PROPOSED REMEDIAL ACTION PLAN

Mill Neck Marina
State Superfund Project
Oyster Bay, Nassau County
Site No. 130166
February 2014

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 repository 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:

Oyster Bay – East Norwich Public Library 89 East Main Street Oyster Bay, NY 11771 Phone: 516-922-1212	OR	Locust Valley Library 170 Buckram Road Locust Valley, NY 11560 516-671-1837

A public comment period has been set from:

2/21/2014 to 3/24/2014

A public meeting is scheduled for the following date:

3/3/2014 at 7:00 PM

Public meeting location:

Locust Valley Library, 170 Buckram Road, Locust Valley, NY 11560

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 3/24/2014 to:

Bob Corcoran
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
rkcorcor@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 Mill Neck Marina site is suburban area of the Town of Oyster Bay on the north shore of Long Island. The former marina is southwest of Oak Neck Creek at the foot of Hernan

Avenue.

Site Features: The site, now vacant, was cleared of structures in 2001-02. The majority of the site is densely overgrown with tall perennial grass, phragmites, and small trees. The site is bounded by Oak Neck Creek to the northeast and east, private residences to the west, Meadow Street to the north, and Hernan Avenue to the south. The site lies at the foot of the Mill Neck Preserve - a shallow tidal area where Oak Neck Creek begins.

The 1.4 acre site has been subdivided into nine separate tax parcels. A right-of-way for a future extension of Meadow Street bisects the site from north to south.

Current Zoning: The site is zoned R1- residential, which allows for single-family houses. The surrounding area is densely developed single-family residential.

Historic Use(s): The site was a marina from approximately 1953 until its abandonment in 2001. The marina reportedly contained boat storage, maintenance, and painting areas, gasoline storage, and dispensing facilities resulting in on site soil and off-site sediments being contaminated with heavy metals, including mercury, lead, arsenic and copper

Site Geology and Hydrogeology: Onsite soils consist of glacial till in the form of poorly sorted clay, silt, sand and gravel with high organic content in the top foot. The depth to groundwater is approximately one to three feet. The groundwater flows in a northeasterly direction toward the adjacent tidal creek.

A site location map is attached as Figure 1. A site boundary map is attached as Figure 1a.

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 residential use (which allows for restricted-residential use, commercial use and 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:

OTS ASSOCIATES

HARVEY WEISMAN

SAAL CORP.

SAUL WEINBERGER D/B/A EAST ARTS

The Department and Harvey Weisman entered into a Consent Order on 8/15/2008. The Order obligated the responsible party to implement a full remedial program. The site was referred to State Superfund in May 2010.

After the remedy is selected, the Department will again approach the PRPs to implement the selected remedy. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

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 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:

ARSENIC
LEAD
MERCURY
COPPER
CADMIUM

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.

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

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.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:
Investigations to date have determined that the on-site soil and off-site sediments have been impacted by historic use of the site as a boat marina. The site did not affect the soil of off-site properties. The primary contaminants of concern are the metals- mercury, arsenic, lead, cadmium and copper deposited in the soils and near shore sediments, from boat servicing and launching operations. Metals have long been used in paints for chromatic reasons (i.e. as pigments to attain desired colors). Arsenic, mercury and copper have additionally served as mildew preventers and anti-fouling agents in marine paints. Arsenic and copper are also found in pressure-treated lumber, functioning as an insecticide and fungicide, respectively.

Findings of the Remedial Investigation (RI) conducted 2011-2012:
Soil- Mercury, lead, arsenic, copper and other metals were detected at some level in virtually every soil sample collected. In various locations, shallow subsurface and subsurface soil samples were found to contain elevated levels of copper (1.26 ppm to 818 ppm), mercury (non-detect to 4.53 ppm), arsenic (0.656 ppm to 24.4 ppm), lead (3.53 ppm to 527 ppm) and cadmium (0.303 ppm to 3.3 ppm). No clear pattern of contamination is evident as metals contamination was found site-wide. Many of the metals detections were at or below NYS DEC's unrestricted use SCO.

Some semi-volatile organic compounds (SVOC) were also found at many locations throughout the site, but residential use SCOs were only marginally exceeded at three subsurface locations. Pesticides were widely detected, slightly exceeding unrestricted use SCOs at three locations. Polychlorinated Biphenyls (PCB) were detected at three locations, all below unrestricted use SCOs. Pesticides and PCB are not considered site-related contaminants.

Sediment- Near shore sediments were found to contain metals exceeding DEC's Sediment Criteria for Metals- Lowest Effect Level, at many locations. The Severe Effect Level criterion was slightly exceeded for copper at 7 of 11 locations, and lead at two locations. PCBs were detected at one sediment location, exceeding the Lowest Effect Level criterion at two depths.

Groundwater- No exceedences of groundwater standards were observed for any site related COC. Groundwater was not adversely impacted by historic operations.

Evaluation for Residential Use SCO:
No clearly defined 'hot spots' were identified, though soil contamination exceeding the residential use SCO was documented at eight surface and ten subsurface locations. Seven subsurface locations exceeded residential use SCOs at 3 to 6 feet below the surface. In order for the site to conform to single-family residential use, all contaminated soil exceeding the residential use SCO must be removed. Additional, pre-design sampling should be conducted to concisely delineate the extent of soil excavation.

Special Resources:

The Division of Fish, Wildlife and Marine Resources has reviewed the data and does not recommend removal of the sediments. Sediment removal would cause more harm to the tidal estuary than leaving them in place.

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*.

Contact with contaminated soil is possible if people dig below the vegetated surface.

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.

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 proposed remedy is referred to as the Soil Excavation to Achieve Residential Use SCOs remedy.

