDEP, border the canal's eastern shore.

A shopping center associated with the Gateway Center Project has been constructed and is open to the public, while residential and additional commercial portions of this project, Gateway Center Properties Phase II, is planned for the open space north of the commercial development. This project is discussed in more detail in Section B, "LAND USE, ZONING AND PUBLIC POLICY."

As part of the Gateway Estates project, a perimeter park is being created. Today, the park runs along the Belt Parkway south of the shopping center to the end of the Gateway property at Erskine Drive and along Hendrix Street Canal to the northern edge of the existing shopping center. A biking/walking path continues adjacent to Gateway Drive and terminates at Vandalia Avenue. The completed park will occupy the area between Gateway Drive and Hendrix Street Canal. This park is discussed in more detail in Section E, "OPEN SPACE."

Interim dredging is proposed for the uppermost 1,400 feet of the canal as shown in Figure A-1. This action would remove accumulated CSO sediments (20,000 cubic yards) from the canal by hydraulic dredging. Hydraulic dredging was selected over mechanical dredging as hydraulic dredging would reduce the overall project duration, result in less turbidity within the canal, and have less impact on the benthic (organisms that live on the bottom of a water body) habitat within the canal.

The dredged material would be pumped through a flexible pipeline from the dredging work area to the dewatering equipment to be staged on barges moored to the existing NYCDEP pier at the confluence of Hendrix Street Canal with the North Channel of Jamaica Bay as shown of Figure A-1. The filtrate (water

resulting from the dewatering operation) would then be pumped, via another flexible floating pipe to the work site. The dewatered material would be transported by barge from the pier to a processing facility located in New Jersey.

The canal bottom would then be restored by placing 12,500 cubic yards of sand atop the dredged surface to cap the remaining sediments within the dredged area of the canal. Sand used in the capping operation would be transported via barge and off-loaded at the NYCDEP pier. The sand would then be hauled to the work site using an access road that connects the pier to internal roadways within the 26<sup>th</sup> Ward WPCP.

## **PURPOSE AND NEED**

This action is in accordance with Consent Order CO2-20000107-8 with NYSDEC to provide odor abatement for the surrounding community.

As previously discussed, this action would reduce the emission of nuisance odors to the community surrounding the canal. The existing odor is caused when accumulated CSO sediments become exposed to the atmosphere during daily tidal events. Typically, the water covering the highly enriched organic CSO sediments can oxidize much of the hydrogen sulfide that is generated through biochemical reactions in the sediments. When submerged, only the portion of the hydrogen sulfide that emanates from the sediment mounds that is not oxidized or dispersed by the tidal currents is lost to the atmosphere. When the CSO sediments are not submerged, and the highly enriched sediment mounds are exposed, the hydrogen sulfide is introduced directly into the atmosphere at a much higher transfer rate. By removing those sediments exposed at low tide and capping the remaining materials, the remaining sediment would remain continuously submerged thereby reducing the emission of hydrogen sulfide and associated nuisance odors. Therefore nuisance odors emitted from the existing CSO mounds to the surrounding community would be reduced, and possibly eliminated.

The proposed action would recontour the canal bottom such that a minimum uniform depth of 2.8 feet of water would be present at all places within the canal (shorelines excepted) at mean low water elevation. The proposed action would remove sediments that cause nuisance odors and ensure remaining sediments are constantly submerged during normal tidal low tides. Sediment would be removed from the canal using hydraulic dredging techniques, as the relatively small dredge size provides maximum mobility and would result in minimal water quality impacts when working within the confined space of the canal. Following dredging, the recontoured creek bed would be capped with a 15 inch layer of clean sand to provide a barrier between the canal ecosystem and the remaining sediments. The cap design considered erosional forces caused by the skimmer vessel propulsion system. The cap would span the entirety of the dredged area.

This action is an interim measure to mitigate nuisance odors. Additional improvements might include future additional dredging of the canal and would be evaluated under the CSO Long Term Control Plan (LTCP) currently being developed by the NYCDEP.

## **EXISTING CONDITIONS**

Hendrix Street Canal is located on the north side of Jamaica Bay, the overall canal length is approximately 7,000 feet, and varies in width from 150 to 300 feet. A fixed bridge, part of the Belt Parkway (Shore Parkway), crosses the canal; the clearance under the bridge is approximately 20 feet at mean low water.

No known pipelines or cables exist in the designated dredging area. A force main that conveys treatment plant sludge from the Jamaica WPCP to the 26<sup>th</sup> Ward WPCP traverses the canal downstream of the work

area. No impediment to navigation is noted by the US Coast Guard or NYCDEP vessels that regularly travel within Hendrix Street Canal, thus utilities outside of the dredge area has not been investigated. In order to prevent public/private vessels from entering the canal during dredging operations, the contractor would be required to notify the U. S. Coast Guard who would publish a Local Notice to Mariners prior to the initiation of dredging activities.

Various studies have been performed that evaluated the existing ecological conditions of the canal. An Essential Fish Habitat Assessment (Attachment C) concluded that the habitat within the project area is unsuitable for fish and benthic organisms due to organically enriched sediments, restricted tidal exchanges, extremely low salinities and toxic sediment accumulations. A site survey of existing ecological habitats concluded that the shore habitats are consistent with saltwater marshes, with salt marsh cordgrass dominating the tidal zone. No threatened or endangered species was observed or identified within the canal. The Dredge Material Characterization Report (O'Brien & Gere, March 2007), concluded that the target material within the dredge area contains elevated levels of pesticides, heavy metals and semi-volatile compounds. These observed compounds were detected at levels that are characterized as "acutely toxic to aquatic life" in accordance with NYSDEC Technical and Operation Guidance Series (TOGS) 5.1.9 document entitled "In-water and Riparian Management of Sediment and Dredged Material."

