RECORD OF DECISION

Davids Island
Environmental Restoration Project
New Rochelle, Westchester County
Site No. E360077
March 2016

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Davids Island
Environmental Restoration Project
New Rochelle, Westchester County
Site No. E360077
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Statement of Purpose and Basis

This document presents the remedy for the Davids Island site, an environmental restoration site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Davids Island site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design/Green Remediation

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Soil Consolidation/Capping/Barrier Wall

On-site soils outside of wetland areas which exceed commercial use SCOs will be excavated, consolidated on-site above the water table, and capped. Contaminated soils within the wetland or adjacent areas which exceed the SCOs for protection of ecological resources will also be excavated and consolidated. The consolidation area will be located in the approximately 2.5 acre former incinerator area located in the southern portion of the site, as indicated on Figure 4. The consolidation area will receive a 2 foot soil cover that will be graded and designed to minimize the infiltration of precipitation, and the shoreline perimeter of the cell will be designed to protect against the harsh storm, water, and wind events that occur based on historical and projected weather trends. The shoreline protection component of the cover will be constructed outside of the wetland adjacent area by at least 1 foot to ensure that there is no encroachment on the wetland adjacent areas, and to satisfy NYCRR Part 661 Tidal Wetlands regulations. This component may be constructed of concrete, sheet piling, grouted wall (e.g., slurry wall), stone revetment or a combination of those materials dependent on terrain, and other factors determined during the remedial design, since this area is affected by storms, and is adjacent to a tidal wetland.

Approximately 17,500 cubic yards of soil will be excavated from discrete areas totaling approximately 471,000 square feet (11 acres) across the site to an approximate depth of 1 foot and consolidated. In non-wetland areas, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use will be re-graded from on-site to replace the excavated soil and establish the designed grades at the site. In wetland or adjacent areas, excavations will be restored with similar clean habitat material from either on-site or off-site which meets the unrestricted use requirements of 6NYCRR 375-6.7(d).

3. Sediment Removal & Consolidation

Removal (excavation or dredging) and on-site consolidation of sediment from the three southern shoreline areas and an area along the southeastern side of the island. Excavation is estimated to be 2 feet in depth, of sediment in southern beach areas from the high tide line to the subtidal zone (area just below low tide) which exceed NYSDEC Class A sediment values and SCOs for unrestricted use; and will include all associated visible contamination (incinerator waste, bricks, metal scraps, etc.). Similar excavation, up to 6 inches in depth, will be conducted in the eastern beach area. Additional investigation will be performed during the remedial design to confirm the areal and vertical extent of contamination. Confirmatory sampling will be performed following remediation. Approximately 7,400 cubic yards of sediment are estimated to be removed and consolidated upland. All sediment removal areas associated with the tidal wetlands will be restored consistent with 6 NYCRR Parts 608 and 661. Wetlands and aquatic environments will be restored to original contours, except for the eastern beach area. Sediment backfill in these areas will meet applicable saltwater sediment criteria (Class A) from the Department's: June 2014 Technical Guidance for Screening Contaminated Sediments and the SCOs for unrestricted use. Simple particle size separation will be used to separate waste material from natural cobbles and stones, which will be used to maintain this rocky intertidal zone.

4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses, which also allow for passive recreational use, as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restricts the use of groundwater that contains analytes above the SCGs provided in Part 5 of the New York State Sanitary Code (10NYCRR Part 5) as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or Westchester County DOH; and

- requires compliance with a Department approved Site Management Plan.

5. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: the soil and sediment consolidation, barrier wall, and soil cover discussed in Paragraphs 2 and 3 above.

This plan includes, but is not limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- a provision for further investigation and remediation should additional areas of contamination be discovered in the future, such as during redevelopment activities. The nature and extent of contamination in these areas will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Departments determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation

Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment.

- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but not be limited to:

- monitoring of sediments to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- restored areas will be monitored five years after the Department's determination of substantial completion of site remediation. The restored areas will be inspected for erosion, settlement and growth of plantings, and repaired and restored as directed by the Department.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 25, 2016
Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Davids Island
New Rochelle, Westchester County
Site No. E360077
March 2016

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that will be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

The New Rochelle Public Library
Attn: Barbara Davis
1 Library Plaza
New Rochelle, NY 10801
Phone: (914) 632-7878

Department of Public Works/Engineering
Attn: James Moran, P.E.
City Hall
515 North Ave
New Rochelle, NY 10801
Phone: (914) 654-2134

NYSDEC Region 3 Office
Attn: Sarah Shepard
21 South Putt Corners Road
New Paltz, NY 12561
Phone: (845) 256-3154

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Davids Island site is an island, inaccessible from the shore, located in Long Island Sound about 0.6 miles off the coast from the City of New Rochelle, Westchester County.

Site Features: The total area of Davids Island to the mean high water line is 77.8 acres. However, 4.2 acres are owned by Consolidated Edison, Co. and are not subject to the ERP. The total area of the ERP site is approximately 73.6 acres. The site includes surficial infrastructure (e.g.,

roadways, sea walls, mortar batteries, remnants of building foundations) related to the former military base, Fort Slocum. All buildings (housing, offices, etc.), have been demolished, with their foundations remaining. The off-site portions include shoreline areas below mean high water line, tidal-wetland areas, and lands underwater (sediment).

Current Zoning and Land Use: The site is currently vacant, and zoned (PWD-8) Planned Waterfront Development which allows residential or commercial redevelopment up to 8-stories high. However the City of New Rochelle has indicated their intent to develop the Island for passive recreational use, including walking trails with historical and environmental signage. The southwestern portion of the site contains an easement by Consolidated Edison, Co. for access to their utility corridor. The nearest residential area is the community of Davenport Neck on the mainland to the northwest.

Past Use of the Site: The US Department of Defense (DOD) had ownership of the island for 100 years from 1867 to 1967 before it was sold to the City of New Rochelle for redevelopment. Until 1965 the site was home to Fort Slocum, which served as an artillery post, general recruiting depot, hospital, a training post, staging area, and rehabilitation center. Portions of the site are known to have been used for the following, which may have resulted in contamination: storage of transformers/empty transformer casings containing polychlorinated biphenyls (PCBs); above ground and underground petroleum storage near Building No. 40 on the western side and Building No. 61 on the eastern side; sewage treatment on the northern side of the site; an incinerator located in the southern side; and landfill activities located around the outer parts of the island but mostly within the southern half of the island.

