# PROPOSED REMEDIAL ACTION PLAN

Special Area 13 Dredge Spoil Disposal Area
State Superfund Project
Moreau, Saratoga County
Site No. 546041
February 2012

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

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## SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of 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 document is a summary of the information that can be found in the site-related reports and documents in the document repositories identified below.

## SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repositories:

NYSDEC Central Office
Attn: William Shaw
625 Broadway
Albany, NY 12233
Phone: (518) 402-9676

USEPA - Hudson River PCB Project Field Office
421 Lower Main Street
Hudson Falls, NY 12839
Phone: (518) 747-4389

Town of Moreau Office Building
61 Hudson Street
South Glens Falls, NY 12803
Phone: (518) 792-1030

**A public comment period has been set from:**

**2/24/2012 to 3/26/2012**

**A public meeting is scheduled for the following date:**

**3/6/2012 at 7:00 PM**

**Public meeting location:**

**Town of Moreau Office Building / 61 Hudson Street / South Glens Falls, NY**

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 3/26/2012 to:

William Shaw
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
wxshaw@gw.dec.state.ny.us

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

**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 Special Area 13 (Dredge Spoil Disposal Area) site is located along the western shore of the Hudson River in the Town of Moreau (Saratoga County), about 1,200 feet down-river (south) of Champlain Canal Lock 7 and near Buoy 219 that marks the western margin of the navigation channel of the Champlain Canal within the Hudson River.

Site Features:

The 25.3 acre site consists of four distinct areas. The main dredge spoil disposal area consists of a closed and covered basin and earthen containment berm complex built by the New York State Department of Transportation (NYSDOT) to dewater and hold sediment removed from the Champlain Canal/Hudson River navigation channel south of Canal Lock 7 and from around Rogers Island. In its present closed and covered state, this dredge spoil disposal structure ranges between 175 and 300 feet wide and extends about 1,750 feet along the shore of the Hudson River with a foot-print covering nearly 14 acres. PCB-contaminated dredge spoils from the main dredge spoil disposal area were graded out onto three adjoining areas prior to its closure. The first fill area adjoins the main dredge spoil disposal area to the north and consists of a closed and covered shallow depression fill area which ranges between 200 and 250 feet wide and extends about 550 feet along former County Route 29 with a foot-print covering nearly 3 acres. This area was covered with a soil cover (consisting of filter fabric, a marker layer, one foot of clean soil, and a vegetated surface) to limit the potential for human exposure to the dredge spoil found here. A second fill area is located in a shallow depression further north beyond the first fill area and is about 550 feet wide and about 500 feet long with a foot-print covering around 6.3 acres. A large portion of the second fill area is covered with clean fill and pavement placed during the construction of a Work Support Marina Facility for the Hudson River PCBs Site remedial dredging project, however the remaining portions of this area are not covered at present. The third fill area adjoins the main dredge spoil disposal area to the west at the southern end and consists of another shallow depression fill area which is oblate in shape with a maximum width of about 220 feet and a long axis length of around 500 feet that covers nearly 2.0 acres on a residential parcel. This residential property is occupied by a single dwelling and a few out-buildings. There is a private well on the property that draws water from the shallow overburden aquifer.

Current Zoning/Use:

The main dredge spoil disposal area at the site is the location of a Toxic Substances Control Act

approved dredge spoil containment structure and is currently zoned for manufacturing. The first fill area is zoned as a marina and is being used as a State-owned recreational boat launch site. The second fill area is zoned Hudson River Regulatory and is now the location of an active Work Support Marina Facility for the Hudson River PCBs Site remedial dredging project. The third fill area is zoned residential and appears to be unoccupied.

Historic Use:

A series of unlined, transient settling basin and baffle systems were constructed at the main part of this site by the NYSDOT and were used to dewater and hold dredge spoil material removed from the Champlain Canal/Hudson River navigation channel south of Champlain Canal Lock 7 in conjunction with routine and emergency maintenance dredging operations of the Canal System. These settling basin systems were initially constructed by excavating the soils across this area slightly and grading the displaced materials outward and upward to form the various containment berms. During subsequent maintenance operations, it is likely that some of the older dredge spoil materials were re-graded in order to deepen or modify the established settling basin to accommodate the disposal of additional dredge spoil materials. During one or more of these re-grading activities in the 1970s, it is believed that spoils from the basin and containment berm complex were pushed outward and into the three identified shallow depression areas adjacent to the main disposal area as fill material.