### **PROPOSED ACTION**

The action would remove 20,000 cubic yards of accumulated sediment and debris from the most northerly 1,440 feet of the canal by means of hydraulic dredging and fine grading techniques. The width of dredging would range from approximately 120 to 160 feet. The dredging depth would be to 7.6 below Brooklyn Sewer datum (-7.6 BSD), which is approximately 4.0 feet below the estimated mean low water (-4.0 MLW) level. The volume of CSO sediments to be dredged was determined based upon a bathymetric survey of the canal performed March 13-17, 2007; this survey provided the elevation of the accumulated CSO sediments within the canal and was utilized to set the target dredge depth noted above. Placing a granular cap to isolate remaining sediments from the water column would follow dredging and grading. The cap would consist of 15 inches of clean sand and be placed over the remaining sediments resulting in a final canal top of bed elevation of -6.4 BSD (-2.8 MLW).

The hydraulic dredge used for this action would be transported to the work site via truck, and off-loaded directly into the Hendrix Street Canal in the immediate area of the work. Contractor employees, estimated at 12 persons, would park private vehicles at a designated area at the NYCDEP pier and use an existing access road that links the pier to the 26<sup>th</sup> Ward Water Pollution Control Plant to access the work site.

Incorporation of a cap into the action was guided by NYSDEC TOGS 5.1.9, which specifies that material with a Class C designation (based on concentrations of chemicals present) be capped "with available cleaner material." An elevation of -7.3 BSD was originally identified as the target dredge elevation to allow for a two-foot cap and to maintain the initial target elevation of -2 MLW (-5.3 BSD). These elevations were presented as the conceptual dredging and capping plan in the Dredge Material Characterization Report (OBG 2007).

Data collected during the final design investigation phase modified the conceptual elevations. First, the datum of mean low water was lowered by 0.3 feet to represent localized conditions observed within the canal. Accordingly, the target final dredge elevation, based on a conceptual cap thickness of 2 feet, was similarly adjusted to -7.6 BSD. The final design of the cap was guided by the U. S. Army Corp of Engineer (USACE) document "Guidance of Subaqueous Dredged Material Capping". Using the USACE guidance document and information collected during field investigations, a 15 inch thick sand cap was

designed. The target dredge depth of -7.6 BSD was selected in the final design as the in situ material that would remain after dredging is more stable than the shallower material. This stability is expected to minimize mixing and loss of cap material into the remaining sediment, although some mixing is expected to occur which is accounted for in the final design.

The anticipated work schedule for this action is noted in Table A-1, below.

**Table A-1. Anticipated Schedule of Work**

Task	Anticipated Start Date	Duration
Notice to Proceed/Contractor Work Plan Submissions	July 2008	
Mobilization	September 2008	2 Months
Dredging	November 2008	4 Months
Pilot Testing- Cap	March 2009	0.5 Months
Capping	April 2009	4 Months
Demobilization/Approval	August 2009	1 Month
<b>Total Anticipated Duration:</b>		<b>13 months</b>

## REQUIRED PERMITS AND APPROVALS

Implementation of the proposed action requires discretionary actions, permits, or approvals from Federal and State agencies as noted in Table A-2 below.

**Table A-2. Regulatory Permits and Approvals Requirements**

Agency/Authority	Permit/Approval/Review	Regulated Activity
<b>Federal</b>		
United States Army Corp of Engineers (USACE)	Section 404 of the Clean Water Act	Discharge of dredged or fill material into waters of the United States (including non-isolated and tidal wetlands).
USACE	Section 10 of the Rivers & Harbors Act of 1899	Work within navigable waters of the United States.
<b>State</b>		
New York State Department of Environmental Conservation (NYSDEC)	Tidal Wetlands (6 NYCRR Part 661)	Activities within State-regulated tidal wetlands and buffer areas (100 – 300 feet).
NYSDEC	Protection of Waters (6 NYCRR Part 608)	Work within navigable water bodies or disturbance to the bed or banks of protected streams.
NYSDEC	Section 401 of the Clean Water Act	Certification is used to ensure that federal agencies issuing permits or carrying out direct actions which may result in a discharge to the waters of the United States do not violate New York State's water quality standards or impair designated uses.

## **B. LAND USE, ZONING AND PUBLIC POLICY**

The study area is shown on Figures A-1 through A-4 and represents the location of this action within a 400-ft study area. The predominant land uses in the study area are classified as multi-family residential, transportation and utility, parking facilities, commercial, and open space and outdoor recreation.

The east bank of the study area is part of the perimeter park created as part of the Gateway Estates project. The Gateway Center commercial development is located east of Gateway Drive. Residential development, north of the commercial center, known as Nehemiah Development, is presently under construction with occupancy expected in April 2008. The approximate location of the Nehemiah Development is shown in Figures A-1, A-2, and A-3.

Downstream of the action is the Belt Parkway Bridge. At the confluence of the canal with Jamaica Bay are two former landfills (Fountain Avenue and Pennsylvania Avenue landfills) that NYCDEP is currently restoring. The surrounding area is zoned R3-2, R6, C4-2 and M3-1 as shown on Figure A-3.

This action and surrounding area are located within the boundaries of the New York City Coastal Zone. Pursuant to Federal legislation, New York State and City have adopted waterfront policies aimed at protecting resources in the coastal zone, which are part of New York City's Waterfront Revitalization Program (WRP). A full analysis of proposed action consistency with the policies of this program is presented in Attachment B, "WATERFRONT REVITALIZATION PROGRAM," which concludes that the action is consistent with the ten policies set forth in the WRP, where applicable.

As part of the closure and remediation of the Pennsylvania and Fountain Avenue Landfills, NYCDEP is restoring coastal grasslands to provide some of the largest expanses of contiguous grassland habitat in the Jamaica Bay watershed. Approximately half of the total area occupied by the two landfill sites (about 200 acres) is reserved solely for coastal grassland habitat. The plan includes the planting of over 40 native tree and shrub species and over 30 wildflowers and grasses. The Pennsylvania Avenue and Fountain Avenue landfill restoration projects will be completed in 2008, but will not be available for public access in the near future.

The land use characteristics of the surrounding area would not be negatively affected by the proposed action and would benefit from the objectives of the proposed action through reduced odors. Therefore, this action presents no potential for significant adverse land use, zoning or public policy impacts to the surrounding area, and no further examination is necessary.