The estimated present worth cost to implement the remedy is $1,600,000. The cost to construct the remedy is estimated to be $1,600,000 and the estimated average annual cost is $0.

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, 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) Excavation
All soil that exceeds residential use SCOs will be excavated and disposed of off-site. Up to 13,000 tons (9,000 cu-yd) of contaminated soil will be removed to varying depths, between the surface and six feet below grade across the majority of the site. An estimated 60-70 percent of the site surface will require excavation. Additional, pre-design sampling is required to more accurately delineate the extent and depth of soil removal.

Confirmation sampling will be conducted in excavated areas prior to backfilling. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

Care will be taken throughout the remedial action process to protect the shoreline soils and vegetation from unnecessary disturbance. Should the excavation encroach into the tidal wetland, then appropriate actions such as erosion control and re-vegetation, consistent with the requirements of 6 NYCRR Part 661 will be considered.

Exhibits

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. Sampling locations are depicted in Figure 2.

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 three categories; semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Soil

Soil samples were collected at 25 locations throughout the site during the RI, to assess compliance with soil cleanup objectives (SCO). Shallow subsurface soil samples were collected from a depth of 0-6 inches at eighteen locations, and surface soil samples were collected from a depth of 0-2 inches at seven locations. Subsurface soil samples were collected at various intervals ranging from 1-6 feet below grade at each location, to assess potential soil contamination impacts to groundwater. Samples were analyzed for inorganics (metals), VOCs, SVOCs, pesticides and PCBs. The results indicate that soils at the site exceed the unrestricted use SCOs for metals, SVOCs and pesticides.

The primary contaminants of concern (COC) identified in the RI are heavy metals, particularly mercury, arsenic, lead and copper. These COCs were indentified in surface soil, subsurface soil and near shore sediments. They were likely deposited during historic boat servicing and launching operations at the site. These metals have long been used as pigments, preservatives and/or antifungal agents in marine paints. Arsenic and copper also serve similar functions in the pressure treated wood used in boat docks and piers.

Metals Contamination:
Metals contamination is widely distributed throughout the site with 20 of 25 sample locations exceeding unrestricted use SCOs. Shallow subsurface soils exceeded the residential use SCO at eight locations. Subsurface soils 1–6 feet below grade are similarly impacted by metals with eighteen locations exceeding unrestricted SCOs, and ten locations exceeding restricted residential use SCOs.

Preventing human exposure to metals contamination in soil is the primary factor driving remedial action goals at this site. Figures 3 and 4 depict the nature and extent of shallow subsurface and subsurface metals contamination, respectively. Table 1 lists contaminants exceeding standards in shallow subsurface and subsurface soils.

Table # 1- 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
Shallow Subsurface Soil – Metals					
Arsenic	2.18-23.4	13	3/18	16	2/18
Cadmium	0.315-3.3	2.5	1/18	2.5	1/18
Chromium, Total	3.39-17.9	30	0/25	22	0/25
Copper	11.1-818	50	18/25	270	3/25
Lead	8.52-1130	63	15/25	400	3/25
Mercury	0.047-3.3	0.18	13/25	0.81	4/25
Nickel	3.57-31.6	30	1/17	140	0/17
Zinc	19.8-837	109	5/17	2200	0/17
Subsurface Soil – Metals					
Arsenic	ND-24.4	13	2/17	16	2/17
Cadmium	0.303-1.82	2.5	0/14	2.5	0/14
Chromium, Total	3.62-20.4	30	0/30	22	0/30
Copper	4.59-329	50	9/30	270	1/30
Lead	5.27-430	63	11/30	400	1/30
Mercury	ND-4.53	0.18	15/30	0.81	6/30
Nickel	3.43-12	30	0/14	140	0/14
Zinc	19.6-118	109	1/14	2200	0/14
SVOCs					
Benzo(A)Anthracene	ND-4.80	1	3/31	1	3/31
Benzo(A)Pyrene	ND-1.50	1	1/31	1	1/31
Benzo(B)Fluoranthene	ND-2.20	1	2/31	1	2/31
Chrysene	ND-5.20	1	3/31	1	3/31
Indeno(1,2,3-C,D)Pyrene	ND-0.910	0.5	1/31	0.5	1/31

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 Residential Use, unless otherwise noted.

Semi-volatile organic compounds (SVOCs) were found at many locations throughout the site, but residential use SCOs were only marginally exceeded at three locations in the subsurface soils. Pesticides were also widely detected, exceeding unrestricted use SCOs at seven locations, but never exceeding residential use SCOs. Polychlorinated biphenyls (PCB) were detected at three locations- all below unrestricted use SCOs. There were no exceedences of residential use SCOs in the shallow subsurface soils for any SVOC, PCB or pesticide.

Based on the findings of the Remedial Investigation, the presence of mercury, lead, arsenic and copper 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 mercury, lead, arsenic, and copper.

Sediments

Sediment samples were collected immediately off-site in the tidal estuary of Oak Neck Creek. Samples were collected at three depths, at eleven locations: 0-6", 6"-12" and 12"-24", for a total of 33 sediment samples. Due to poor recovery of one of the samples, only 32 samples were ultimately collected. Samples were analyzed for inorganics (metals), VOCs, SVOCs, pesticides, PCBs and total organic carbon (TOC). Results indicate there is fairly widespread metals contamination in the sediments nearby the site, consistent with historic operations as a marina. Many samples exceeded SCGs for Lowest Effect Level (LEL) criteria for fish and wildlife safety, while samples exhibiting exceedences of Severe Effect Level (SEL) criteria were much less frequent. The Division of Fish and Wildlife & Marine Resources (DFWMR) has evaluated the sediment data and concluded that remediation of contaminants for the protection of fish and wildlife is not recommended. DFWMR maintains that the area is an important tidal marsh habitat which would be detrimentally impacted by sediment removal efforts.