Available NYSDOT records report that the Special Area 13 dredge spoil disposal area was used between 1952 and 1979 for the disposal of up to 802,000 cubic yards of dredge spoil material during canal maintenance operations. In 1979, it was covered with between six and 24-inches of sand and seeded. Monitoring wells were also installed and a monitoring program was established. These actions were taken to comply with Toxic Substances Control Act (TSCA) requirements imposed by the USEPA when they issued an approval for the interim storage/disposal of PCB laden material at this site in September of 1979. In 1991, a TSCA-approved clay cover/cap was added over the existing 'standard turf' cover. The new cover was constructed by the NYSDOT and the earlier monitoring wells were replaced. The new cover added a six-inch to five-foot thick layer of clay over the entire closed main structure. The combination of the two cover layers put the top surface of the potentially contaminated dredge spoil materials at depths ranging between about one-foot and nearly five-feet below the ground surface. Following the installation of the TSCA-approved cap, subsequent monitoring demonstrated that PCB levels in the local groundwater diminished such that PCBs were no longer detected in the groundwater. Personnel from the NYSDOT inspect and sample the groundwater monitoring wells and maintain the site under the TSCA program. The latest TSCA program inspection occurred on May 20, 2010.

The first fill area adjoining the main disposal area to the north has been closed and covered and now serves as part of a State-owned public recreational boat launch site. As mentioned previously, a large portion of the second fill area is covered with clean fill and pavement placed during the construction of a Work Support Marina Facility for the Hudson River PCBs Site remedial dredging project, however the remaining portions of this area are not covered at present.. The third fill area on the residential property that adjoins the main disposal site to the west along the southern margin has not been covered.

Site Geology and Hydrogeology:

The geologic setting for the Special Area 13 site has a varied mixture of silts, sands, gravel, and clay and that were placed over bedrock by natural processes and a varied mixture of sand, silt, shale fragments, and debris that were placed over the earlier lacustrine and alluvial deposits by unnatural processes a relatively short time ago.

The overburden materials in the natural setting are located in most areas outside of the basin and berm system at the site. The overall thickness of these native soils at Special Area 13 is not known, but earlier work by others report similar undisturbed silts, sands, gravel, and clay to a depth about 30 feet lower than the bottom of the Special Area 13 dredge spoil disposal structure.

The overburden materials in the unnatural setting are best described as mechanically reworked native soil mixed with dredge spoil materials in the closed and covered dredge spoil disposal structure. The dredge spoils are typically dark gray to black, fine to medium sands with varying amounts of silt, black shale fragments, pebble gravel, brick fragments, coal fragments, fused slag, glass shards, and wood debris. Dredge spoils vary in thickness from a few inches to nearly 13.5 feet within the closed and covered main disposal area, from a few inches to 6.7 feet within the closed and covered first fill area, from a few inches to 6.5 feet within the second fill area, and from a few inches to about 7 feet within the third fill area.

Groundwater flow in this area typically moves away from the slight topographic rise on the west and toward the Hudson River in a general east-southeast direction.

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) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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 for the site, documented to date, include:

NYS Department of Transportation

General Electric Company

The PRPs for the site declined to implement a remedial program when requested by the Department. After the remedy is 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. The PRPs are subject to legal actions by the state for recovery of all response costs NYSDEC has incurred. NYSDOT is required to continue all operation, maintenance and monitoring activities at this site under the governing TSCA authorization for the Special Area 13 Dredge Spoil Disposal Area.

## 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.

### 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 Information

The analytical data collected on this site includes data for:

- groundwater
- surface water
- drinking water
- soil

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste 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:

POLYCHLORINATED BIPHENYLS (PCB)

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

- soil

## 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.

There were no IRMs performed at this site during the RI.

## 6.3: 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.*

People will not come in contact with contamination unless they dig below the cover layer. In areas where dredge spoils are present at the surface beyond the fenced enclosure, people could come in contact with contamination by digging or otherwise disturbing the soil below the vegetated layer.

## 6.4: 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.

Based upon investigations conducted to date, the primary contaminants of concern for the proposed Special Area 13 site are PCBs in soils. Groundwater monitoring data demonstrates that groundwater is not being impacted by this site.

**Main Dredge Spoil Disposal Area** (Closed and Covered)

PCBs were found in many of the subsurface soil samples collected below the established cover at concentrations up to 49 ppm which exceeds the soil cleanup objectives (SCOs) for unrestricted use (0.1 ppm), restricted residential use (1 ppm), commercial use (1 ppm), and industrial use (25 ppm).

**First Fill Area - State-owned Recreational Boat Launch** (Closed and Covered)

PCBs were found at concentrations up to 12 ppm in soil samples collected at locations that are now beneath the established cover. These PCB concentrations exceed the SCOs for unrestricted use (0.1 ppm), restricted residential use (1 ppm), and commercial use (1 ppm).