## **C. SOCIOECONOMIC CONDITIONS**

The proposed action would not result in any development in the study area, nor would it generate new employees or new residential, commercial or manufacturing uses. The proposed action would not displace any residential populations, businesses, institutions or employees. Therefore, this action presents no potential significant adverse impacts on socioeconomic conditions to the surrounding area, and no further examination is necessary.

## **D. COMMUNITY FACILITIES AND SERVICES**

*The CEQR Technical Manual* specifies that actions adding less than 100 residential units to an area generally do not need to consider community facilities and services unless they would have a direct effect

on a community facility. The proposed action would not result in an increase in residential units nor would it directly or indirectly negatively affect any community facilities. Therefore, this action presents no potential significant adverse impacts on community facilities and services to the surrounding area, and no further examination is necessary.

### **E. OPEN SPACE**

A detailed open space assessment is required if a proposed action adds 200 residents or 500 employees to an area. Currently, public green space with biking and walking paths adjacent to Gateway Drive abuts the eastern shoreline of the canal south of the work site. The biking and walking path extends north from the park to Vandalia Avenue, 100 feet away from the work site. Generally, the park is east of the canal, west and south of the Gateway Center development and bounded by the Belt Parkway as noted in Figure A-1, A-2, and A-3. The proposed action is anticipated to eliminate odors caused by tidally exposed CSO sediments that may affect nearby parks and pedestrian pathways, thereby resulting in a positive benefit to the open space in this area.

The proposed action would not introduce additional residents or employees, nor would it adversely impact any public open space and is not expected to increase utilization demand. Therefore, this action presents no potential significant adverse impacts on open space in the surrounding area, and no further examination is necessary.

### **F. SHADOWS**

The proposed action would not create any above-grade structures to cast shadows. Therefore, this action presents no potential significant adverse impacts on shadows in the surrounding area, and no further examination is necessary.

### **G. HISTORIC AND ARCHAEOLOGICAL RESOURCES**

The proposed action would consist of removing accumulated sediment and debris from the most northerly 1,440 feet of the Canal by means of hydraulic dredging and fine grading techniques. The dredging depth is to -7.6 BSD, which is approximately -4.0 MLW level. The dredging activities would not extend beyond the original 1937 canal bed and, therefore, the vertical and horizontal limits proposed for this action are in areas that have been previously disturbed. As such, no historic or archaeological resources are expected to be encountered. Therefore, this action presents no potential significant adverse impacts on historic and archaeological resources in the surrounding area, and no further examination is necessary.

### **H. URBAN DESIGN AND VISUAL RESOURCES**

As discussed above under Section F, "SHADOWS," the proposed action would not result in any above-ground structure. As discussed in Section B, "LAND USE, ZONING AND PUBLIC POLICY," the proposed action is consistent with all adjacent land uses, zoning classifications and existing public policies. This project will improve visual aesthetics of Hendrix Street Canal by removing CSO sediments that are visible during low water levels. Therefore, this action presents no potential significant adverse impacts on urban design and visual resources in the surrounding area, and no further examination is necessary.

## I. NEIGHBORHOOD CHARACTER

The *CEQR Technical Manual* defines a neighborhood character assessment as an evaluation of the many features that define the local community. These elements include land use, urban design and visual resources, socioeconomic conditions, traffic, air quality and noise. The proposed action is anticipated to eliminate odors caused by tidally exposed CSO sediments that affect the surrounding community, thereby resulting in a positive benefit to the community. As described elsewhere in this document, the proposed action would not result in any significant adverse impacts to any of these elements. Therefore, this action presents no potential significant adverse impacts on neighborhood character in the surrounding area, and no further examination is necessary.

## J. NATURAL RESOURCES

The *CEQR Technical Manual* states that a natural resources assessment should be conducted when a natural resource is present on or near the project site and when an action involves the direct disturbance of that resource or has the potential for indirect impacts. This action would remove accumulated CSO sediments within the canal that currently provide a degraded habitat to aquatic flora or fauna. The proposed cap material would re-establish water depths consistent with littoral zone habitat. This action is not expected to significantly impact marine life or essential fish habitat due to the existing degraded environmental conditions which includes organically rich sediment loads, restricted tidal exchange, extremely low salinity and contaminated sediment accumulation.

A site visit was conducted on December 20, 2006, to observe the section of the canal north of the Belt Parkway Bridge, and to characterize ecological habitats that exist along the canal banks in support of biological characterization of the canal. Generally, the vegetated areas within and just above, the tidal influence include vegetation consistent with saltwater marsh habitat. The observed area descriptions are summarized below:

- The littoral zone to be dredged consists predominately of unvegetated sediment with areas of sand, gravel and rock interspersed.
- The eastern bank, north of the outfall of the 26<sup>th</sup> Ward WPCP, consists almost entirely of common reed (*Phragmites australis*) that extends from the waterline to the top of bank. There are occasional young trees (0 to 10 years old), mainly cottonwood (*Populus deltoides*) and tree-of-heaven (*Alianthus altissima*). East of this common reed stand is a relatively flat, 20-foot wide vegetated stretch from an earlier restoration. Young trees with nursery labels include chestnut oak (*Quercus prinus*), willow oak (*Quercus phellos*), northern bayberry (*Myrica pensylvanica*), and eastern red cedar (*Juniperus virginianai*). Vegetative species in this area include various grasses, seaside goldenrod (*Solidago sempervirens*), common evening primrose (*Oenothera biennis*), common plantain (*Plantago major*), and black-eyed susan (*Rudbeckia serotina*). The elevated area east of this restoration area is dominated by old field species including seaside goldenrod.
- The eastern bank, south of the outfall of the 26<sup>th</sup> Ward WPCP to the Belt Parkway, consists mainly of salt marsh cordgrass (*Spartina alterniflora*) within the tidal zone. Above the tidal zone, a shrub layer consists mainly of marsh elder (*Iva frutescens*). There are riprap aprons in the vicinity of several outlet culverts that exist along this reach.
- The western bank, south of the outfall of the 26<sup>th</sup> Ward WPCP to the Belt Parkway, consists mainly of common reed with some seaside goldenrod adjacent to the access road that parallels the Canal.
- The western bank, along the break wall north of the outfall of the 26<sup>th</sup> Ward WPCP, consists of a mix of seaside and old field species, including various grasses, mullein (*Verbascum thapsus*), poison

hemlock (*Conium maculatum*), beach clotbur (*Xanthium echinatum*), and common ragweed (*Ambrosia artemisiifolia*).