Site Geology and Hydrogeology: Fill was used to create much of the island surface, but the island does include glacial till in the subsurface. It consists of sand, silt, gravel mixed with varying concentrations of construction debris (bricks, concrete, wood, etc.), coal ash, cinders, and coal fragments. Bedrock is relatively shallow (less than 20 feet below ground surface (bgs)) and there are outcrops in a number of locations within the southern portion of the site. There is no overburden groundwater, with the exception of perched water in limited areas at depths ranging from 5 to 7 feet bgs after rain or snow events, and for the most part groundwater drains radially into Long Island Sound. This brackish groundwater, a mixture of intruding saltwater and draining fresh groundwater, is found within areas closest to the shoreline that are tidally influenced. Tidally influenced groundwater varies from 1 ½ to 7 feet bgs. Bedrock groundwater was not investigated.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs (past owners/operators) for the site, documented to date, include:

United States (US) Department of Defense (DOD)

The Department and City of New Rochelle and Westchester County entered into an ERP State Assistance Contract (SAC) in September 2005. This SAC obligates the City of New Rochelle and Westchester County to implement a RI/FS for Davids Island, and assist the State in its efforts by providing all information to the state which identifies PRPs. Since the remedy has been selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the ERP or the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred. City of New Rochelle and Westchester County will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- sediment

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

lead
mercury
copper
chromium
DDT
cadmium
arsenic
benzo(a)pyrene
benzo(a)anthracene
benzo(b)fluoranthene
benzo[k]fluoranthene
indeno(1,2,3-CD)pyrene
zinc
nickel
barium
chrysene
dibenz[a,h]anthracene
fluorene
fluoranthene
phenanthrene
pyrene

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- soil
- sediment

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Interim Removal Action for PCBs

This interim remedial action focused on removing PCB-contaminated soil with concentrations greater than 1 parts per million (ppm) in soil which is consistent with the residential use and protection of groundwater soil cleanup objectives (SCOs). This IRM was performed by the US Army Corps of Engineers (USACE) on behalf of the DOD in 2010. The contaminated soils were excavated to the depths from 1 ½ to 16 feet below grade, in 5 areas determined during the 2009 PCB delineation investigation by the USACE. PCBs detected in these areas were up to 16,300 ppm (SCO of 1 ppm) in surface soil samples, and subsurface soils up to 24,600 ppm (1 to 2 feet bgs) and 3,200 ppm (9 to 10 feet bgs), located near Buildings 20, T-22, 109, T-34, and between Buildings 10 and 11. Approximately 240 cubic yards of soil with PCBs greater than 1 ppm were excavated and transported off-site for proper disposal in accordance with applicable regulations. Post-excavation sampling verified that the 1 ppm clean-up level was met, and surveying of the excavation end points was conducted. The excavations were backfilled with crushed concrete, and the area was restored with 6 inches of mulch/sand material to facilitate re-vegetation.

Interim Removal Action for USTs

Two underground petroleum storage tanks (USTs) were discovered during the remedial investigation. A 10,000 gallon tank was located underneath a pump island near former Building No. 40 on the western portion of the island and a 550 gallon tank located within a concrete and brick vault on the eastern side of the island near Building No. 61. Approximately 2,100 gallons of oil/water product was removed by the USACE in 2009 and properly disposed of off-site. This work was completed under the USACE demolition/abatement contract with the City of New Rochelle. Confirmatory samples indicated that soils in the vicinity of the tanks met restricted residential SCOs and were not visually impacted. A groundwater sample was taken from near 10,000 gallon UST and no VOCs and SVOCs were detected above groundwater standards. Therefore, no soil excavation was necessary. The tank vaults were backfilled with crushed concrete, and the area was restored with 6 inches of mulch/sand material to facilitate re-vegetation.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for OU 01, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

The island possesses several attributes that make it an important ecological resource. The rocky intertidal zone habitats associated with the island along the southern shoreline are designated unique areas in New York State (NYS). A NYS threatened plant, fringed boneset (Eupatorium hyssopifolium var. laciniatum), was found on the island, and the island is a breeding habitat for osprey (Pandion haliaetus), a NYS species of concern. Ecological resources are present in the shoreline, tidal wetlands, and adjacent areas of the island. Sediments on the western, central, and eastern shorelines are contaminated with heavy metals and polycyclic aromatic hydrocarbons (PAHs) in both surface and subsurface sediments from the upper shoreline areas to the sub-tidal zone. A Fish and Wildlife Resources Impact Analysis (FWRIA) was conducted, including a Step IIC Toxic Effects Analysis, which demonstrated that contamination in the shoreline sediments are impacting ecological resources. This is included in the RI report and presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination: Samples of surface soil (0-2 inches), subsurface soil, sediment and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, and pesticides/PCBs. The primary contaminants of concern are SVOCs in the form of polycyclic aromatic hydrocarbons (PAHs) and inorganics (metals). These were found primarily in approximately 11 acres of surface soils, and limited subsurface soils, with the highest concentrations associated with areas of ash and fill; and within surface soils near two small disposal areas for metals and pesticides. PCBs were addressed during the IRM and achieved the soil cleanup goal of 1 ppm. Based on the areas of waste disposal and surface soil sampling results, the remaining 60 acres of soil meets restricted commercial SCOs. No contamination was found off the island with the exception of metals and PAHs in sediments found in Long Island Sound along the southern and eastern shoreline areas, some of which exceed the SCOs for commercial use.

Soil - Surface and subsurface soil in certain areas of the site have been impacted by several metals including: arsenic; mercury; lead; cadmium; chromium; copper; and barium. Concentrations of arsenic were detected up to 973 parts per million (ppm), which is above the commercial SCO of 16 ppm, mercury up to 148 ppm (SCO of 2.8 ppm), lead up to 21,900 ppm (SCO of 1,000 ppm), cadmium up to 55.6 ppm (SCO of 9.3 ppm), chromium up to 449 ppm (SCO of 400 ppm), copper up to 10,300 ppm (SCO of 270 ppm), and barium up to 2,980 ppm (SCO of 400 ppm). These metals are primarily associated with the ash and fill deposited in the southern portion of the site, but are widely scattered across approximately 11 acres of the site exceeding commercial SCOs. However, these high concentrations of metals indicated above, are mostly associated with two disposal areas next to Buildings 56 and 119 in surface soils. Mercury at 148 ppm was found 2 to 3 feet in the subsurface soils near Building 119. The rest of the approximately 60 acres of the site meet the commercial SCOs. Lead exceeded the TCLP threshold of 5 milligrams per liter (mg/L) in two locations. One location included outside of Building 56 at a concentration of 174 mg/L (0 -2 inches), and the other one was in the incinerator

area, Area Wide Sample No. 6 (AW-06), located in the southern portion of the site at a concentration of 11.6 mg/L (0-2 inches).