**Second Fill Area - Land East of the Moreau Dredge Spoil Disposal Area** (Partially Covered)

PCBs were found in many of the soil samples collected at locations below the established cover at concentrations up to 25 ppm which exceeds the SCOs for unrestricted use (0.1 ppm), restricted residential use (1 ppm), and commercial use (1 ppm).

**Third Fill Area - Residential Property**

PCBs were found in many of the soil samples collected from all parts of the third fill area at concentrations up to 30 ppm which exceeds the SCOs for unrestricted use (0.1 ppm), restricted residential use (1 ppm), commercial use (1 ppm), and restricted industrial use (25 ppm).

Special Resources Impacted/Threatened:

A Fish and Wildlife Impact Analysis was conducted which concluded that environmental contamination attributable to the dredge spoil materials at the site poses little or no risk to communities of terrestrial plants, invertebrates in soil, or carnivorous birds and mammals.

## 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:

**Groundwater**

**RAOs for Environmental Protection**

- Prevent the discharge of contaminants to surface water.

**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.

## SECTION 7: SUMMARY OF THE PROPOSED 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 FS 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 proposed remedy is set forth at Exhibit D.

The estimated present worth cost to implement the remedy is $4,599,000. The cost to construct the remedy is estimated to be $4,310,000 and the estimated average annual cost is $76,000.

The elements of the proposed remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, 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 gas 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. Maintain the existing isolation cap/cover, which has been constructed, over the main dredge spoil disposal area at the Special Area 13 site to satisfy Toxic Substances Control Act requirements imposed by the United States Environmental Protection Agency.

3. Maintain the isolation soil covers that have been established beyond the margins of the main dredge spoil disposal area that are part of the TSCA-approved dredge spoil containment structure. These areas include those portions of the first fill area (NYSDEC Boat Launch in Moreau) that were subject to the installation of a soil cover and those areas within the second fill area at the northern extent of the site that are adequately covered by materials placed in association with the construction of General Electric's Work Support Marina Facility for the Hudson River PCBs Site remedial dredging project.

4. Installation of a cover system where current surficial PCB concentrations exceed 1 part per million for the commercial portions of the site (the main dredge spoil disposal area, fill area 1, and fill area 2). These areas include all portions of the Special Area 13 site where PCB-contaminated dredge spoils are exposed at the surface - and - that are not covered by an adequate cover at the present time - but excludes all of the residential portion of the site. This currently includes two small areas adjacent to the river-side of the main dredge spoil disposal area, a small flood plain soil area south and east of the southeastern margin of the main dredge spoil disposal area, and those areas within the second fill area at the northern extent of the site that are outside of the adequate cover materials placed in association with the construction of General Electric's Work Support Marina Facility for the Hudson River PCBs Site remedial dredging project.

5. For the commercial portions of the site that are not covered by an adequate cover at the present time - a cover will be required to allow for commercial use of these areas of the site. Applicable cover will consist either of the structures such as buildings, pavement, sidewalks comprising any site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set

forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

6. For the residential portion of the site and those areas immediately adjacent to it, removal and off-site disposal of contaminated soils to meet the unrestricted SCOs in Part 375. This area adjoins the capped landfill cell to the west at the southern end and consists of shallow depression fill area which is oblate in shape with a maximum width of about 220 feet and a long axis length of around 500 feet that covers nearly 2.0 acres.

Approximately 17,500 cubic yards of soil will be removed. Clean fill meeting the requirements of 6 NYCRR Part 375-6.8 will be brought in to replace the excavated soil and establish the designed grades at the site.

7. Imposition of an institutional control in the form of an environmental easement or an environmental notice for the controlled property that:

(a) 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);
(b) allows the use and development of the controlled property for restricted residential (parcels zoned residential) or commercial (parcels not zoned residential) as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
(c) restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
(d) prohibits agriculture or vegetable gardens on the portions of the controlled property which were subject to remediation; and
(e) requires compliance with the Department approved Site Management Plan.

8. 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 ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easements and Environmental Notices discussed in Paragraph 7 above.

Engineering Controls: The existing isolation cap/cover discussed in Paragraph 2 above, the existing isolation covers discussed in Paragraph 3 above, and the soil covers discussed in Paragraph 4 and 5 above.