Table 2 - Sediment

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
SVOCs			
Acenaphthene	ND-0.34	LEL 0.016 SEL 0.5	1/32 0/32
Anthracene	ND-0.86	LEL 0.085 SEL 1.1	1/32 0/32
Benzo(a)anthracene	ND-2.1	LEL 0.261 SEL 1.6	2/32 1/32
Benzo(a)pyrene	ND-1.5	LEL 0.430 SEL 1.6	1/32 0/32
Chrysene	ND-2.0	LEL 0.384 SEL 2.8	2/32 0/32
Fluoranthene	ND-4.1	LEL 0.6 SEL 5.1	2/32 0/32
Fluorene	ND-0.32	LEL 0.019 SEL 0.540	1/32 0/32

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
Inorganics			
Arsenic	0.656-16.4	LEL 6	22/32
		SEL 33	0/32
Cadmium	ND-2.68	LEL 0.6	12/32
		SEL 9	0/32
Chromium (total)	5.66-73.1	LEL 26	20/32
		SEL 110	0/32
Copper	1.26-225	LEL 16	24/32
		SEL 110	11/32
Lead	3.53-361	LEL 31	21/32
		SEL 110	5/32
Mercury	ND-2.07	LEL 0.15	19/32
		SEL 1.3	2/32
Nickel	2.23-214	LEL 16	18/32
		SEL 50	3/32
Zinc	8.10-476	LEL 120	15/32
		SEL 270	4/32
Pesticides/PCBs			
4,4'-DDT	ND-0.011	LEL 0.00158 SEL 0.0461	1/32 0/32
PCBs (total)	ND-0.066	LEL 0.0227	2/32
		SEL 0.180	0/32

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;
b - SCG: The Department's Technical Guidance for Screening Contaminated Sediments.
LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered contaminated if either of these criteria is exceeded. If the SEL criteria are exceeded, the sediment is severely impacted. If only the LEL is impacted, the impact is considered moderate.

No remedial action is recommended for sediments, as their removal would cause more disruption to the coastal ecosystem than leaving them in place. Therefore, no remedial alternatives need to be evaluated for sediment.

Groundwater

Groundwater samples were collected from four permanently installed monitoring wells and eleven temporary wells. Samples were analyzed for inorganics (metals), VOCs and SVOC. The site related contaminants-arsenic, lead, cadmium, copper and mercury were well below SCG for groundwater. Some VOC and SVOC were also detected at below SCG. Results indicate that groundwater was not adversely impacted by site operations. No remedial action is recommended for groundwater, and no remedial alternatives will be evaluated.

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.

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.

Alternative 2: Re-zoning for Commercial Use with Site Management

The Re-zoning for Commercial Use with Site Management Alternative requires only institutional controls for the site. This alternative requires institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site. This alternative requires that the Town of Oyster Bay rezone the property from residential to commercial use, with a residential use prohibition. As the site meets commercial use SCOs, no remediation is required. The site management plan must include an excavation plan detailing provisions for management of future excavation in contaminated areas.

This alternative includes the abandonment of the four on-site monitoring wells according to NYSDEC CP-43, Groundwater Monitoring Well decommissioning policy.

An environmental easement and site management plan must be developed to restrict the site to its approved use.

Present Worth: *$60,000*
Annual Costs: *$2,500*

Alternative 3: Restoration to Pre-Disposal or Unrestricted Use Conditions Full Excavation

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 requires: the removal and off-site disposal of all soil that exceeds unrestricted soil clean up objectives (SCOs). Contaminated soil will be removed to varying depths, between three and six feet below grade across the majority of the site. Additional, pre-design sampling will be required to more accurately delineate the extent and depth of soil removal. Pursuant to NYSDEC DER-10, confirmation sampling will be conducted to verify that remedial action objectives have been achieved. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Backfilling activities will not occur prior to receipt of confirmatory sample results. All samples will be sent to a NYSDOH-certified laboratory for analysis. Excavated soil will be disposed of off-site at a NYSDEC approved disposal facility.

Prior to excavation, the site will require extensive clearing and grubbing to remove the dense vegetation from the areas being excavated. Care will be taken throughout the remedial action process to protect the shoreline soils and vegetation from unnecessary disturbance. A clearing limit line will be established on plans to delineate the zones of vegetative clearing and limit encroachment into the tidal wetland. All areas excavated or otherwise disturbed by machinery access or staging will be replanted and/or reseeded with native vegetation. Appropriate actions such as erosion control and re-vegetation, consistent with the requirements of 6 NYCRR Part 661 will be considered. Implementation of this alternative is expected to have temporary impact on the existing ecosystem, which will require a comprehensive restoration program.

No institutional or engineering controls will be required with this alternative.

In addition, this alternative includes the abandonment of the four on-site monitoring wells according to NYSDEC CP-43, Groundwater Monitoring Well decommissioning policy.

Capital Cost: $2,100,000

Alternative 4: Soil Excavation to Achieve Residential Use SCOs

This alternative requires the removal and off-site disposal of all soil that exceeds residential use SCOs. Contaminated soil will be removed to varying depths, between the surface and six feet below grade across the majority of the site. An estimated 60-70 percent of the site surface will require excavation. Additional, pre-design sampling will be required to more accurately delineate the extent and depth of soil removal. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Pursuant to NYSDEC DER-10, confirmation sampling will be conducted to verify that remedial action objectives have been achieved. Backfilling activities will not occur prior to receipt of confirmatory sample results. All samples will be sent to a NYSDOH-certified laboratory for analysis. Excavated soil will be disposed of off-site at a NYSDEC approved disposal facility.