- No threatened or endangered species or specially protected or regulated habitats were observed during the site visit conducted on December 20, 2006. Additionally, based upon April 2007 correspondence with the National Oceanic and Atmospheric Administration National Marine Fisheries Division, US Fish and Wildlife Service and the NYSDEC Division of Fish, Wildlife and Marine Resources, Natural Heritage Program, there are no known occurrences of rare or state-listed species on the subject site and no specially protected or regulated habitat are present within the area of the proposed action.

A detailed assessment of the potential for impacts on natural resources is presented in Attachment C, "ESSENTIAL FISH HABITAT ASSESSMENT," dated May 2007.

The following agencies were contacted regarding the presence of any rare, threatened, and/or endangered species within the area of this action: National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-NMFS), U.S. Fish and Wildlife Service (USFWS), and the NYSDEC Natural Heritage Program (NHP). According to NHP, there are no records or known occurrences of rare or state-listed animals on the subject site. Except for transient individuals, no federal-listed or proposed endangered or threatened species under the NMFS, USFWS or NYSDEC jurisdictions are known to exist within the area of the proposed action.

A low salt marsh, considered a sensitive community by the NHP, is located downstream of this action along the west bank of the Fountain Avenue Landfill. As discussed in the Essential Fish Habitat Assessment, the low salt marsh is considered unhealthy and is converting to a mudflat. It is anticipated that this action would not impact the low salt marsh, as it is downstream of the site. Therefore, this action presents no potential significant impact to the salt marsh.

During dredging/capping activities, turbidity levels would temporarily increase within the work area. However, turbidity would be controlled by a silt curtain across the canal downstream of the active work area during dredging activities. Protective measures, such as this silt curtain and the use of a hydraulic dredge, would reduce dredging impacts on the salt marsh. Additional information addressing protective measures during construction can be found in Section T, "CONSTRUCTION IMPACTS."

The impacts of this action are expected to be minimal, as the area is currently a degraded habitat. Long-term impacts would be negligible, as the canal would continue to be used as a receiving water body for CSO and 26<sup>th</sup> Ward WPCP discharge. Therefore, this action presents no potential significant adverse impacts on natural resources in the surrounding area, and no further examination is necessary.

## **K. HAZARDOUS MATERIALS**

Characterization of the CSO sediments in the Hendrix Street Canal was completed during the Dredge Material Characterization, 2007.

Target sediment was collected from thirteen locations and chemically characterized during April 2006. Samples were analyzed for volatile organic compounds, semi-volatile organic compounds, pesticides, poly-chlorinated biphenyls (PCBs), and inorganic constituents. No compound was observed to exceed the thresholds for any listed hazardous waste, nor did collected sediment exhibit any characteristic of hazardous waste as defined by 6 NYCRR Part 371.

The material to be dredged has been characterized as Class C - acutely toxic to aquatic biota - in accordance with NYSDEC TOGS 5.1.9. Based on NYSDEC TOGS guidance, cadmium, chlordane, DDT and PCBs were the primary constituents of concern.

Dredged materials would be disposed by the contractor at an off-site disposal facility in accordance with applicable Federal, State and Local rules and regulations. Following dredging, remaining sediments would be covered by a cap of clean material as prescribed by the TOGS for Class C material. A cap, consisting of approximately 12,500 cubic yards of sand has been proposed to ensure stability based on site conditions and achieve the intent of the NYSDEC TOGS 5.1.9 guidance.

The dredged material to be removed would consist primarily of outwash from the nearby CSO outfall and consists of fine silt, shell, clay, sand, debris, and trash. It is anticipated that chemical constituents of the total dredged material would be of similar nature as the sampled material. Additionally, given the history and character of the site, a considerable volume of debris could be encountered during dredging. This debris could consist of tires, shopping carts, broken asphalt, plastics, ropes, trash bags, assorted trash articles, abandoned pilings, as well as other types of automotive metal or construction debris. As such, a Construction Health and Safety Plan, to be submitted by the selected contractor, and reviewed and approved by NYCDEP, would be required prior to the initiation of dredging activities to protect workers and the public from exposure to known and potential contaminants.

All dredged material would be transported in a dewatered state, deposited, and retained at a licensed off-site upland disposal facility approved to accept the dredged and dewatered material. No beneficial re-use is presently authorized for Class C dredged material. Additionally, all collected debris would be transported to a landfill licensed to accept such material. All transportation and disposal activities would comply with all conditions issued in the Joint Application Permit to be issued by USACE and NYSDEC, and would be in accordance with Federal, State and local laws and regulations. See Section T, "CONSTRUCTION IMPACTS" for more information about storage and transportation of dredged material during construction.

Through the removal and off-site disposal of contaminated sediments and subsequent capping this action would provide benefits to the surrounding area such as reduced odor. Therefore, given that no hazardous material is known to exist, this action presents no potential adverse impact to the surrounding area due to the presence of hazardous materials. Further, with appropriate measures in place to handle contaminated dredged material, this action presents no potential adverse impact to the surrounding area due to the presence of contaminated materials.

## **L. WATERFRONT REVITALIZATION PROGRAM**

As shown in Figure A-1, this action is located within the New York City's Coastal Zone although the work is outside the limits of the Special Natural Waterfront Area in Jamaica Bay.

The following Waterfront Revitalization Program policies will be directly promoted by the removal of contaminated sediment through dredging, incorporating silt curtains and hydraulic dredging that minimize water quality impacts, fine grading along shoreline to protect existing vegetation, and isolating the remaining sediments by capping:

- Policy 4. Protect and restore the quality and function of ecological systems within the New York City coastal area;
- Policy 5. Protect and improve water quality in the New York City coastal area;

- Policy 7. Minimize environmental degradation from solid waste and hazardous substances; and
- Policy 9. Protect scenic resources that contribute to the visual quality of the New York City coastal area.