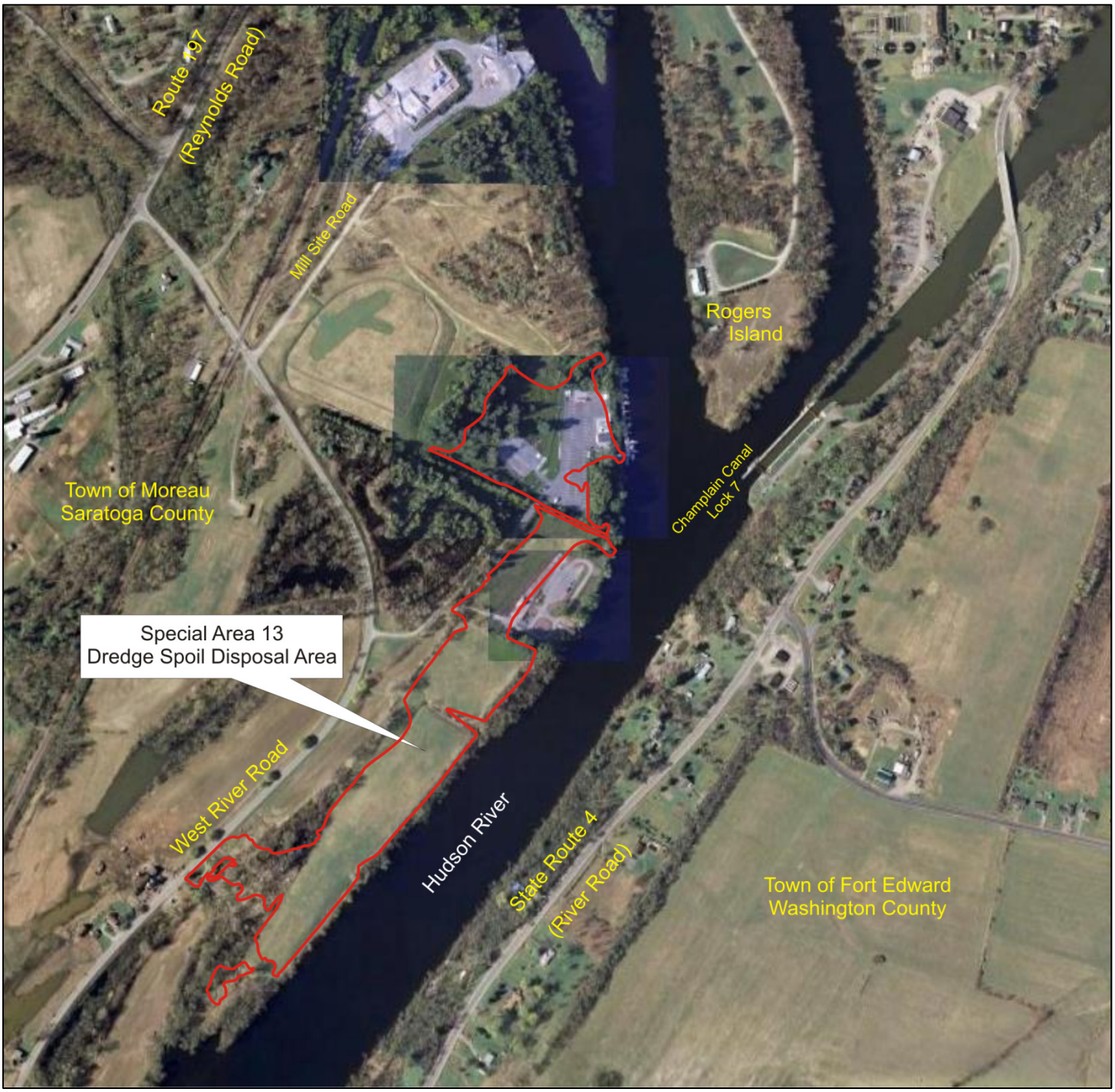
This plan includes, but may not be limited to: (i) Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination; (ii) descriptions of the provisions of the environmental easement including any land use and/or groundwater use restrictions; (iii) provisions for the management and inspection of the

identified engineering controls; (iv) maintaining site access controls and Department notification; and (v) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and

(b) a Monitoring Plan to include, but not be limited to: (i) monitoring of groundwater to assess the performance and effectiveness of the remedy; and (ii) a schedule of monitoring and frequency of submittals to the Department.

# Figure 1 - Location Map

## Special Area 13 Dredge Spoil Disposal Area
## Proposed Remedial Action Plan
## February 2012




0 100 200 300 400 500 1000 1500 2000

Scale in Feet

N
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*Aerial Imagery extracted from Google Earth and Microsoft's Bing Maps.*

# *Figure 2*
# *Remedial Findings and Proposed Remedy*

### *Special Area 13 Dredge Spoil Disposal Area*
### *Proposed Remedial Action Plan*
### *February 2012*


***Excerpt from the February 2012***
***"Remedial Investigation Report for the Special Area 13 Dredge Spoil Disposal Area"***

**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, 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 one category; polychlorinated biphenyls (PCBs. 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 6.1.1 are also presented.

### Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site which were the original source of PCB at the site.

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 were 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 main dredge spoil disposal area that is part of the TSCA-approved dredge spoil containment structure at the site, the first fill area that adjoins the main dredge spoil disposal area to the north, the second fill area at the northern extent of the site beyond the first fill area, and the third fill area on the residential property that adjoins the main dredge spoil disposal site to the west along the southern margin of the site.