A specific subset of SVOC compounds commonly referred to as total PAHs were also detected in soil samples up to 1,441 ppm (SCO of 500 ppm). Individual PAHs included: benzo(a)anthracene up to 63.6 ppm (SCO of 5.6 ppm); benzo(a)pyrene up to 106 ppm (SCO of 1 ppm); benzo(b)fluoranthene up to 63.5 ppm (SCO of 5.6 ppm) , benzo(k)fluoranthene up to 69.4 ppm (SCO of 5.6 ppm); chrysene up to 95.8 ppm (SCO of 56 ppm); dibenzo[a,h]anthracene up to 14.5 ppm (SCO of 0.56 ppm); fluorene up to 56.1 ppm (SCO of 500 ppm); fluoranthene up to 248 ppm (SCO of 500 ppm); indeno(1,2,3-cd)pyrene up to 33.2 ppm (SCO of 5.6 ppm); phenanthrene up to 470 ppm (SCO of 500 ppm); and pyrene up to 251 ppm (SCO of 500 ppm). Test pits were dug in Area A-6 near former Buildings 101 and 102, to locate some petroleum odors and staining, but only these individual PAHs were found in the sub-surface soils. Most of the PAHs are associated with areas of ash and fill material, mostly found on 11 acres of the site and near the southern incinerator landfill area.

Pesticides, including 4,4-DDT up to 142 ppm (SCO of 47 ppm), 4,4-DDE up to 10 ppm (SCO of 62 ppm), 4,4-DDD up to 5.52 ppm (SCO of 92 ppm) were detected in several surface soil sample locations near the former pesticide storage area near Building 56.

Groundwater - The results indicate that contamination in groundwater at the site does not exceed the SCGs for VOCS and SVOCs.

Sediment - Lead was found in a sub-tidal area located a few hundred feet off-shore of the ash disposal area at 29,600 ppm, above the Class C sediment value of 220 ppm, cadmium up to 18 ppm (Class C sediment of 9.6 ppm), chromium up to 300 ppm (Class B sediment of 81 to 370 ppm), copper up to 3,080 ppm (Class C sediment of 270 ppm), mercury up to 1.62 ppm (Class C sediment of 0.71 ppm), nickel up to 66.6 ppm (Class C sediment of 52 ppm), and zinc up to 933 ppm (Class C sediment of 410 ppm). Total PAHs were found at 47 ppm at one location, above the Class C sediment value of 45 ppm. Less than half are Class A sediments (below 4 ppm), and more than a quarter (1/4) of the PAHs detected are between 4 and 45 ppm, which categorizes them Class B sediments.

Special Resources Impacted/Threatened - A NYS threatened plant, fringed boneset (Eupatorium hyssopifolium var. laciniatum), and the island is a breeding habitat for osprey (Pandion haliaetus), a NYS species of concern. Ecological resources are present in the shoreline and tidal wetlands of the island and in the adjacent areas.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

The island is uninhabited and accessible only by boat. Measures are in place to control the potential for coming in contact with subsurface soil and groundwater.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the alternatives analysis (AA) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation,

maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Soil Cleanup to Commercial Levels, Consolidation and Capping with Barrier Wall remedy.

The estimated present worth cost to implement the remedy is $20,500,000. The cost to construct the remedy is estimated to be $16,500,000 and the estimated average annual cost is $133,000.

The elements of the selected remedy are as follows:

1. Remedial Design/Green Remediation

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Soil Consolidation/Capping/Barrier Wall

On-site soils outside of wetland areas which exceed commercial use SCOs will be excavated, consolidated on-site above the water table, and capped. Contaminated soils within the wetland or adjacent areas which exceed the SCOs for protection of ecological resources will also be excavated and consolidated. The consolidation area will be located in the approximately 2.5 acre former incinerator area located in the southern portion of the site, as indicated on Figure 4. The consolidation area will receive a 2 foot soil cover that will be graded and designed to minimize the infiltration of precipitation, and the shoreline perimeter of the cell will be designed to protect against the harsh storm, water, and wind events that occur based on historical and projected weather trends. The shoreline protection component of the cover will be constructed outside of the wetland adjacent area by at least 1 foot to ensure that there is no encroachment on the

wetland adjacent areas, and to satisfy NYCRR Part 661 Tidal Wetlands regulations. This component may be constructed of concrete, sheet piling, grouted wall (e.g., slurry wall), stone revetment or a combination of those materials dependent on terrain, and other factors determined during the remedial design, since this area is affected by storms, and is adjacent to a tidal wetland.

Approximately 17,500 cubic yards of soil will be excavated from discrete areas totaling approximately 471,000 square feet (11 acres) across the site to an approximate depth of 1 foot and consolidated. In non-wetland areas, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use will be re-graded from on-site to replace the excavated soil and establish the designed grades at the site. In wetland or adjacent areas, excavations will be restored with similar clean habitat material from either on-site or off-site which meets the unrestricted use requirements of 6NYCRR 375-6.7(d).

3. Sediment Removal & Consolidation

Removal (excavation or dredging) and on-site consolidation of sediment from the three southern shoreline areas and an area along the southeastern side of the island. Excavation is estimated to be 2 feet in depth, of sediment in southern beach areas from the high tide line to the subtidal zone (area just below low tide) which exceed NYSDEC Class A sediment values and SCOs for unrestricted use; and will include all associated visible contamination (incinerator waste, bricks, metal scraps, etc.). Similar excavation, up to 6 inches in depth, will be conducted in the eastern beach area. Additional investigation will be performed during the remedial design to confirm the areal and vertical extent of contamination. Confirmatory sampling will be performed following remediation. Approximately 7,400 cubic yards of sediment are estimated to be removed and consolidated upland. All sediment removal areas associated with the tidal wetlands will be restored consistent with 6 NYCRR Parts 608 and 661. Wetlands and aquatic environments will be restored to original contours, except for the eastern beach area. Sediment backfill in these areas would meet applicable saltwater sediment criteria (Class A) from the Department's: June 2014 Technical Guidance for Screening Contaminated Sediments and the SCOs for unrestricted use. Simple particle size separation will be used to separate waste material from natural cobbles and stones, which will be used to maintain this rocky intertidal zone.

4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses, which also allow for passive recreational use, as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restricts the use of groundwater that contains analytes above the SCGs provided in Part 5 of the New York State Sanitary Code (10NYCRR Part 5) as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or Westchester County DOH; and

- requires compliance with a Department approved Site Management Plan.

5. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: the soil and sediment consolidation, barrier wall, and soil cover discussed in Paragraphs 2 and 3 above.

This plan includes, but is not limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- a provision for further investigation and remediation should additional areas of contamination be discovered in the future, such as during redevelopment activities. The nature and extent of contamination in these areas will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Departments determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment.

- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;

- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification; and

- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but not be limited to:

- monitoring of sediments to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- restored areas will be monitored five years after the Department's determination of substantial completion of site remediation. The restored areas will be inspected for erosion, settlement and growth of plantings, and repaired and restored as directed by the Department.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting soil and sediment.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas that were identified at the site include: the incinerator landfill area; and two drum storage or disposal sites near former buildings 56 and 119. The waste material produced by the historic incinerator activities appears to have been used as fill around the island and the overwhelming majority of contamination found above sediment criteria and toxicity to benthic community is attributable to placement of this fill around the perimeter of the island, or transported from surface water runoff generated during severe storm events. The historic incinerator landfill area covers a substantial portion of the southeastern corner of the island and extends seaward beyond the high tide line along the shoreline.

Certain waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2. The remaining waste/source area(s) identified during the RI will be addressed in the remedy selection process.

Groundwater

Groundwater beneath the site is limited and mostly a perched water table that drains into the surrounding Long Island Sound. Previous studies conducted by the United States Coast Guard as part of an Environmental Impact Statement indicated no significant groundwater reserves are present in either the overburden or bedrock at depths ranging between 1 ½ and 120 feet below ground surface. Seven shallow groundwater samples were able to be collected from soil borings, test pits, and an underground vault by the former Building 20 and near the former Landfill Area. The results indicate that contamination in groundwater at the site does not exceed the SCGs for site-related metals, VOCs or SVOCs. No site-related groundwater contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for groundwater.

Soil

Surface and subsurface soil samples were collected at the site during the RI starting in 2007 and to 2009. Surface soil samples were collected from a depth of 0 to 2 inches to assess direct human exposure. Subsurface soil samples were collected from depths ranging from 2 to 20 feet. The results indicate that soils at the site exceed the unrestricted, restricted residential, and commercial SCGs for semi-volatile organics (SVOCs) and metals in most site wide surface soils.

Table 1 – Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
1,2,4-Trimethylbenzene	ND – 4.85	3.6	1/89	190	0/89
1,3,5-Trimethylbenzene	ND – 1.37	8.4	0/89	190	0/89
SVOCs					
2-Methylnaphthalene	0.0094 – 8.8	0.41	133/541	36.4[d]	0/541
Acenaphthene	0.0078 – 140	20	3/598	500	0/598
Anthracene	0.0113 - 128	100	1/598	500	0/598
Benzo(a)anthracene	0.0016 – 63.6	1	133/598	5.6	22/598
Benzo(a)pyrene	0.00918 - 106	1	120/598	1	120/598
Benzo(b)fluoranthene	0.0136 – 63.5	1	117/598	5.6	17/598
Benzo(g,h,i)perylene	0.0124 – 27.3	100	0/598	500	0/598
Benzo(k)fluoranthene	0.0171 – 69.4	0.8	29/598	56	1/598
Chrysene	0.0164 – 95.8	1	146/598	56	3/598
Dibenzo(a,h)anthracene	0.0168 – 14.5	0.33	69/598	0.56	39/598
Fluoranthene	0.0163 – 248	100	4/598	500	0/598
Fluorene	0.0087 – 56.1	30	1/598	500	0/598
Indeno(1,2,3-cd)pyrene	0.0119 – 33.2	0.5	129/598	5.6	7/598
Naphthalene	0.00988 – 21	100	0/89	500	0/89
Phenanthrene	0.0128 – 470	100	4/598	500	0/598
Pyrene	0.0148 – 251	100	5/598	500	0/598
Total PAHs	0.034 – 1,441	100[f]	10/598	500[g]	5/598
Inorganics					

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Commercial Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Arsenic	0.58-973	13[e]	63/590	16[d]	63/590
Barium	6.87-2,980	350	38/590	400	16/590
Cadmium	0.67-55.6	2.5	83/376	9.3	13/376
Chromium	2.16-449	1[e]	582/584	400	1/584
Copper	2.02-10,300	50[e]	30/584	270	16/584
Lead	0.21-21,900	63[e]	93/643	1,000	31/643
Manganese	15.1-2,710	2000	1/263	10,000	0/263
Mercury	0.0039-148	0.18[e]	18/584	2.8	9/584
Nickel	3.58-200	30[e]	38/263	310	0/263
Zinc	9.72-6,190	109[e]	73/263	10,000	0/263
Pesticides					
4,4' - DDE	0.004-10	0.0033[e]	119/168	62	0/168
4,4' - DDT	0.00249-142	0.0033[e]	89/168	47	1/168
4,4' - DDD	0.00176-5.52	0.0033[e]	22/168	92	0/168
PCBs					
Aroclor-1260	0.0117-0.71	0.1	9/172	1[e]	0/172

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.
e – SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Ecological Resources.
f - SCG: Part 375-6.8(a), Unrestricted Use Soil Cleanup Objectives were capped at a maximum value of 100 ppm.
g - SCG: Part 375-6.8(a), Commercial Use Soil Cleanup Objectives were capped at a maximum value of 500 ppm.
NA – Not Applicable.
ND – Not Detected.
NC – No Criteria.

The primary soil contaminants are SVOCs and metals. Figures 4-1a, 4-2a, 4-3a, and 4-4a from the RI illustrate the extent of SVOC contamination in the western, northern, eastern, and southern areas, respectively. Figures 4-1b, 4-2b, 4-3b, and 4-4b from the RI illustrate metals contamination in the western, northern, eastern, and southern areas. The primary SVOC contamination in soil is associated with the southern incinerator area and other areas where fill material was discovered along the perimeter of the island. The SVOC and metal contamination identified above is the result of past operations at the site, and metals seem to be co-located with SVOC contamination. The metals, arsenic, copper, barium, cadmium, mercury, and lead, were found at levels in the eastern and southwestern soil in adjacent wetland/shoreline areas exceeding NYSDEC soil criteria for the protection of ecological resources. The SVOCs or PAHs included in surface soils also near eastern and the

southwestern shoreline, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and chrysene exceeding NYSDEC soil criteria for the protection of ecological resources.

Based on the findings of the Remedial Investigation, the presence of SVOCs and metals has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, arsenic, barium, cadmium, copper, lead, and mercury.

Sediment

Sediment samples were collected from four shoreline areas along the southern and eastern shoreline, and subtidal areas over 100 feet off-shore. Background samples were collected at locations near the western and northern shoreline that were not impacted by site related contamination. Samples were collected to assess the potential for impacts from the site on tidal wetlands habitat adjacent to the site. The results indicate that sediment in these shoreline areas exceed NYSDEC Class A sediment values for PAHs and metals. See Figures 4-3a, 4-3b, 4-4a, and 4-4b from the RI for impacted sediments in shoreline areas. Metals and PAHs were found at levels in the intertidal and subtidal sediments that are classified as Class B and Class C sediments for salt water environments. With some of the highest metals concentrations of lead and copper impacting off-shore sediments, at 29,600 ppm and 3,080 ppm respectively. Class A sediments are considered to be of low risk to aquatic life. Class B sediments are slightly to moderately contaminated and additional testing is required to evaluate the potential risks to aquatic life. Class C sediments are considered to be highly contaminated and likely to pose a risk to aquatic life. The further testing included benthic community and toxicity testing for the 3 southern shoreline intertidal and subtidal areas. Three background samples were collected from the western and northern shoreline areas, had detections of SVOCs and metals, but insufficient to determine concentrations for use as site-specific background value or a site derived value.