An assessment of this action's consistency with the City's Coastal Zone Management policies is presented in Attachment B: "WATERFRONT REVITALIZATION PROGRAM." As described in greater detail in that document, the proposed action is consistent with the City's Coastal Zone Management Program.

Therefore, through the removal of contaminated sediments and use of best management practices during construction, this action would be consistent with the Waterfront Revitalization Program with no potential for significant adverse impacts to areas covered by the Waterfront Revitalization Program.

## **M. INFRASTRUCTURE**

The proposed action would introduce no new residents and no new employees. Therefore, the proposed action presents no potential significant adverse impacts to the City's infrastructure systems, and no further examination is necessary.

## **N. SOLID WASTE AND SANITATION SERVICES**

The proposed action would introduce no residents, no permanent employees, and would not result in a significant increase in the production of solid and sanitary wastes. Therefore, the proposed action presents no potential significant adverse impacts to the City's solid waste and sanitation services, and no further examination is necessary.

## **O. ENERGY**

The proposed action would not generate additional demand for energy or any strain on the existing distribution system. See Section T, "CONSTRUCTION IMPACTS" for information about energy use during construction. Therefore, the proposed action presents no potential significant adverse impacts to the City's energy distribution network, and no further examination is necessary.

## **P. TRAFFIC AND PARKING**

The proposed action would not introduce any additional residences, commercial or manufacturing facilities that would impact the vehicular traffic and parking in the site or surrounding areas. See Section T, "CONSTRUCTION IMPACTS" for information about traffic and parking during construction. Therefore, this action presents no potential significant adverse impacts on traffic and parking in the surrounding area, and no further examination is necessary.

## **Q. TRANSIT AND PEDESTRIANS**

This action is not anticipated to involve subway, rail or bus trips. Further, this action would not affect public transportation infrastructure or pedestrian walkways at any time. Therefore, this action presents no potential significant adverse impacts to transit and pedestrians in the surrounding area, and no further examination is necessary.

## R. AIR QUALITY

This action is being undertaken, in part, to eliminate nuisance odors caused by tidal exposure of decomposing CSO sediments within the canal. By removing the CSO sediments that become exposed at low tide and subsequent capping, the remaining sediments would be continuously submerged and not be exposed to the atmosphere. Further, the proposed action is limited to the removal of existing materials, and does not incorporate any action that would result in potential new sources of pollutants that would affect air quality. See Section T, "CONSTRUCTION IMPACTS" for information about air quality during construction. Through the removal of sediments and subsequent capping of remaining material, any existing adverse impacts to the surrounding area air quality are expected to be reduced as a result of this action. Therefore this action presents no potential significant adverse air quality impacts to the surrounding area, and no further examination is necessary.

## S. NOISE

No component of this action would create noise following the completion of construction activities. See Section T, "CONSTRUCTION IMPACTS" for information about noise during construction. Therefore, this action presents no potential significant adverse noise impacts to the surrounding area, and no further examination is necessary.

## T. CONSTRUCTION IMPACTS

The proposed action requires the interim dredging of Hendrix Street Canal in accordance with a Consent Order with NYSDEC. This action would remove the accumulated sediment within the uppermost 1,400 feet of the canal shown on Figure A-1. Hydraulic dredging was chosen over mechanical dredging as hydraulic dredging would reduce the overall project duration, result in less turbidity within the canal, and have less impact on the benthic habitat within the canal.

As presently envisioned, the dredging contractor would mobilize his equipment to the site during September and October 2008. During this phase, the hydraulic dredge would be hauled to the work area via truck and off-loaded directly into the work area while the barge-mounted dewatering equipment would be floated to and moored at the NYCDEP pier. Dredging activities would be initiated in November 2008 and proceed through March 2009, approximately four months. Capping activities would commence in April 2009 and would be completed in July 2009, approximately four months. Following the performance of a post-construction bathymetric survey and approval of the work, the contractor would demobilize from the site of the work, currently projected as September 2009.

### *Hydraulic Dredging*

Hydraulic dredge equipment that would be used for this action is portable and used for shallow draft projects. Such a dredge consists of a floatation barge approximately eight to twelve feet wide and approximately thirty to forty feet long that drafts approximately two feet of water. The hydraulic dredge would be transported to the work site by truck and off-loaded directly into the Hendrix Street Canal within the proposed work area. Mounted on the floatation barge is a pump that is connected at the intake end to a suction head known as a "ladder" and on the discharge end to a flexible pipeline connected to a barge-mounted dewatering plant as discussed below.

At the extreme end of the ladder, is an “eggbeater” type device known as a cutterhead. The cutterhead is rotated and lowered to the bottom of the waterway until it comes in contact with the top of the bottom sediments. Upon reaching the bottom sediments, the rotation of the cutterhead places the upper layer of sediment into suspension in the lower water column. As the sediment becomes mixed with water, the intake port of the dredge pump, located on the ladder immediately next to the cutterhead, sucks the sediment into the dredge pump. The sediment/water mixture would then be pumped through the pipeline to a temporary dewatering plant, placed on barges at the mouth of the canal, and transported to the Clean Earth facility in Jersey City, NJ for unloading, processing, and final disposal.

The dredge and cap volume associated with the proposed dredging were based on bathymetric surveys conducted within the canal. Based on this survey and the requirement to maintain CSO sediments below a finished elevation of -2.0 MLW, approximately 20,000 cubic yards of sediment will be removed. Based on a cap thickness of 15 inches, approximately 12,500 cubic yards of sand would be required.