Prior to excavation, the site will require extensive clearing and grubbing to remove the dense vegetation from the areas being excavated. Care will be taken throughout the remedial action process to protect the shoreline soils and vegetation from unnecessary disturbance. A clearing limit line will be established on plans to delineate the zones of vegetative clearing and limit encroachment into the tidal wetland. All areas excavated or otherwise disturbed by machinery access or staging will be replanted and/or reseeded with native vegetation. Appropriate actions such as erosion control and re-vegetation, consistent with the requirements of 6 NYCRR Part 661 will be considered.

This remedial alternative conforms to the current zoning and intended future use of the site as single-family residential housing. Its implementation is expected to have temporary impact on the existing ecosystem, which will require a comprehensive restoration program.

No institutional or engineering controls, or site management will be required with this alternative.

In addition, this alternative includes the abandonment of the four on-site monitoring wells according to NYSDEC CP-43, Groundwater Monitoring Well decommissioning policy.

Capital Cost: $1,600,000

Alternative 5: Soil Excavation to Achieve Restricted Residential SCOs with Site Management

This alternative will achieve restricted residential use SCOs by excavating all soil exceeding restricted residential use SCOs to a depth of two feet below the surface. It is estimated that 20-30 percent of the site's surface will require excavation within the top two feet. Additional, pre-design sampling will be required to more accurately delineate the extent and depth of soil removal. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Pursuant to NYSDEC DER-10, confirmation sampling will be conducted to verify that remedial action objectives have been achieved. A demarcation layer will be placed at the bottom of each excavation, to separate the remaining contaminated soil below from the new clean fill above. Backfilling activities will not occur prior to receipt of confirmatory sample results. All samples will be sent to a NYSDOH-certified laboratory for analysis. Excavated soil will be disposed of off-site at a NYSDEC approved disposal facility.Prior to excavation, the site will require moderate clearing and grubbing to remove the dense vegetation from the areas being excavated. Care will be taken throughout the remedial action process to protect the shoreline soils and vegetation from unnecessary disturbance. A clearing limit line will be established on plans to delineate the zones of vegetative clearing and limit encroachment into the tidal wetland. All areas excavated or otherwise disturbed by machinery access or staging will be replanted and/or reseeded with native vegetation. Appropriate actions such as erosion control and re-vegetation, consistent with the requirements of 6 NYCRR Part 661 will be considered.

An environmental easement and site management plan will be developed to restrict the site to a restricted residential use. The site management plan will include an excavation plan detailing provisions for management of future excavation in contaminated areas.

This remedial alternative is in conflict with current zoning and does not restore the site to the zoning approved use of single-family residential housing. Selection of this alternative will require that the Town of Oyster Bay rezone the property to prohibit a single-family residential land use. The restricted residential use SCO allows for the reasonably foreseeable use of the site as a waterfront park.

In addition, this alternative includes the abandonment of the four on-site monitoring wells according to NYSDEC CP-43, Groundwater Monitoring Well decommissioning policy.

Present Worth: *$353,000*
Capital Cost: *$315,000*
Annual Costs: *$2,500*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Rezoning to Commercial Use w/ Site Mgt.	0	2,500	60,000
Restoration to pre-disposal conditions	2,100,000	0	2,100,000
Soil Excavation to Achieve Residential Use SCO	1,600,000	0	1,600,000
Soil Excavation to Achieve Restricted Residential SCOs with Site Management	315,000	$2,500	353,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, Soil Excavation to Achieve Residential Use SCOs as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by removing all surface and subsurface soil where contamination exceeds residential use SCOs, and backfilling excavated areas with clean fill. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

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 RI/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.

Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further.

Alternative 2 (Rezoning Site to Commercial Use with Site Management) satisfies this criterion by restricting future use of the site for commercial purposes.

Alternative 3 (Restoration to pre-disposal conditions), is protective of human health since it will remove all the contaminated soil from the site. However, the remedy and any ensuing development may have an adverse impact on the adjacent tidal wetlands.

Alternative 4 (Soil Excavation to Achieve Residential Use SCOs) is protective of human health since it will remove all soil from the site that exceeds residential use criteria. This satisfies the protection of the environment criterion by removing most of the contamination, but not all of it. It is protective of the environment to a lesser degree than Alternative 3.

Alternative 5 (Soil Excavation to Achieve Restricted Residential SCOs with Site Management) is protective of human health and the environment, by removing surface soil contamination and capping subsurface contamination with clean soil after installation of a demarcation layer to identify areas where residual contamination exceeds Restricted Residential SCOs. This alternative is considered less protective of the environment than Alternative 3 or Alternative 4.

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.

No remediation is required for Alternative 2 to comply with SCGs. All that is required is that the Town of Oyster Bay be willing to change zoning regulations for the tax parcels comprising the site. The site has historically been used for commercial purposes, and it may not be unreasonable to change the current zoning from residential to commercial. Alternative 2 will not satisfy this criterion without a zoning change.

Alternatives 3, 4 and 5 all comply with SCGs through removal of contamination. Alternative 3 removes all contamination and therefore complies with unrestricted use SCOs. Alternative 4 removes most of the contamination and complies with residential use SCOs. Alternative 5 complies with restricted residential use SCOs through removal of contamination in the top two feet and construction of a limited cover system.

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 best accomplished by those alternatives involving removal of contamination (Alternatives 3, 4 and 5). Since Alternative 3 removes all soil contamination above standards, it has the greatest long-term effectiveness and permanence. Alternatives 4 and 5 which remove approximately 30% and 70% less soil and thus less of the contamination, respectively, satisfy this criterion to a lesser degree or with lower certainty.

Alternative 2 satisfies this criterion to a still lesser degree by leaving all contamination in place and relying on a land use restriction to achieve compliance.