The Fish and Wildlife Impact Resource Analysis (FWRIA) classified sediments from the eastern and central shoreline areas in the southeastern portion of the Island as degraded to significantly degraded, based upon elevated concentrations of historic landfill-related contaminants, observed toxic effects, and lack of benthic communities.

Table 2 - Sediment

Detected Constituents	Concentration Range Detected (ppm)[a]	Class A, B, or C sediments[b] (ppm)	Frequency Exceeding Classification
SVOCs			
2-Methylnaphthalene	ND – 0.079	0.41[c]	0/122
Acenaphthene	ND – 0.311	20[d]	0/122
Acenaphthylene	ND – 0.210	100[d]	0/122
Anthracene	ND – 1.10	100[d]	0/122
Benzo(a)anthracene	ND – 5.13	1[d]	15/122
Benzo(a)pyrene	ND – 4.27	1[d]	16/122

Detected Constituents	Concentration Range Detected (ppm)[a]	Class A, B, or C sediments[b] (ppm)	Frequency Exceeding Classification
Benzo(b)fluoranthene	ND – 3.62	1[d]	12/122
Benzo(g,h,i)perylene	ND – 1.63	100[d]	0/122
Benzo(k)fluoranthene	ND – 3.93	0.8[d]	21/122
Chrysene	ND – 4.82	1[d]	18/122
Dibenzo(a,h)anthracene	ND – 0.765	0.33[d]	4/122
Fluoranthene	ND – 4.57	100[d]	0/122
Fluorene	ND – 0.367	30[d]	0/122
Indeno(1,2,3-cd)pyrene	ND – 1.85	0.5[d]	19/122
Naphthalene	ND – 0.129	100[d]	0/122
Phenanthrene	ND – 4.72	100[d]	0/122
Pyrene	ND – 7.91	100[d]	0/122
Total PAHs	ND – 47	Class A < 4	59/122
		Class B 4 - 45	35/122
		Class C > 45	1/122
Total Organic Carbon (TOC)			
TOC	21,100 – 580,000	NC	NA
Inorganics			
Arsenic	ND – 5.72	Class A < 8.2	18/163
		Class B 8.2 - 70	0/163
		Class C > 70	0/163
Cadmium	ND – 18	Class A < 1.2	24/163
		Class B 1.2 – 9.6	16/163
		Class C > 9.6	5/163
Chromium	ND – 300	Class A < 81	134/163
		Class B 81 – 370	3/163
		Class C > 370	0/163
Copper	ND – 3,080	Class A < 34	60/163
		Class B 34 - 270	78/163
		Class C > 270	12/163
Lead	ND – 29,600	Class A < 47	54/163
		Class B 47 - 220	85/163
		Class C > 220	29/163
Mercury	ND – 1.62	Class A < 0.15	97/163
		Class B 0.15 – .71	33/163

Detected Constituents	Concentration Range Detected (ppm)[a]	Class A, B, or C sediments[b] (ppm)	Frequency Exceeding Classification
		Class C > 0.71	7/163
Nickel	ND – 66.6	Class A < 21	46/163
		Class B 21 – 52	5/163
		Class C > 52	1/163
Zinc	ND – 933	Class A < 150	48/163
		Class B 150 – 410	8/163
		Class C > 410	5/163

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;
b - Sediment Class designations are described in "Screening and Assessment of Contaminated Sediment," June 2014, New York State Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources, Bureau of Habitat.
c – CP-51 Commissioner's Policy Soil Cleanup Guidance, Residential Soil Cleanup Objectives – No Site Derived Sediment Values for SVOCs
d – Lower of Protection of Ecological Resources or Unrestricted Use Soil Cleanup Objectives – No Site Derived Sediment Values for SVOCs
NA – Not Applicable.
NC – No Criteria.
ND – Not Detected.

Based on the findings of the Remedial Investigation, the presence of metals and PAHs (SVOCs) has resulted in the contamination of sediment. The site contaminants that are considered to be the primary contaminants of concern which drive the remediation of sediment to be addressed by the remedy selection process are, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, cadmium, copper, lead, mercury, and zinc.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

The selected remedy, Remedial Alternative 3, and Remedial Alternative 4, were considered to address the site-related impacted soils, and the site-related impacted sediments.

Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

Alternative 2: No Further Action with Site Management (Limited Action)

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of and environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: $2,200,000
Capital Cost:..... $863,000
Annual Costs:..... $66,000

Alternative 3 (Selected Remedy): Soil Cleanup to Commercial Levels and Sediment Removal (up to 2-feet) and Soil/Sediment Consolidation with Capping and Barrier Wall

The remedy includes, the removal (excavation and/or dredging) and consolidation of soils and sediments impacted by metals, pesticides, and SVOCs (PAHs), to achieve NYSDEC soil cleanup objectives (SCOs) for commercial and passive recreational use of the site for metals and PAHs, and protection of ecological resources SCOs in shoreline areas and adjacent areas along the southern and eastern shoreline.

The remedy includes the excavation and on-site consolidation of about 17,500 cubic yards (cy) of soil will be excavated from discrete areas totaling approximately 11 acres across the site to an approximate depth of 1 foot and consolidated. In non-wetland areas, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use will be re-graded from on-site to replace the excavated soil and establish the designed grades at the site. In wetland or adjacent areas, excavations will be restored with similar clean habitat material from either on-site or off-site which meets the unrestricted use requirements of 6NYCRR 375-6.7(d).The footprint and vertical extent of soil removal will be defined by contamination in excess of the commercial SCOs identified above, as determined during a pre-design investigation, and will be confirmed by post-excavation sampling during implementation of remedial activities. Figure 3 shows the approximate extent of soil removal based on the relevant SCOs. Surface soil removal will extend horizontally to approximately 11 acres.

Removal (excavation and/or dredging) and on-site consolidation of sediments from the three southern shoreline areas and an area along the southeastern side of the island. Removal is estimated to include up to 6 inches of Class B and C sediments in the eastern shoreline area and up to 2-feet of Class B and C sediments and all visible contamination (incinerator waste, bricks, metal scraps, etc.) in southern shoreline areas from the high tide line to the subtidal zone (area just below low tide) where sediments that exceed NYSDEC Class A sediment values listed in Table 2, and sediment removal up to 6 inches deep in the eastern shoreline area. A pre-design investigation will be performed during the remedial design to determine the areal and vertical extent of contamination. Confirmatory sampling will also be performed following remediation. Approximately 7,400 cy of sediment are estimated to be excavated down to 2 feet, dewatered, and consolidated upland. The eastern shoreline area will be excavated down to 6 inches, consolidated upland, but not restored to original grade. Wetlands and aquatic environments will be restored to original contours, except for the eastern shoreline area. Sediment backfill in these areas will meet applicable saltwater sediment criteria (Class A) from the Department's: June 2014 Technical Guidance for Screening Contaminated Sediments. Simple particle size separation will be used to separate waste material from natural cobbles and stones, which will be used to maintain this rocky intertidal zone.