As discussed above, hydraulic dredging was selected over mechanical dredging due to a number of reasons including the negligible impact of delivering the dredge to the work site over land. Mechanical dredging would have required an access channel to be dredged from the open waters of Jamaica Bay to the project site. Hydraulic dredging would result in less disturbance of sediment downstream of the work area and in a shorter project duration. Further, due to the clearance under the Belt Parkway Bridge, if mechanical dredging was used, the dredged material would have been loaded onto smaller barges, possibly resulting in spillage of the dredge material into the canal. Additionally, as the water route from the canal to the processing plant in Jersey City, New Jersey would require larger barges for safe transport, a second transfer of dredge material from the smaller to the large barges would be required increasing the likelihood of spillage into the canal. Thus, NYCDEP decided to undertake dredging using hydraulic dredge equipment.

#### ***Dewatering of Dredged Sediment***

In order to minimize transportation costs, the dredged material would be dewatered at a temporary dewatering plant located on a barge moored at the existing NYCDEP pier. This pier is approximately 5,000 feet away from the work site. The hydraulic dredge would pump the sediment/water mixture to the temporary dewatering plant through a flexible pipeline, approximately 12 inches in diameter. The dredge material would then be pumped through three stages of treatment to remove debris and sand and dewater the material prior to transport to the off-site facility. These stages include screening, flocculation, and dewatering. The first stage of the process is mechanical screening that separates the debris and sand from the sediment/water mixture. The removed debris would be stockpiled on an adjacent barge for sorting and offsite disposal at a landfill licensed to accept such material. The sand would be further separated from the mixture through a hydro-cyclone (equipment that removes larger particles by centrifugal action), stockpiled on an adjacent barge and disposed of at a licensed facility.

The next stage after screening is flocculation, where the water/sediment mixture would be directed to an on-site frac-tank (a large portable steel tank typically used for temporary holding of a waste stream) in which flocculent (a polymer chemical that enhances the settling action of suspended particles) is added to enhance the water/sediment separation process. Following flocculation, the sediment/water mixture would be pumped to either mechanical presses (belt filter or plate and frame press) or geotubes, where most of the water would be separated from the sediment. Filtrate or “return” water (remaining water from the dewatering process), which is expected to have a suspended solids concentration of less than 100 parts per million (ppm), would be pumped back to the active dredging area via an approximately 12-inch diameter flexible pipe and discharged into the work area. Bench-scale testing has demonstrated that available dewatering technology used in this project would produce return water with levels of chemical constituents that are below applicable discharge standards and levels of suspended solids concentrations ranging from 9.5 to 91 ppm, below permit levels for temporary discharges.

In order to neutralize odors that might occur during screening, flocculation and dewatering operations, an aerosol type odor control system would be provided. Such systems include piping with spray nozzles, which would inject an odor neutralizing agent into the atmosphere. The piping for this system would be placed around the perimeter of these temporary facilities.

The dewatered sediment would then be transported via barge to the Clean Earth facility in Jersey City, NJ for further processing. It is estimated that each barge would be moored at the NYCDEP pier approximately two days for loading before transport to the Clean Earth facility. At the Clean Earth facility, either cement kiln dust or fly ash would be added, with the aggregate transported to a licensed facility in either southern New Jersey or eastern Pennsylvania for ultimate disposal. Manifests would be provided and chain of custody documentation submitted to the Department.

### ***Capping of the Dredged Area***

Sand for capping would be transported to the work site via barges and moored at the NYCDEP pier. The material would be off-loaded and transported by dump truck from the pier to the work site along the interior access roads of the 26<sup>th</sup> Ward WPCP. Capping material would be staged along the shoreline of the 26<sup>th</sup> Ward WPCP and deposited into the canal by front end loader. A hydraulic dredge would then operate in reverse to draw the clean sand from where it was deposited within the canal and spread the material in controlled layers upon the previously dredged area.

### **NATURAL RESOURCES**

As discussed in Section J, "NATURAL RESOURCES," the removal of bottom sediments create the potential to temporarily impact fish and fish habitat as a result of increased turbidity and loss of benthic habitat during dredging activities. However, the extent of potential impact is expected to be negligible, as the habitat in the work area is considered degraded as documented in the Essential Fish Habitat Study. (Attachment C) and the turbidity curtain will help to contain the increased turbidity within the work area.

The study noted that the action would likely have a minimal effect on the designated essential fish habitat and commercial/recreational species of concern as the canal system was found to be a degraded habitat with organically rich sediment loads, restricted tidal exchange, extremely low salinities and toxic sediment accumulations. Only three species of fish (summer flounder, winter flounder and Windowpane) were observed at a monitoring station located in the North Channel of Jamaica Bay off Fountain Landfill. No evidence has been found that suggests these fish species utilize the canal. Further, the degraded habitat and low salinity currently characterizing the canal work area would be avoided by adult finfish, thus preventing the presence of eggs and larvae.

To ensure that project construction is completed in a manner that is protective to natural resources surrounding the canal, the following measures would be implemented:

- The work area would be segregated with a silt curtain that would extend from shoreline to shoreline of the canal. The silt curtain would extend from the water surface at extreme high tide to the bottom of the canal (typically weighted by chains) and from the point at which the water surface meets each shoreline at extreme high tide. The curtain would contain sediments within the work area during the anticipated peak velocity of water (approximately 1.1 feet per second) occurring with the outgoing tide.
- Return water would be monitored on a regular basis for compliance with any and all parameters required by the dredging permit granted for this action. It is anticipated that a return water limit for suspended solids of 100 ppm would be imposed for this project. As such, return water from the

dewatering process would be managed by dewatering to maintain a total suspended solids concentration of less than 100 ppm at the immediate discharge point.

- Dredge slurry and return water pipelines would be “floated” through the canal and anchored sufficiently far from the shore that the pipelines would not be washed into shoreline vegetation or impact the ongoing upland restoration work conducted by the NYCDEP at the Pennsylvania Avenue landfill.
- Other short-term impacts that might result from this action include a direct impact from dredging activities that would cause substrate disturbance, as well as other indirect temporary construction impacts such as disturbance and displacement of fish species, loss of prey and water quality degradation. However, due to the degraded habitat within the area to be dredged as a result of organically enriched sediment loads, restricted tidal exchange and extremely low salinity (0.4 to 3.8 ppt), it is unlikely that the action will have any impact on fish species or result in loss of prey.
- Fine grading of shorelines would minimize incidental damage to adjacent tidal vegetation.
- The use of non-toxic dewatering polymers such as those manufactured by Cytec Chemical, Ciba Chemical or other similar polymers have been tested and passed USEPA “Method for Measuring Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.”
- The contract would define work staging limitations to reduce the area exposed during dredging.
- During construction, fish would likely avoid the area. Further, any benthic communities that would be disturbed during construction would likely recolonize the area quickly after construction completion.