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 3 removes all soil contamination above unrestricted use SCO's, and best reduces the toxicity, mobility and volume of contamination at the site. Alternatives 4 and 5 which remove approximately 30% and 70% less soil and thus less of the contamination, respectively, satisfy this criterion to a lesser degree or with lower certainty.

Alternative 2 does nothing to reduce the toxicity, mobility or volume of contamination at the site.

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.

Alternative 2 is purely an administrative remedy, and as such, has no short-term impacts upon the community or environment.

Alternatives 3, 4 and 5 all involve removal of contaminated soil which requires operation of heavy construction equipment, trucking of wastes off-site, clean fill on-site, jobsite noise, possible odors and potential detrimental

impacts to the on-site ecosystem. These impacts can be managed with engineering controls. Alternative 3 requires the most soil removal, and will result on highest level of truck traffic and jobsite noise. Under this alternative, the dense coastal vegetation will be removed across the site prior to soil removal, resulting in substantial impact to the on-site ecosystem.

Alternative 4 requires about 30% less soil removal than Alternative 3, and the attendant time and truck traffic should be similarly reduced. As soil excavation is expected to impact 60% - 70% of the site surface, disruption to the ecosystem will be only slightly less severe than with Alternative 3.

Alternative 5 includes soil removal in select areas exceeding restricted residential use SCOs within the top two feet of the site. Removal is expected to occur on only 20%-30% of the site, resulting in less impact to the ecosystem.

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.

Alternative 2 is easily implementable as it is a purely administrative remedy, , provided the municipality concurs and takes the necessary administrative action. However, the municipality has indicated that it is not contemplating rezoning the site for commercial use.

Alternatives 3, 4 and 5 are all readily implementable, and can be accomplished using standard construction techniques. They are straight soil removal projects, differing mostly in the amount of soil being excavated. As such, Alternative 5 removes the least amount of soil and should be more easily implementable than Alternative 3 or Alternative 4. The deeper soil removal expected in Alternatives 3 and 4 may be hindered by the shallow on-site groundwater and influences of the tidal estuary, possibly preventing achievement of RAOs.

Alternative 5 additionally requires the local municipality to rezone the site to prohibit single-family residential housing. The land is currently privately held which may complicate the rezoning process. It is reasonably foreseeable that the municipality may concur with this alternative if the site can be repurposed as a waterfront park. The town has indicated that it will not contemplate multi-family housing on the site.

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 is not addressed other than by institutional controls.

With its large volume of soil to be handled, Alternative 3 has the highest present worth cost, but the site would be restored to unrestricted use conditions. The cost to implement Alternative 3 may exceed the value of the property.

Alternative 4 achieves a land use consistent with current zoning, though the cost to implement it may exceed the

value of the property. Efforts to restore the on-site ecosystem may be counter-productive if the site was to be developed.

Alternative 5 achieves a reasonable degree of public health and environmental protection with the lowest present worth cost. It is by far the most cost effective of the soil removal alternatives.

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.

The anticipated future use of the site is single-family residential. Due to the fact that the majority of the site lies in the 100-year flood plain, it will require substantial investment to become fit for development. It is not the Department's intention to improve the property for future development, only to remediate the contamination to the extent feasible.

Alternative 2 restricts the site to commercial purposes, which does not fit well with the surrounding residential land use and is in conflict with current zoning.

Alternative 3 restores the site to pre-release conditions, but at significant cost both monetarily and environmentally. The destruction of habitat only to then restore it is undesirable.

Alternative 4 similarly destroys much of the existing habitat, only to require restoration. It is the only acceptable alternative when considering current zoning.

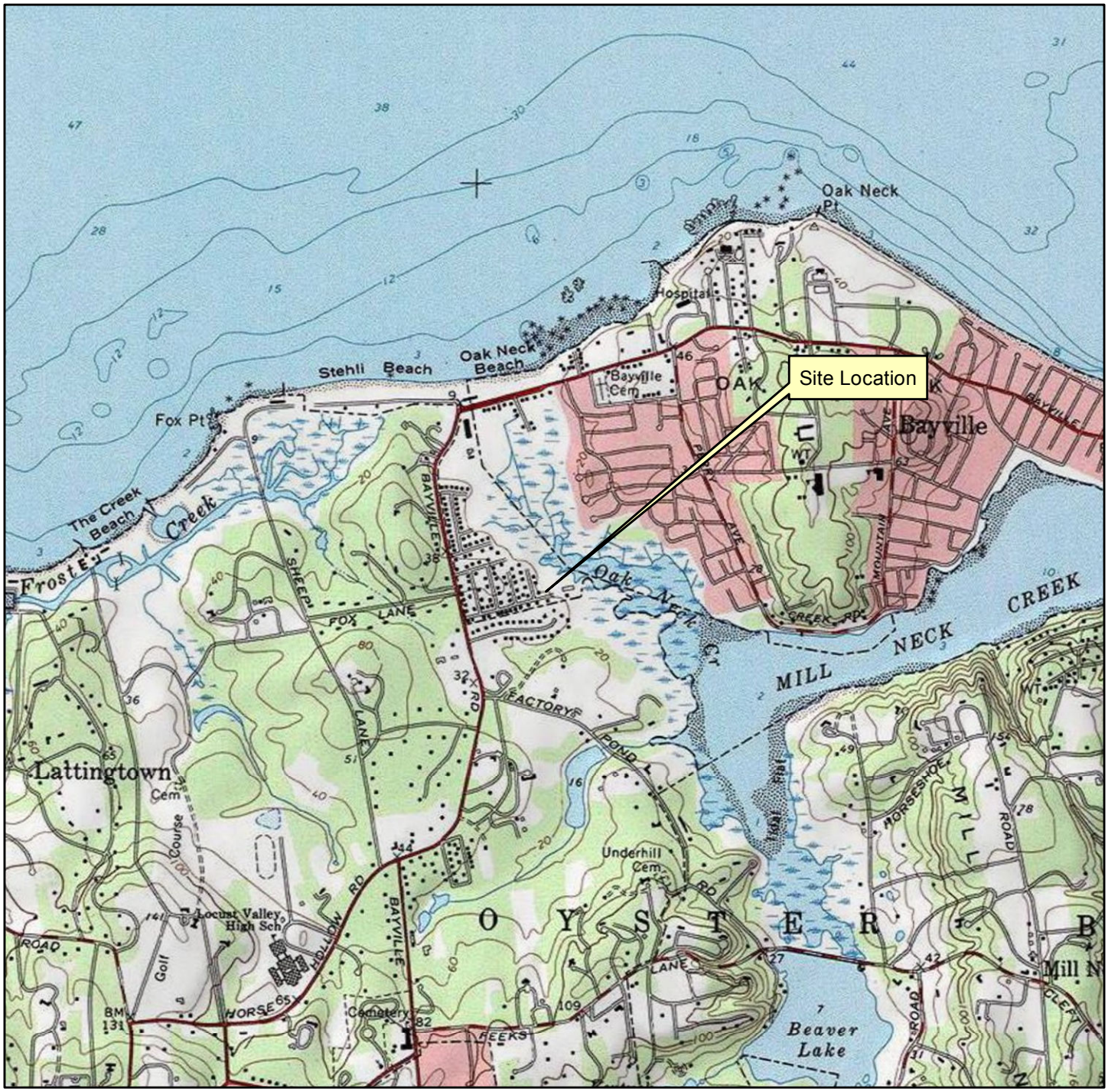
Although Alternative 5 does not conform with current zoning, though the site is well suited for use as a waterfront park. With the select removal of contaminated soil, restoration of the coastal vegetation and rezoning, the site could cost-effectively be repurposed as parkland.