According to NYSDOT records, nearly 77,000 cubic yards (CY) of dredge spoil materials were disposed of at the site between July 1974 and November 1975. Additional dredge spoil materials from later channel maintenance and clearing operations may have been placed at the site after 1975. Previous studies indicate that polychlorinated biphenyl (PCB)-contaminated effluent seeps from the cell and infiltrates into the groundwater or possibly flows directly into the Hudson River. This disposal area is not lined, but was initially covered with a “standard turf establishment” cap. In 1991, the “standard turf” cap was replaced with a Toxic Substance and Control Act (TSCA)-approved cap by the NYSDOT. The site and existing groundwater wells are inspected, sampled, and maintained by the NYSDOT under the TSCA program. Previous studies (Malcolm Pirnie 1992) estimated that there are up to 154,900 CY of PCB-contaminated dredge spoils from the Hudson River located at the disposal area.

The waste/source areas identified will be addressed in the remedy selection process.

### Groundwater

Four rounds of groundwater samples were collected from six new monitoring wells installed at the site and from five existing monitoring wells located around the cell. PCBs were not detected in groundwater collected from the 11 on-site monitoring wells during the four sampling rounds.

**Table 1 - Groundwater**

| Detected Constituents | Concentration Range Detected (ppb)[a] | SCG[b] (ppb) | Frequency Exceeding SCG |
|---|---|---|---|
| **Pesticides/PCBs** | | | |
| Total PCB | ND | 0.009 | 0 / 44 |

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

No site-related groundwater contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for groundwater.

## Soil

**Surface Soil.** Sixty-nine surface soil samples were collected during three sampling events at the site. Thirty-six locations were on the disposal cell, six were to the south of the cell, nine were to the west of the cell, one was to the east of the cell, and 17 were north/northeast of the disposal cell. Twenty-five of the 69 samples contained PCBs up to 12 ppm. The majority of these samples were collected from the northeast portion of the site outside the SA 13 disposal cell.

**Subsurface Soil.** A total of 132 subsurface soil samples were collected from 27 margin borings (borings outside the perimeter of the disposal cell), 10 cap borings (borings drilled within the disposal cell), six additional soil sampling locations (co-located with surface soil samples) and six new monitoring wells. Samples collected from 68 subsurface soil samples detected PCB concentrations up to 49 ppm. The ranges of PCB concentrations in the first, second and third fill areas were similar, with higher concentrations in the capped cell. SCOs were exceeded in all areas where dredge spoil was placed.

Seven samples were collected from on-site depressions/ditches along the western and southern borders of the suspected dredge spoil disposal area, while one sample was collected at the mouth of a drainage ditch that segregates the disposal cell and leads to the Hudson River. Five of the eight samples contained PCBs at concentrations ranging from 0.05 to 2 parts per million (ppm). The samples with the highest concentrations were located along the southern border of the SA 13 fill area. As these areas represent soil rather than an aquatic habitat, they will be addressed along with the surficial soils in remedy selection.

The soil samples collected on the residential property (the third fill area) are appropriately compared to an unrestricted SCO for PCB, as the parcel is classified as residential. The other areas where dredge spoil was placed or PCBs were found in soils related to dredge spoil deposition at the SA 13 site are not classified as residential, but rather represent a commercial exposure and will also be compared to the commercial/recreational SCO.

**Table 2 - Soil**

| Detected Constituents | Concentration Range Detected (ppm)[a] | Unrestricted SCG[b] (ppm) | Frequency Exceeding Unrestricted SCG | Restricted Use SCG[c] (ppm) | Frequency Exceeding Restricted SCG |
|---|---|---|---|---|---|
| **Pesticides/PCBs** | | | | | |
| Total PCBs | ND to 49 | 0.1 ppm | 233/394 | 1 ppm | 117/394 |

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 Restricted Residential or Commercial Use, unless otherwise noted.

The primary soil contaminants at this site are PCBs, found in surface and subsurface soil within the SA 13 cell, as well as in areas where the dredge spoils were placed outside of the SA 13 cell. These areas include the area between the SA 13 disposal site and the adjacent residential parcel, around the residential parcel, on the NYSDEC boat launch property to the north of the SA 13 disposal site, and on the property currently being used as the support marina for the ongoing EPA Hudson River dredging project to the north of the NYSDEC boat launch. No other significant contaminants requiring remediation were identified in site area soils.

Based on the findings of the Remedial Investigation, the presence of PCBs from the placement of dredge spoils 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 PCBs.

## Surface Water

No surface water contamination was measured in samples collected during the site Remedial Investigation. Samples were collected in drainage areas leading away from the dredge disposal site and in the vicinity of other areas were dredge spoil was placed. No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for surface water.