Therefore, through the use of best management practices during construction and due to its temporary nature, this action presents no potential significant adverse natural resources impacts to the surrounding area, and no further examination is necessary.

#### **HAZARDOUS MATERIALS**

As described in Section K, “HAZARDOUS MATERIALS,” no hazardous waste is known to exist within the area of the proposed action. The material to be dredged has been characterized as Class C - acutely toxic to aquatic biota - in accordance with NYSDEC TOGS 5.1.9. To minimize the spread of suspended sediments during the hydraulic dredging process, the following measures would be implemented:

- The work area would be segregated with a silt curtain that would extend from shoreline to shoreline of the canal. The silt curtain would extend from the water surface at extreme high tide to the bottom of the canal (typically weighted by chains) and from the point at which the water surface meets each shoreline at extreme high tide. The curtain would contain sediments within the work area during the anticipated peak velocity of water (approximately 1.1 feet per second) occurring with the outgoing tide.
- Return water would be monitored on a regular basis for compliance with any and all parameters required by the construction permit granted for this work. It is anticipated that a return water limit for suspended solids of 100 parts per million would be imposed for this project. As such, return water from the dewatering process would be managed to maintain a total suspended solids concentration of less than 100 parts per million at the immediate discharge point.

- Dredging and dewatering pipelines will be form a “closed circuit” such that all water removed from the work area is returned to the work area. No discharge points for dredge water would be located outside of the work area.
- Waterborne vessel traffic (skimmer boat) that require temporary opening of the turbidity boom would be limited to periods of high tide during non-dredging activity.

Therefore, through the use of best management practices during construction and disposal in accordance with federal, state and local regulations, this action presents no potential significant adverse impacts to the surrounding area due to hazardous materials, and no further evaluation is necessary.

### ENERGY

Power required for operation of the temporary dewatering equipment would be provided via a 250 kW diesel generator to be provided by the contractor conducting the work. Hydraulic dredge equipment would also be diesel-fueled. Engine size is anticipated to be approximately 500 horsepower. Best management practices, in the form of ultra-low sulfur diesel fuel as explained in the section Air Quality discussed below, would be required. Therefore, this action presents no potential significant adverse energy impacts to the surrounding area, and no further evaluation is necessary.

### TRAFFIC AND PARKING

A temporary increase in traffic to surrounding streets during construction would be incurred when dredging equipment is delivered to and removed from the site at the beginning and end of construction. Up to approximately 12 additional personal vehicles would be added to surrounding roadways during construction to accommodate contractor personnel; however, parking for these vehicles would be on NYCDEP-owned land in the vicinity of the NYCDEP pier and would not affect public facilities. Delivery of fuel oil is also anticipated periodically during construction. It is not anticipated that the number of trips would exceed the traffic analysis threshold of 50 passenger car equivalents (PCE) during the peak hour as presented in *CEQR* documentation.

Truck trips would be limited to the delivery and removal of the hydraulic dredge and generator equipment, and the delivery of fuel to the pier (shown in Figure A-1) and hydraulic dredge. The actual number of truck trips required for fuel delivery is based on equipment consumption rates and is estimated at once per day. A theoretical “worst-case” peak hour (the greatest number of anticipated equivalent vehicle trips that occur within a single hour) for vehicle trips is presented in the table below and assumes that all potential vehicle movement would occur during the same hour and each vehicle trip has been converted to “passenger car equivalents (PCE).” The number of PCE, including construction worker vehicles that occur during the actual peak hour during this action is anticipated to be significantly less than the *CEQR* threshold of 50 as noted below:

Vehicle	Number	Type (PCE)	Equivalent Trips
Personal Auto- Worker	12	1	12
Personal Auto - Engineer	1	1	1
Fuel Delivery	1	2	2
Dredge Delivery	1	2	2
Dewatering Equipment Delivery	1	2	2
Generator Delivery	1	2	2
On-site materials hauling	1	2	2
Total:			23

Barges would be the primary mode for transporting materials to and from the site. Barge trips would be made as needed; however, it is estimated that this action would require 15 trips by barge from the work

site to the New Jersey processing facility and 30 trips to the work site with capping materials over the course of the project. Barges would use the pier for mooring and would not enter Hendrix Street Canal. Therefore, with minimal project-related traffic during construction, this action presents no potential significant adverse traffic and parking impacts to the surrounding area, and no further evaluation is necessary.

## AIR QUALITY

### *Mobile and Stationary Sources*

Use of diesel fuel to power construction equipment (e.g. hydraulic dredge, temporary dewatering plant, return water pump, crew boat, front end loader, dump trailer) would result in diesel emissions. In accordance with City Local Law 77 (Title 24 of the Administrative Code of the City of New York, Section 24-163.3) as well as the NYCDEP's Notice of Promulgation of Chapter 14 of Title 15 of the Rules of the City of New York – Rules Concerning the Use of Ultra-Low Sulfur Fuel and Emissions Control Technology in Non-road Vehicles Used in City Construction, this action would utilize Ultra-Low Sulfur Diesel Fuel and employ Best Available Technology on construction equipment to minimize emissions during the temporary construction period to the extent practicable.