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.

Alternative 4 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

Figures



USGS Quad ID: 40073-H5
Quad Name: Bayville, New York
Revision Date: 1967
Publish Date: 1968
Photorevised: 1975

Figure 1
Site Location
Former Mill Neck Marina Site
Hernan Avenue
Locust Valley (Oyster Bay), New York
HRP # NEW9626P2
Scale 1"=2,000'

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Path: S:\Data\NNEWEN - NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\MILL NECK MARINA, HERNAN AVEUNE, OYSTER BAY, NY\NEW9626P2\GIS\Site Location.mxd

Mill Neck Marina (Class 2 Site)

Foot of Hernan Avenue
Locust Valley, NY 11560
Town of Oyster Bay, Nassau County

Site Map

Figure 1a
02/19/14
RKC

LEGEND

– SEDIMENT SAMPLE

– MONITORING WELL

– SOIL SAMPLE / GRAB GROUNDWATER SAMPLE

INFERRED GROUNDWATE CONTOUR LINE (FEET)

Groundwater flow direction

1" = 60'

60 40 20 0 30 60 120

APPROXIMATE SCALE IN FEET

N

HRP–SS–1
HRP–SS–2
HRP–SS–3
HRP–SS–4
HRP–SS–5
HRP–SS–6
HRP–SS–7
HRP–SS–8
HRP–SS–9
HRP–SS–10
HRP–SS–11

HRP–SB–1
HRP–SB–2
HRP–SB–3
HRP–SB–4
HRP–SB–5
HRP–SB–6
HRP–SB–7
HRP–SB–8
HRP–SB–9
HRP–SB–10
HRP–SB–11
HRP–SB–12
HRP–SB–13
HRP–SB–14
HRP–SB–15
HRP–SB–16
HRP–SB–17
HRP–SB–18
HRP–SB–19
HRP–SB–20
HRP–SB–21
HRP–SB–22
HRP–SB–23
HRP–SB–24
HRP–SB–25

HRP–MW–1 4.21
HRP–MW–2 7.78
HRP–MW–3 7.08
HRP–MW–4 10.72

4'
5'
6'
7'
8'
9'
10'

MEADOW ST

BAYVIEW PL

HERNAN AVE

Figure 2
Groundwater Contours and Sample Locations

MILL NECK February 7, 2012
MARINA SITE
HERNAN AVE.
LOCUST VALLEY, NY
HRP# NEW9626.P2
SCALE: 1" = 60'

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LEGEND

- –SEDIMENT SAMPLE
- –MONITORING WELL
- –SOIL SAMPLE/ GROUNDWATER SAMPLE
- –SAMPLE EXCEEDS UNRESTRICTED OBJECTIVE
- –HISTORICAL BUILDINGS

NOTES:
1. N=INDICATES SPIKE SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS.
2. EXCEEDANCES ARE IN mg/kg.
3. SOIL SAMPLES WERE SAMPLED IN OCTOBER 18–20, 2011 AND JULY 18 AND 28, 2012.