**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. Three sets of alternatives were developed to address three substantially different portions of the site: (1) the already capped SA 13 dredge disposal site; (2) the portions of the site outside of the capped SA 13 dredge disposal site which have already had a soil cover placed over dredge spoils; and (3) those areas outside of the capped SA 13 dredge disposal site where dredge spoils have been placed, or where soils have been impacted by dredge spoil placement, which have not been covered.

Alternatives to address the Main Dredge Spoil Disposal Area (Closed and Covered)

### Cell Alternative 1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the capping work described in the site history. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

### Cell Alternative 2: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the installation of the cap described in the site history. Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of this action. This alternative maintains engineering controls which were part of this action, and includes institutional controls (in the form of an environmental easement or environmental notice in the deed for State owned land) and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the cap was placed.

*Present Worth:* ..... *$345,000*
*Capital Cost:* ..... *$216,000*
*Annual/Periodic Costs:* ..... *$34,000*

### Cell Alternative 3: Restoration to Pre-Disposal or Unrestricted Conditions by Excavation and On Site Treatment by High Temperature Thermal Desorption

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include the excavation and on site treatment of all soils exceeding SCGs within the already capped SA 13 dredge disposal area. This treatment would be accomplished by the use of high temperature thermal desorption. Under this alternative, the use of the treatment technology requires construction and operation of a treatment system at the site, or mobilization of a transportable treatment unit. The substantive requirements of all applicable regulations are met through the proper implementation of the treatment technology. 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:.....$28,718,000*

**Cell Alternative 4: Restoration to Pre-Disposal or Unrestricted Conditions by Excavation Off Site Disposal of the Dredge Spoils and Impacted Soils**

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include the excavation and proper off site disposal of all dredge spoils and soils exceeding the SCOs within the already capped SA 13 dredge disposal area. The excavated soils and dredge spoils under this alternative are disposed in properly permitted off site disposal facilities. 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:.....$25,142,000*

<u>Alternatives to address the Covered Spoils within Fill Area 1 and Fill Area 2</u>

**Covered Spoils Alternative 1 - No Further Action**

The No Further Action Alternative recognizes the remediation of the site completed by the previous soil cover work described above. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

**Covered Spoils Alternative 2 – No Further Action with Site Management**

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the installation of the soil covers described in the site history. Site Management and Institutional Controls and Engineering Controls are necessary to confirm *the effectiveness of this action. This alternative maintains engineering controls which were part of this action, and includes institutional controls (in the form of an environmental easement or notice in deed) and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the cap was placed.*

*Present Worth:.....$176,000*
*Capital Cost:.....$93,000*
*Annual/Periodic Costs:.....$22,000*

**Covered Spoils Alternative 3 - Excavation and Offsite Disposal of all covered spoils**

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative includes the excavation and proper

off site disposal of all dredge spoils and soils exceeding the SCOs within the areas containing dredge spoils or impacted soils (outside of the capped SA 13 disposal cell) which had been previously covered. The excavated soils and dredge spoils under this alternative are disposed in properly permitted off site disposal facilities. 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:.....$8,631,000*

Alternatives to address the site areas containing exposed dredge spoils or impacted soils upon and near the Main Dredge Spoil Disposal Area and within Fill Areas 2 and 3

**Uncovered Spoils Alternative 1 - No Action**

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

**Uncovered Spoils Alternative 2 - Cover all uncovered spoils in place**

Under this alternative, soil covers to prevent direct contact and erosion would be placed over all currently uncovered areas where dredge spoils or impacted soils exceed SCOs. Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of this action. This alternative includes engineering controls and institutional controls (in the form of an environmental easement or notice in deed) and site management plan, as necessary to protect public health and the environment from contamination remaining at the site after the soil cover is placed.

*Present Worth:.....$934,000*
*Capital Cost:.....$857,000*
*Annual/Periodic Costs:.....$20,000*

**Uncovered Spoils Alternative 3**
**Excavation and Offsite Disposal to meet Unrestricted SCOs in Fill Area 3 (Residential Parcel),**
**Soil Cover with Site Management for uncovered impacted areas**
**upon and near the Main Dredge Spoil Disposal Area and within Fill Area 2**

This alternative includes meeting the SCOs in the residential parcel by excavation and off site disposal, along with the placement of soil covers on the other uncovered areas containing dredge spoils or impacted soils above SCOs. For the residential parcel, no further site management or monitoring is required after the action. Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of this action where the soil covers are placed. This alternative includes engineering controls and institutional controls (in the form of an environmental easement or notice in deed) and site management plan, as necessary to protect public health and the environment from contamination remaining at the site after the soil cover is placed.