Potentially sensitive receptors have been identified; the closest sensitive receptors are as follows:

1. Site North - nearest residence, single-family attached house on Flatlands Avenue at 400 feet north of the dredging area and 7,000 feet north of the dewatering area.
2. Site West – nearest residence, apartment house on Bethel Loop in Starrett City at 775 feet west of dredging area and 3,500 feet northwest of the dewatering area along Van Siclen Ave.
3. Site East – Open space and park land between Hendrix Street Canal and the completed Gateway Plaza shopping center 400 feet south east from the work area. A biking and walking path extends north from the park to Vandalia Avenue, 100 feet away from the work site.
4. Site East - The Gateway Plaza shopping center nearest building is 650 feet from the dredging area and 4,800 feet northeast of the dewatering area.
5. Site East –The Nehemiah Development – Phase I project in Gateway Estates is currently under construction and will be completed before construction begins. This development is located approximately 1,600 feet east of the dredging area and 8,800 feet northeast of the dewatering area. Phase II of the Nehemiah Development project is scheduled to begin this year with construction through the duration of this action. Construction completion is estimated to be finished after this action is completed.
6. Site South – Two former landfills, the Pennsylvania Avenue Landfill (southwest of the action) and the Fountain Avenue Landfill (southeast of the action) are not currently accessible to the public. The extent of this land is approximately 1,700 feet southwest and southeast of the dredge area. The dewatering area at the pier is located immediately adjacent to the former Pennsylvania Avenue landfill.

The following equipment is anticipated to be present and in use during the proposed action:

- Hydraulic Dredge: This equipment would be self-propelled by an approximately 500 horsepower diesel-fueled engine. Actual dredge size would be proposed by the selected contractor prior to construction. The hydraulic dredge motor would power the cutterhead and slurry pump. The dredge would also be operated for the placement of capping material.
- Dewatering Plant: The dewatering plant would consist of a sand separator (hydro-cyclone) and dewatering equipment with an electrically driven mechanical press or a passive dewatering membrane. Either dewatering technology would incorporate an electrically driven system for injecting odor neutralizing agents at the perimeter of the dewatering facilities and an electrically

driven pump to return water to the canal work area. It is estimated that a 250 KW, diesel-fueled generator would be sufficient to power the dewatering plant. Actual generator size would be proposed by the selected contractor prior to construction. If the contractor selects geotube technology for sediment dewatering, a smaller electric generator might be used, as geotubes do not require power.

The dewatering equipment would be set-up on a 60-ft long barge moored to the NYCDEP Pier (see Figure A-1). Following dredging, the dewatering plant components would be removed from the site. Four barges are necessary for the siting of the dewatering plant along with stockpiling and transporting sand, debris and dewatered sediment.

- Crew boat: This equipment would be self-propelled by either a diesel-or gasoline-fueled engine and be employed during all phases of construction. The crew boat will be used for transportation of workers and supplies between the hydraulic dredge and the shore.
- Tug boat: This equipment would be used to transport barges filled with dewatered material to the treatment and disposal site and to transport capping material to the NYCDEP pier.
- Dump truck: This equipment would be operated during the capping process to bring sand from the NYCDEP pier to the capping area (operation will only occur on the access road that is not open to public traffic).

The dewatering plant and hydraulic dredge would be operated simultaneously during dredging operations. Only the hydraulic dredge, front end loader, and hauling vehicle would be operated during capping operations. The tug and crew boat would be operated as needed in addition to the dredge and dewatering equipment.

Best management practices would be incorporated into the work to minimize any effects from this action. This action would create a temporary (during construction only) increase in stationary and mobile combustion sources. The closest receptors are the residences to the north and west and the open space to the east. As previously noted, active dredging activities are presently planned to occur during the months of November, December, January and February. During this period, the number of users in the nearby park is expected to be minimal as a result of winter temperatures, and therefore only minimal impacts are anticipated. To verify the air quality in the surrounding community, NYCDEP has committed to real-time community air monitoring of volatile organic compounds and particulates during this project.

### ***Odor***

The potential for increased odors during construction exists if dredged sediments would be exposed to the atmosphere; however, dredging activities would only occur while water completely covers the sediment in the work area, thus maintaining the current level of odor during construction. This project would be short in duration and the effects on the closest receptors would be insignificant, as the odor would be no worse than today's conditions.

During the dredging process, dredged materials will be submerged at the worksite and would immediately enter the flexible pipeline. The dredged material would remain within the flexible pipeline until reaching the dewatering barge, which is located at the southern terminus of the former Pennsylvania Avenue landfill. Once on the barge, the dredged material would undergo the dewatering process described above. While there are no sensitive receptors within a quarter mile of the dewatering facility, odor control chemicals would be applied during the dewatering process to control odors during processing and storage prior to transportation to the extent practicable. These chemicals shall be non-toxic, non-hazardous and rated by the USDA as appropriate for food-grade applications. Due to the distance to sensitive receptors,

application of odor control chemicals, and the temporary nature of this action, no potential significant adverse odor impacts are expected to the surrounding area.

Therefore, through the use of best management practices during construction, this action presents no potential significant adverse air quality impacts to the surrounding area, and no further evaluation is necessary.

### **NOISE**

Noise levels that would occur due to equipment during construction are not known as the equipment for this action would be specified by the Contractor after the contract is awarded. However, the contractor would be required to comply with the Construction Noise Mitigation Rule (July 2007) by certifying all equipment used is maintained according manufacturers specifications and prepare and implement a Construction Noise Mitigation Plan. Further, the contractor would not be allowed to “operate or use or cause to be operated or used a construction device or combination of devices in such a way as to create an unreasonable noise” in accordance with the Local Law 113.

The City Code limits construction activities to weekdays between 7 AM and 6 PM. The Noise Code was recently amended to include preparation of noise minimization plans as part of a construction program. The contractor would be required to adhere to applicable daily work restrictions. The duration of active dredging and dewatering (the components must be performed simultaneously) would be short in duration and has been estimated to require approximately four months; however, actual time would vary based on the rate of production achieved by the contractor.

Due to the noise levels expected at sensitive receptors and the temporary nature of the activities, this action presents no potential significant adverse impacts due to construction, and no further examination is necessary.

### **U. PUBLIC HEALTH**

According to the *CEQR Technical Manual*, a proposed project could impact public health due to impacts resulting from air quality, traffic, hazardous material in soil or groundwater used for drinking water, noise, odors, or other actions that exceed the City, State or Federal Standards. As described in other sections, the proposed project would not cause any such potential impacts. Therefore, this action presents no potential significant adverse public health impacts to the surrounding area, and no further examination is necessary.