The consolidation area will be located in the approximately 2.5 acre former incinerator area located in the southern portion of the site, as indicated on Figure 4. The consolidation area will receive a 2 foot soil cover that will be graded and designed to minimize the infiltration of precipitation, and the shoreline perimeter of the cell will be designed to protect against the harsh storm, water, and wind events that occur based on historical and projected weather trends. The shoreline protection component of the cover will be constructed outside of the wetland adjacent area by at least 1 foot to ensure that there is no encroachment on the wetland adjacent areas, and to satisfy NYCRR Part 661 Tidal Wetlands regulations. This component may be constructed of concrete, sheet piling, grouted wall (e.g., slurry wall), stone revetment or a combination of those materials dependent on terrain, and other factors determined during the remedial design, since this area is affected by storms, and is adjacent to a tidal wetland.

This selected remedy will also include preparing and implementing a Site Management Plan (SMP), employing institutional controls in the form of an environmental easement on the 2.5 acre consolidation area and the remaining 70 acres above the mean high tide water line to control and/or prohibit access to remaining contaminated soils on-site, soil/sediment consolidated area, and periodic reviews to assess the continued effectiveness of the remedy.

Present Worth: $20,500,000
Capital Cost: $16,700,000
Annual Costs: $133,000

Alternative 4: Soil Cleanup to Restricted Residential Levels and Sediment Removal (up to 2-feet) and Soil/Sediment Consolidation with Capping and Barrier Wall

This alternative will include, the same excavation and on-site consolidation of soil as the selected remedy, but with excavation and on-site consolidation of non-wetland soil exceeding NYSDEC soil cleanup objectives (SCOs) for the protection of human health for restricted residential use of the site. Excavation of wetland soils from shoreline areas and adjacent areas along the southern and eastern shoreline will be same as for the selected remedy.

This alternative includes the excavation and on-site consolidation of about 48,000 cubic yards (cy) of soil will be excavated from discrete areas totaling approximately 15 acres across the site to an approximate depth of 2 feet and consolidated. In non-wetland areas, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for

restricted residential use will be re-graded from on-site to replace the excavated soil and establish the designed grades at the site. In wetland or adjacent areas, excavations will be restored with similar clean habitat material from either on-site or off-site which meets the unrestricted use requirements of 6NYCRR 375-6.7(d).The footprint and vertical extent of soil removal will be defined by contamination in excess of the restricted residential SCOs identified above, as determined during a pre-design investigation, and will be confirmed by post-excavation sampling during implementation of remedial activities. Surface soil removal will extend horizontally to approximately 15 acres.

Same as the selected remedy, this alternative includes the removal (excavation and/or dredging) and on-site consolidation of sediments from the three southern shoreline areas and an area along the southeastern side of the island. Removal up to 2-feet deep in southern shoreline areas from the high tide line to the subtidal zone (area just below low tide) where sediments that exceed NYSDEC Class A sediment values listed in Table 2, and sediment removal up to 6 inches deep in the eastern shoreline area. A pre-design investigation will be performed during the remedial design to determine the areal and vertical extent of contamination. Confirmatory sampling will also be performed following remediation. Approximately 7,400 cy of sediment are estimated to be excavated down to 2 feet, dewatered, and consolidated upland. The eastern shoreline area will be excavated down to 6 inches, consolidated upland, but not restored to original grade. Wetlands and aquatic environments will be restored to original contours, except for the eastern shoreline area. Sediment backfill in these areas will meet applicable saltwater sediment criteria (Class A) from the Department's: June 2014 Technical Guidance for Screening Contaminated Sediments. Simple particle size separation will be used to separate waste material from natural cobbles and stones, which will be used to maintain this rocky intertidal zone.

Same as the selected remedy, the consolidation area will be located in the approximately 2.5 acre former incinerator area located in the southern portion of the site, as indicated on Figure 4. The consolidation area will receive a 2 foot soil cover that will be graded and designed to minimize the infiltration of precipitation, and the shoreline perimeter of the cell will be designed to protect against the harsh storm, water, and wind events that occur based on historical and projected weather trends. The shoreline protection component of the cover will be constructed outside of the wetland adjacent area by at least 1 foot to ensure that there is no encroachment on the wetland adjacent areas, and to satisfy NYCRR Part 661 Tidal Wetlands regulations. This component may be constructed of concrete, sheet piling, grouted wall (e.g., slurry wall), stone revetment or a combination of those materials dependent on terrain, and other factors determined during the remedial design, since this area is affected by storms, and is adjacent to a tidal wetland.

Same as the selected remedy, this alternative includes preparing and implementing a Site Management Plan (SMP), employing institutional controls in the form of an environmental easement on the 2.5 acre consolidation area and the remaining 70 acres above the mean high tide water line to control and/or prohibit access to remaining contaminated soils on-site, soil/sediment consolidated area, and periodic reviews to assess the continued effectiveness of the remedy.

Present Worth: $30,600,000
Capital Cost:..... $25,300,000
Annual Costs:..... $133,000

Alternative 5: Restoration to Pre-Disposal or Unrestricted/Ecological Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted or ecological soil clean objectives listed in Part 375-6.8 (a) and Part 375-6.8 (b) for soils in wetland or adjacent areas. This alternative will include: removal of all soils and sediments contaminated with metals, PAHs, and

pesticides down to an average depth of 4 feet and a maximum depth of 16 feet across 60 acres to unrestricted or ecological SCOs and above sediment criteria that exceed NYSDEC Class A sediment values to at least 2 feet in sediments. Approximately 384,000 cubic yards of contaminated soil and 7,400 cubic yards of sediments will be disposed off-site. The remedy will not rely on institutional or engineering controls to prevent future exposure. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Capital Cost:.....$118,000,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
No Further Action with Site Management (Limited Action)	$863,000	$66,000	$2,200,000
***Soil Cleanup to Commercial Levels Sediment Removal and Soil/Sediment Consolidation with Capping and Barrier Wall**	**$16,700,000**	**$133,000**	**$20,500,000**
Soil Cleanup to Restricted Residential Levels and Sediment Removal and Soil/Sediment Consolidation with Capping and Barrier Wall	$25,300,000	$133,000	$30,600,000
Restoration to Pre-Disposal or Unrestricted/Ecological Conditions	$118,000,000	0	0