*Present Worth:* ..... *$4,078,000*
*Capital Cost:* ..... *$4,001,000*
*AnnualPeriodic Costs:* ..... *$20,000*

**Uncovered Spoils Alternative 4**
**Excavation and Onsite Treatment to meet Unrestricted SCOs in Fill Area 3 (residential parcel),**
**Soil Cover with Site Management for uncovered impacted areas**
**upon and near the Main Dredge Spoil Disposal Area and within Fill Area 2**

This alternative is the same as alternative 4, except that the soils excavated from the residential parcel are treated onsite. This treatment would be accomplished by the use of high temperature thermal desorption. Under this alternative, the use of the treatment technology requires construction and operation of a treatment system at the site, or mobilization of a transportable treatment unit. The substantive requirements of all applicable regulations are met through the proper implementation of the treatment technology.

*Present Worth:* ..... *$6,534,000*
*Capital Cost:* ..... *$6,485,000 cost*
*Annual/ Periodic Costs:* ..... *$14,000*

**Uncovered Spoils Alternative 5 - Excavation and Offsite Disposal of all uncovered spoils**

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted SCOs listed in Part 375-6.8 (a). This alternative would include the excavation and proper off-site disposal of all dredge spoils and soils exceeding the SCOs within the currently uncovered soils. The excavated soils and dredge spoils under this alternative are disposed in properly permitted off-site disposal facilities. 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:* ..... *$7,571,000*

**Exhibit C**

## Remedial Alternative Costs

| Remedial Alternative | Capital Cost ($) | Annual / Periodic Costs ($) | Total Present Worth ($) |
|---|---|---|---|
| Cell Alternative `1 - No Action | 0 | 0 | 0 |
| Cell Alternative 2 – Site Management | 216,000 | 34,000 | 345,000 |
| Cell Alternative 3 – Excavation and On Site Treatment | 28,718,000 | 0 | 28,718,000 |
| Cell Alternative 4 – Excavation and Off Site Disposal | 25,142,000 | 0 | 25,142,000 |
| Uncovered Spoil Alternative 1 – No Action | 0 | 0 | 0 |
| Uncovered Spoil Alternative 2 – Cover Uncovered Spoils In Place with Site Management | 857,000 | 20,000 | 934,000 |
| Uncovered Spoil Alternative 3 – Excavation and Off Site Disposal in Fill Area 3 (Residential Parcel), Cover Uncovered Spoils in Place, with Site Management | 4,001,000 | 20,000 | 4,078,000 |
| Uncovered Spoil Alternative 4 - Excavation and On Site Treatment in Fill Area 3 (Residential Parcel), Cover Uncovered Spoils in Place, with Site Management | 6,485,000 | 14,000 | 6,534,000 |
| Uncovered Spoil Alternative 5 – Excavation and Off Site Disposal | 7,571,000 | 0 | 7,571,000 |
| Covered Spoil Alternative 1 – No Further Action | 0 | 0 | 0 |
| Covered Spoil Alternative 2 – Site Management | 93,000 | 22,000 | 176,000 |
| Covered Spoil Alternative 3 – Excavation and Off Site Disposal | 8,631,000 | 0 | 8,631,000 |

**Exhibit D**

## SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Cell Alternative 2 (*No Further Action with Site Management*), Covered Spoils Alternative 2 (*No Further Action with Site Management*), and Uncovered Spoils Alternative 3 (*Excavation and Offsite Disposal to meet Unrestricted SCOs on residential parcel, Soil Cover for uncovered impacted areas, with Site Management*), as the remedy for this site. This set of alternatives would achieve the remediation goals for the site by preventing any further direct contact exposures or potential for erosion and transport of the dredge spoils or impacted soils. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 2.

### Basis for Selection

The proposed 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 FS 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.

All remedial alternatives, other than the No Action alternatives, would be protective of human health and the environment. Therefore, the No Action alternatives will not be considered further in this evaluation.

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.

All Cell and Covered Spoils alternatives currently comply with SCGs; for the Uncovered Spoils the retained alternatives all comply.

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.

For the Cell alternatives, all alternatives have good long term effectiveness and permanence. The alternatives which involve excavation and treatment, or excavation and offsite disposal, rank higher than allowing the

already capped dredge spoils to remain in place per Cell Alternative 2. However, alternative 2 still ranks well as the remaining risks are small, the cap system is a proven and reliable technology to contain these dredge spoils, and the existing system has shown for several years to be effective in containing the spoils.

For the Covered Spoils alternatives, the rationale is the same as for the Cell Alternatives. Allowing the existing soil covers to address exposures to the surficial contaminants within the spoils or impacted soils has been shown to be effective at this site. The alternatives involving removal of the covered spoils with either treatment or off-site disposal would result in only modest improvements in long term effectiveness.