1" = 60'

60 40 20 0 30 60 120

APPROXIMATE SCALE IN FEET

N

MEADOW ST

BAYVIEW PL

HERNAN AVE

A B C D E 1 2 3 4 5

HRP-SS-1 HRP-SS-2 HRP-SS-3 HRP-SS-4 HRP-SS-5 HRP-SS-6 HRP-SS-7 HRP-SS-8 HRP-SS-9 HRP-SS-10 HRP-SS-11

HRP-SB-1 HRP-SB-2 HRP-SB-3 HRP-SB-4 HRP-SB-5 HRP-SB-6 HRP-SB-7 HRP-SB-8 HRP-SB-9 HRP-SB-10 HRP-SB-11 HRP-SB-12 HRP-SB-13 HRP-SB-14 HRP-SB-15 HRP-SB-16 HRP-SB-17 HRP-SB-18 HRP-SB-19 HRP-SB-20 HRP-SB-21 HRP-SB-22 HRP-SB-23 HRP-SB-24 HRP-SB-25

HRP-MW-1 HRP-MW-2 HRP-MW-3 HRP-MW-4

HRP-SB-11	
10/19/2011	(0-0.5)
CHROMIUM	9.75
COPPER	91.8

HRP-SB-9	
10/19/2011	(0-0.5)
CHROMIUM	12.1

HRP-SB-22	
7/18/2012	(0-2")
CHROMIUM	15.5
COPPER	61.7
LEAD	125
MERCURY	0.376

HRP-SB-8	
10/18/2011	(0-0.5)
ARSENIC	20.7
CHROMIUM	11.6
COPPER	147
LEAD	527
ZINC	124

HRP-SB-5	
10/18/2011	(0-0.5)
CHROMIUM	4.87
COPPER	114
MERCURY	0.21

HRP-SB-25	
7/18/2012	(0-2")
CHROMIUM	6.68
LEAD	114
MERCURY	0.326

HRP-SB-6	
10/18/2011	(0-0.5)
CHROMIUM	12.6

HRP-SB-21	
7/18/2012	(0-2")
CHROMIUM	5.94
COPPER	121

HRP-SB-4	
10/18/2011	(0-0.5)
CHROMIUM	7.18

HRP-SB-3	
10/18/2011	(0-0.5)
CHROMIUM	13.7
COPPER	818
LEAD	160
NICKLE	31.6
ZINC	208

HRP-SB-7	
10/18/2011	(0-0.5)
CHROMIUM	17.9
COPPER	195
LEAD	114

HRP-SB-18	
7/27/2012	(0-2")
CHROMIUM	10.5
COPPER	626
LEAD	152
MERCURY	0.421
ARSENIC	23.4

HRP-SB-14	
10/20/2011	(0-0.5)
CHROMIUM	7

HRP-SB-10	
10/19/2011	(0-0.5)
CHROMIUM	9.9
COPPER	142

HRP-SB-2	
10/18/2011	(0-0.5)
CHROMIUM	5.8
COPPER	56.1
LEAD	913
MERCURY	0.55

HRP-SB-19	
7/18/2012	(0-2")
CHROMIUM	10.2
COPPER	71.4
LEAD	389
MERCURY	1.34

HRP-SB-1	
10/18/2011	(0-0.5)
ARSENIC	13.3
CADMIUM	3.3
CHROMIUM	9.68
COPPER	134
LEAD	265
ZINC	837
MERCURY	3.3

HRP-SB-15	
10/20/2011	(0-0.5)
CHROMIUM	12.3
COPPER	131 N
LEAD	181 N
ZINC	180
MERCURY	0.801 D/0.72

HRP-SB-16	
10/20/2011	(0-0.5)
CHROMIUM	6.19
COPPER	120 N
LEAD	130 N
ZINC	125

HRP-SB-20	
7/18/2012	(0-2")
CHROMIUM	14.9
COPPER	240
LEAD	120
MERCURY	0.85

HRP-SB-17	
10/20/2011	(0-0.5)
CHROMIUM	3.39

HRP-SB-23	
7/18/2012	(0-2")
CHROMIUM	11.7
COPPER	59.4
LEAD	91.5

HRP-SB-12	
10/19/2011	(0-0.5)
CHROMIUM	6.85
COPPER	60.8 N

HRP-SB-13	
10/19/2011	(0-0.5)
CHROMIUM	7.78
LEAD	67 N

HRP-SB-24	
7/18/2012	(0-2")
CHROMIUM	11.9
COPPER	291
LEAD	1130
MERCURY	0.231

Figure 3

SURFACE SOIL SAMPLES ANALYZED FOR METALS
MILL NECK MARINA SITE
HERNAN AVE.
LOCUST VALLEY, NY
HRP# NEW9626.P2
SCALE: 1" = 60'

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LEGEND

- –SEDIMENT SAMPLE
- –MONITORING WELL
- –SOIL SAMPLE/ GROUNDWATER SAMPLE
- –VAPOR SAMPLE
- –SAMPLE EXCEEDS UNRESTRICTED OBJECTIVE
- –HISTORICAL BUILDINGS

NOTES:
1. D = REPORTED VALUE IS FROM SECONDARY ANALYSIS WITH A DILUTION FACTOR
N = INDICATES SPIKE SAMPLE RECOVERY IS NOT WITH IN CONTROL LIMITS
2. EXCEEDANCES ARE IN mg/kg
3. SOIL SAMPLES WERE SAMPLED ON OCT. 18–20, 2011 AND JULY 18 AND 27, 2012

1" = 60'

60 40 20 0 30 60 120

APPROXIMATE SCALE IN FEET

North

HRP-SB-11	
10/19/2011	(2.5-3)
ARSENIC	24.4
CHROMIUM, TOTAL	9.71
COPPER	329 N
LEAD	148 N
ZINC	111
MERCURY	3.12 D

HRP-SB-22		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	16.8	6.75
LEAD	153	
MERCURY	0.292	

HRP-SB-8	
10/18/2011	(4.5-5)
CHROMIUM, TOTAL	6.69

HRP-SB-5	
10/18/2011	(2-2.5)
CHROMIUM, TOTAL	8.65

HRP-SB-25		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	10.4	7.55

HRP-SB-6	
10/18/2011	(1.5-2)
CHROMIUM, TOTAL	12.7
COPPER	71.3
LEAD	71.9
MERCURY	1.13*D

HRP-SB-21		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	17.9	13.4
COPPER	114	
LEAD	101	
MERCURY	1.21	0.284