*** Selected Remedy – Remedial Alternative 3**

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 3, Soil Cleanup to Commercial Levels and Sediment Removal and Soil/Sediment Consolidation with Capping and Barrier Wall as the remedy for this site. Alternative 3 will achieve the remediation goals for the site by removing and consolidating soils and sediments that exceed the applicable cleanup levels, removing for off-site disposal of debris (incinerator waste, bricks, metal scraps, etc.) that may contaminate other media, restoring tidal wetlands and adjacent areas, and placing institutional and engineering controls to maintain the effectiveness of the site remedy. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 3 and 4.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy, Alternative 3, will satisfy this criterion by removing the contaminated site-wide surface soil above the mean high tide water level and sediment below the mean high tide the southern/eastern shoreline areas, and consolidating them in an area which will be capped and protected by a barrier wall, thereby achieving levels suitable for commercial and passive recreational use of the site, and unrestricted/ecological use of shoreline and subtidal areas. Alternative 4 addresses contaminated surface soils and sediments to levels suitable for restricted residential and active recreational use of the site, and will also be protective of public health and the environment. Alternative 1 (No Further Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 (No Further Action with Site Management) does provide some protection to public health, through administrative controls like access restrictions (e.g., fencing and signs), but will provide no environmental protection or restoration of the tidal wetlands and shoreline areas. Alternative 5, by removing all soil contaminated above the unrestricted soil cleanup objective and sediment, meets the threshold criteria.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The No Further Action Alternative, Alternative 1, will not meet this threshold criterion since it will not meet the SCGs for soil or sediment. Alternative 2 (Limited Action) will similarly not achieve SGCs for the above-mentioned environmental media. Since Alternatives 1 and 2 will not satisfy the two threshold criteria, they are not considered further in this evaluation.

Alternative 3 and 4 comply with SCGs for commercial/passive recreational and restricted residential/active recreational uses, respectively. Both address areas of contamination and comply with sediment quality criteria.

Alternative 5 will achieve applicable SCGs for unrestricted use and sediment quality criteria. The removal and restoration activities associated with alternatives 3, 4, and 5 will be performed in accordance with all applicable action- and location-specific SCGs. Tidal wetlands disruptions will also be restored as required by 6NYCRR Part 608 within the wetland and adjacent areas. Alternatives 3, 4, and 5 will comply with chemical-specific SCGs. Because Alternatives 3, 4, and 5 satisfy the two threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is accomplished by those alternatives involving excavation of the contaminated surface soils and sediments. Since most of the soil contamination is concentrated around the perimeter of the island and near the southern incinerator area, it will be effective to remove that contamination above the Department's restricted use SCOs (Alternatives 3 and 4). These alternatives will be effective and permanent over the long-term. Limited controls will be implemented to manage remaining contamination, specifically, restricting the site to commercial or restricted residential use, for Alternatives 3 and 4, and maintaining the cover and barrier wall in the consolidation area. These measures are effective and reliable.

Removing all the on-site soil exceeding Unrestricted SCOs (Alternative 5) will achieve the highest level of effectiveness and permanence, as all contaminated materials will be removed and no long-term engineering or institutional controls will be required.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 will provide institutional controls only and will not reduce the toxicity, mobility or volume of contaminants remaining. Both Alternatives 3 and 4, excavation, reduce the mobility and volume of on-site contaminated soils above SCOs by transferring it to an approved on-site consolidation location. Alternative 4 requires the excavation and consolidation of approximately 48,000 cubic yards of contaminated soil. Alternative 3 requires the excavation and consolidation of approximately 17,500 cubic yards of contaminated soil. The volume of the contaminated soil is not reduced, the overwhelming majority of contamination from the surface will be excavated, placed above the water table in the consolidation area and capped, thereby, reducing its potential mobility. Only Alternative 5 will fully reduce the mobility and volume of contaminants by use of complete removal and off-site disposal.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 3 and 4 will have comparable short term impacts to each other. These alternatives will involve extensive on-site remedial activities to excavate and move contaminated soils into the consolidation area and installation of a barrier wall, and dredging sediments for upland consolidation. There will be risks typically

associated with construction activities, including movement of heavy equipment through areas adjacent to roads, water, and shoreline areas. Alternative 5 will have the highest short term impacts with the depth of excavations reaching up to 16 feet versus 1 or 2 feet removals for Alternatives 3 and 4. These risks will be addressed by developing and implementing a health and safety plan (HASP) and community air monitoring plan (CAMP) to provide protection for workers and the surrounding community. Alternatives 3 and 4 will take approximately 6-12 months or less to implement, and Alternative 5 will have the longest period for implementation, approximately 2 years.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

The implementability of the remedy for this site is primarily affected by the lack of road access and the need to transport all materials, equipment and soil to and from the site by boat and/or barge. Alternative 2 is most implementable, as it does not require any construction activities. Alternatives 3 and 4 are equally implementable in that the same equipment and materials will be required for the work, and consolidation of soil and sediment. The differing volumes of on-site consolidation between Alternatives 3 and 4 do not significantly affect the implementability. Alternative 5 will be extremely difficult to implement as all of the excavated soil and associated backfill will have to be transported on and off the island by barge. The volume of soil excavated under this alternative will generate significantly increased truck traffic on local roads and barge traffic on waterways; and operation of staging areas for soil and sediment removal over several years. For Alternatives 3, 4, and 5, any excavation work within 50 feet of the Con Edison utility corridor for their 345 kV underground transmission line will also require oversight by Con Edison personnel.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs of the alternatives vary significantly. Alternative 2 has the lowest cost, but the contaminated soil and sediment will not be addressed other than by institutional controls. With its large volume of soil to be handled, Alternative 5 (excavation and off-site disposal) will have the highest present worth cost. Consolidation and capping (Alternative 3 and 4) will be much more cost effective than Alternative 5, yet both will provide equal protection of public health and the environment. The capital costs of Alternatives 3 and 4 are similar to each other, although the capital cost for Alternative 4 is higher than that of Alternative 3 for the additional soil handling and consolidation. The long-term maintenance cost of the capped area under Alternatives 3 and 4 will be the same, but are not required for Alternative 5.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