For the Uncovered Spoil alternatives, installation of the soil covers in the non-residential areas results in the same level of long term effectiveness as with the areas with existing soil covers. Removal of the uncovered spoils with either, treatment or off-site disposal results in only modest improvements in long term effectiveness over installation of a soil cover. For the residential parcel, alternatives which would not meet the residential SCOs have low long term effectiveness, as future controls would not prevent residential exposures to soils exceeding the residential SCOs. Alternatives which result in meeting the Unrestricted SCOs provide the greatest long term effectiveness and permanence.

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.

For the Cell Alternatives, the highest ranking alternative is excavation and treatment (Cell alternative 3), followed by excavation and off site disposal (Cell alternative 4) and allowing the area to remain capped (Cell alternative 2). The reductions in mobility associated with Cell alternatives 2 and 4 are comparable. For the Covered Spoils alternatives and the Uncovered Spoils alternatives, each alternative except No Action for the uncovered spoils results in the same reduction in mobility, as the soil covers would prevent erosion and migration via surface water, the only significant migration pathway for these areas.

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.

Among the Cell alternatives, the best short term effectiveness and permanence is with Alternative 2, as there are little or no negative short term impacts and these can be implemented immediately. Alternatives 3 and 4 require design elements to control releases during excavation and, for Cell Alternative 4 (utilizing onsite treatment) requires specialized monitoring to ensure control of potential releases from the treatment process. Cell Alternatives 3 and 4 reflect a lesser degree of green remediation as they include significant expenditure of energy and resources.

For the Covered Spoils alternatives, the analysis is the same as for the Cell alternatives. The alternatives involving excavation and off-site disposal require design elements to control releases during excavation.

For the Uncovered Spoils alternatives, the analysis is also similar. Alternatives which involve excavation and removal or treatment require design elements to control releases during construction, resulting in lower short term effectiveness. Alternative 2 has the highest short term effectiveness, as no intrusive work would be done to cause potential releases to be controlled.

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.

For the cell alternatives, alternative 2 has the highest implementability, as no approvals or access agreements are required. Excavation and treatment requires the highest level of controls and approvals, which result in lower implementability. Excavation and off-site disposal requires lesser but still significant controls. For all alternatives, the personnel and engineering expertise is available.

For the Covered Spoils alternatives, a similar evaluation results, where the alternative utilizing the existing soil covers have the best implementability, while excavation and off-site disposal requires access, personnel, and -monitoring resulting in somewhat lower implementability.

For the Uncovered Spoils alternatives, again a similar evaluation results under which the alternatives involving greater amounts of excavation and either treatment or off-site disposal having somewhat lower implementability. The excavation and treatment alternative would require greater difficulties in achieving the applicable controls on releases during treatment, and in finding available treatment vendors.

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.

For the Cell alternatives, the costs vary significantly between the alternatives which involve excavation and either treatment or off-site disposal, and alternative 2 under which the Cell would remain in place under the existing cap. The significant difference in cost, however, does not appear to be proportional to any increase in protectiveness, implementability, or effectiveness.

For the Covered Spoils alternatives, there is again a significant difference in costs between the alternatives which involve excavation and either treatment or off-site disposal, and alternative 2 under which the Cell would remain in place under the existing soil covers. The significant difference in cost, however, also does not appear to be proportional to any increase in protectiveness, implementability, or effectiveness.

For the Uncovered Spoils alternatives, there is a wide range in costs between the alternatives under which some, versus all of the uncovered dredge spoils and impacted soils are excavated and either disposed off site or treated on site. The increase in cost between Alternatives 2 and 3 appears proportional to the increased protectiveness, as alternative 3 would achieve the SCOs in the residential parcel when alternative 2 would not. The significant increases in cost between alternative 3 and the alternatives under which all of the uncovered spoils would be excavated and either treated on site or disposed off site do not appear to be proportional to any increase in protectiveness, implementability, or effectiveness.

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.

For the Cell alternatives, the current land use is not anticipated to change. The surrounding land use will be governed by the site management plans associated with the areas which will receive soil covers, which could be recreational or commercial. The presence of the cell will not impair commercial or recreational use of the adjacent areas.

The Covered Spoils alternatives, and the portions of the Uncovered Spoils alternatives, the current and anticipated land use (except for the residential parcel) is commercial or recreational.

The current land use of the residential parcel is expected to remain residential.

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 are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Cell Alternative 2 (*No Further Action with Site Management*), Covered Spoils Alternative 2 (*No Further Action with Site Management*), and Uncovered Spoils Alternative 3 (*Excavation and Offsite Disposal to meet Unrestricted SCOs on residential parcel, Soil Cover for uncovered impacted areas, with Site Management*) is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.