HRP-SB-4	
10/18/2011	(2-2.5)
CHROMIUM, TOTAL	4.81

HRP-SB-3	
10/18/2011	(2-2.5)
CHROMIUM, TOTAL	6.95
MERCURY	0.184*

HRP-SB-18		
7/27/2012	(3-4)	(4-5)
CHROMIUM, TOTAL	13.4	8.26
COPPER	52.5	81.1
LEAD	144	

HRP-SB-10	
10/19/2011	(2.5-3)
CHROMIUM, TOTAL	7.3
COPPER	180
LEAD	66.4
ZINC	118
MERCURY	4.53*D

HRP-SB-2		
10/18/2011	(1-1.5)	(3-3.5)
CHROMIUM, TOTAL	5.51	4.32

HRP-SB-19		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	7.75	7.38

HRP-SB-15	
10/20/2011	(2.5-3)
CHROMIUM, TOTAL	5.51
LEAD	92.9 N

HRP-SB-24		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	3.52	12.6
MERCURY	0.5	

HRP-SB-16	
	(2.5-3)
CHROMIUM, TOTAL	14.6
LEAD	430 N
MERCURY	0.494

HRP-SB-23		
7/18/2012	(4-5)	(5-6)
CHROMIUM, TOTAL	6.3	8.07
COPPER	55.3	74.3
LEAD		77.7
MERCURY	0.508	2.9

HRP-SB-13	
10/19/2011	(2-2.5)
CHROMIUM, TOTAL	3.67
MERCURY	0.482

HRP-SB-20		
7/18/2012	(3-4)	(4-5)
CHROMIUM, TOTAL	7.54	13.4
MERCURY		0.188

HRP-SB-12	
10/19/2011	(2.5-3)
CHROMIUM, TOTAL	6.56
COPPER	120 N
LEAD	127 N
MERCURY	3.52 D

HRP-SB-17	
10/20/2011	(2-2.5)
CHROMIUM, TOTAL	20.4
MERCURY	0.507

HRP-SS-1, HRP-SS-2, HRP-SS-3, HRP-SS-4, HRP-SS-5, HRP-SS-6, HRP-SS-7, HRP-SS-8, HRP-SS-9, HRP-SS-10, HRP-SS-11

HRP-SB-8, HRP-SB-5, HRP-SB-25, HRP-SB-6, HRP-SB-4, HRP-SB-3, HRP-SB-2, HRP-SB-7, HRP-SB-1, HRP-SB-24, HRP-SB-13, HRP-SB-12, HRP-SB-22, HRP-SB-11, HRP-SB-10, HRP-SB-21, HRP-SB-9, HRP-SB-18, HRP-SB-14, HRP-SB-19, HRP-SB-15, HRP-SB-16, HRP-SB-20, HRP-SB-17, HRP-SB-23, HRP-SB-12, HRP-SB-24, HRP-SB-13

HRP-MW-1, HRP-MW-2, HRP-MW-3, HRP-MW-4

MEADOW ST

BAYVIEW PL

HERNAN AVE

A B C D E

1 2 3 4 5

Figure 4

SUBSURFACE SOIL SAMPLES ANALYZED FOR METALS
MILL NECK MARINA SITE
HERNAN AVE.
LOCUST VALLEY, NY
HRP# NEW9626.P2
SCALE: 1" = 60'

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LEGEND

- –SEDIMENT SAMPLE
- –MONITORING WELL
- –SOIL SAMPLE/ GROUNDWATER SAMPLE
- –HISTORICAL BUILDINGS

NOTE:
1. REPLACEMENT MONITORING WELLS HRP–MW–1 THROUGH HRP–MW–4 INSTALLED DUE TO THE FACT THAT FORMERLY INSTALLED MONITORING WELLS NOT ABLE TO BE LOCATED

1" = 60'

60 40 20 0 30 60 120

APPROXIMATE SCALE IN FEET

HRP–SS–1
HRP–SS–2
HRP–SS–3
HRP–SS–4
HRP–SS–5
HRP–SS–6
HRP–SS–7
HRP–SS–8
HRP–SS–9
HRP–SS–10
HRP–SS–11
HRP–SB–1
HRP–SB–2
HRP–SB–3
HRP–SB–4
HRP–SB–5
HRP–SB–6
HRP–SB–7
HRP–SB–8
HRP–SB–9
HRP–SB–10
HRP–SB–11
HRP–SB–12
HRP–SB–13
HRP–SB–14
HRP–SB–15
HRP–SB–16
HRP–SB–17
HRP–SB–18
HRP–SB–19
HRP–SB–20
HRP–SB–21
HRP–SB–22
HRP–SB–23
HRP–SB–24
HRP–SB–25
HRP–MW–1
HRP–MW–2
HRP–MW–3
HRP–MW–4

ASSUMED BOAT MAINTENANCE AREA

MEADOW ST
BAYVIEW PL
HERNAN AVE

A B C D E

1 2 3 4 5

5 3 3 3 2.5 2 3.5 3.5 3 6 3.5

Legend

- Proposed Excavation Zones - Surface and Shallow Subsurface Soils Exceed Residential SCOs.
- Proposed Excavation Zones - Subsurface Soils Exceed Residential SCOs. (> 2ft below surface)
- 5 – Depth of contamination exceeding Residential SCOs (feet)

North

MILL NECK
MARINA SITE
HERNAN AVE.
LOCUST VALLEY, NY
HRP# NEW9626.P2
SCALE: 1" = 60'

Figure 5-
Proposed Excavation Areas
(Soils Exceeding Residential SCOs)

2/19/14
RKC

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