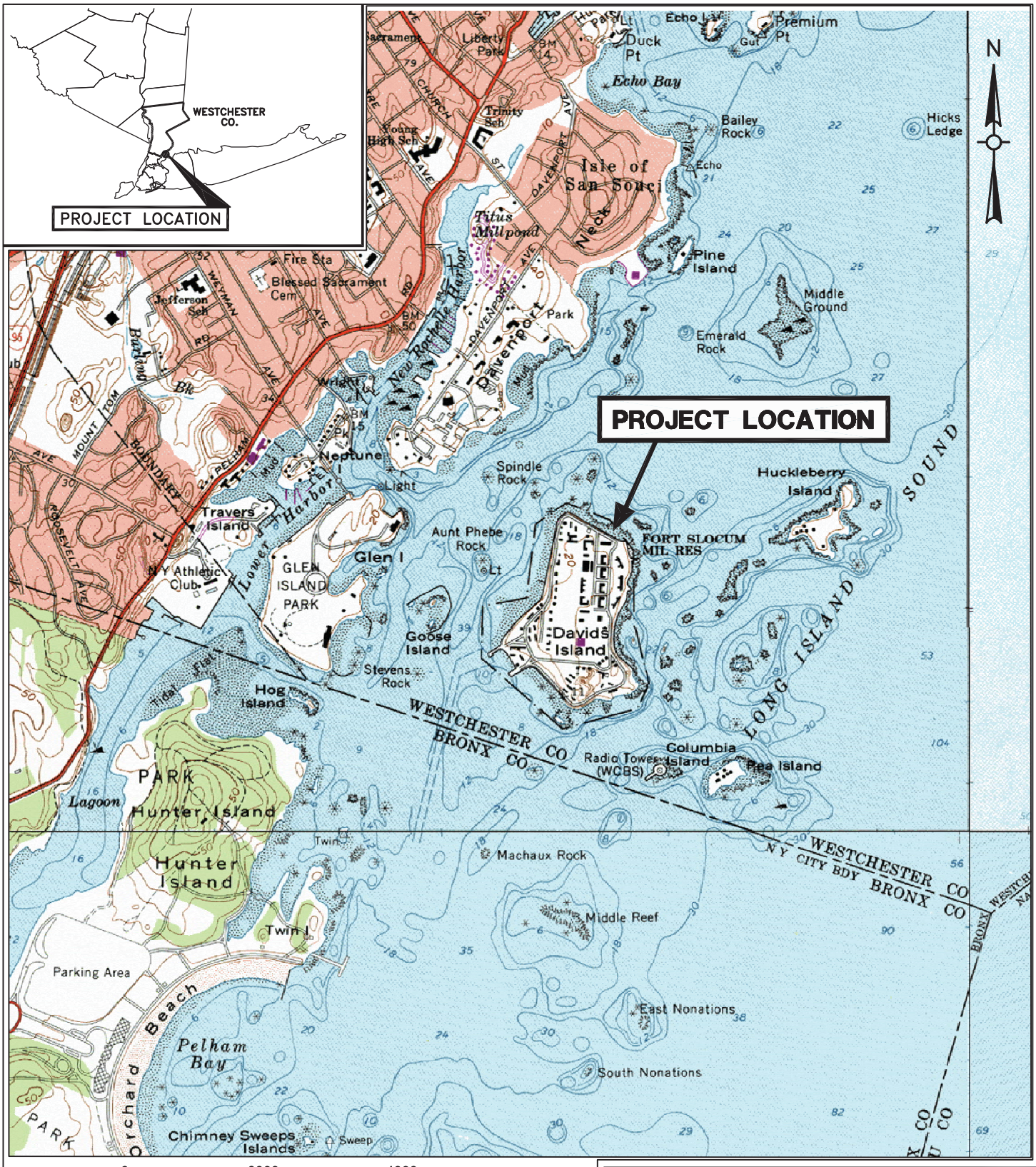
Since the anticipated use of the site is commercial, which includes passive recreational, Alternative 2 will not comply with this criterion because at least some contaminated soil will remain above the commercial SCOs in surface soils on the property. Alternatives 3 and 4 will consolidate the contaminated soil and sediment under a protective cap and behind a barrier wall, leaving the remainder of the site suitable for commercial/passive

recreational or restricted residential/active recreational uses, respectively. Remaining contamination with Alternatives 3 and 4 will be managed by the environmental easement and implementation of a Site Management Plan. Under Alternative 5, all of the soil and sediment will be removed and restrictions on the site use will not be necessary. Because the reasonably anticipated land use for this site is commercial and/or passive recreational, Alternative 3 will comply with this criterion, and cleanup to a higher level of land use is not warranted.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP have been evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department has addressed the concerns raised. The selected remedy does not differ from the proposed remedy. At this time, no notices to the public describing the differences and reasons for the changes are necessary.

Alternative 3 has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



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Source:
USGS 7.5 Minute Series Topographic Maps: Mount Vernon, NY, 1966, photorevised 1979, Sea Cliff, NY, 1968, photorevised 1979, Mamaroneck, NY-CT, 1967, photoinspected 1975, and Flushing NY, 1966, photorevised 1979

FIGURE 1-1

DAVIDS ISLAND
NEW ROCHELLE, NEW YORK

PROJECT LOCATION MAP

SCALE: AS SHOWN

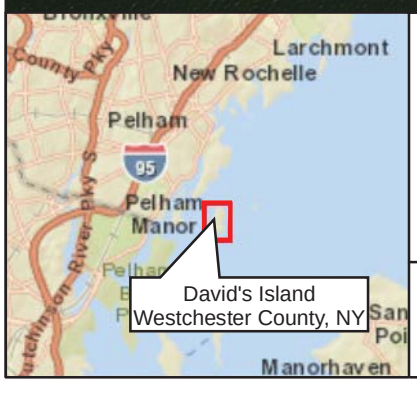
CADDFILE: 2880-A001.DWG


N
W
E
S
Site No. E360077
David's Island
77.8 acres
Consolidated Edison Property
4.2 Acres
POOL
TENNIS COURT
TENNIS COURT
STANDS
STANDS
Traffic Island
Traffic Island
CONVEYOR
UST A 10000
UST B 550
Utility Vault
Davids Island ROD Figure 2
Davids Island Site Borders
Paths_and_Roads
Former Structures
ConEd_Property
500
250
0
500 Feet

Path: T:\GIS\Davids_Island\Geodata\Spatial\MXD\Isopleths_042712\Isopleths.mxd

ESTIMATED FOOTPRINT
CONSOLIDATED AREA

0 100 200 400
Feet



Legend

- ESTIMATED FOOTPRINT OF CONSOLIDATED AREA
- VERTICAL BARRIER WALL
- INTERPOLATED MEAN LOW WATER MARK (MLW)
- INTERPOLATED MEAN HIGH WATER MARK (MHW)
- HORIZONTAL EXTENT OF CONSTITUENT CONCENTRATIONS ABOVE COMMERCIAL USE SCOs
- KNOWN EXTENT OF INCINERATOR LANDFILL AREA

SOURCE:
(c) 2010 Microsoft Corporation and its data suppliers.

TETRA TECH

FIGURE 3

ALTERNATIVE 3:
EXCAVATION TO NYSDEC
COMMERCIAL USE SCOs
SEDIMENT REMOVAL

AUGUST 2015

WESTCHESTER COUNTY, NEW YORK