PROPOSED RECORD OF DECISION AMENDMENT
HARBOR AT HASTINGS SITE
OPERABLE UNIT 1 – ON-SITE CONTAMINATION

Village of Hasting on Hudson / Westchester County / Site No. 360022 January 2012

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

SECTION 1: PURPOSE AND SUMMARY OF THE PROPOSED RECORD OF DECISION AMENDMENT

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing an amendment to the Record of Decision (ROD) 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 modification to the remedy identified by this Proposed ROD Amendment. The disposal of hazardous wastes at this site, as more fully described in the original ROD and Section 6 of this document, has contaminated various environmental media. The proposed amendment is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This amendment identifies the new information which has lead to this proposed amendment and discusses the reasons for the preferred remedy.

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.

On March 18, 2004, the New York State Department of Environmental Conservation (Department) signed a Record of Decision (ROD) which selected a remedy to cleanup the Harbor at Hastings Site Operable Unit No. 1 (OU1), the on-site soils area. The ROD outlined a set of remedial actions for the site that included partial excavation, containment, groundwater management, and installation of a soil cover. Following the issuance of the ROD, design investigations for OU1 were completed by Atlantic Richfield Company to resolve investigation uncertainties and provide a basis for the remedial design.

The remedial design for OU1 identified constructability issues with the design of the proposed remedy and the need to integrate the OU1 and OU2 (off-site impacts to the Hudson River) remedies. The issues and concerns are related to the alignment of the sheeting at the existing shoreline, the geotechnical stability of the shoreline, and significant new information regarding the presence and extent of dense non-aqueous phase liquid (DNAPL) beneath the Northwest Corner of the site. In addition, the Department issued shoreline protection guidance in 2007 which identified a preference for approaches other than the installation of vertical sheet pile bulkheads, where feasible and appropriate.

The Department is proposing to amend the ROD for OU1 of the Harbor at Hastings Site. The proposed changes include:

- Modifying the alignment of the sheet pile wall offshore of the northwest corner of the site to extend

into the Hudson River in conjunction with the proposed OU2 remedy, to provide containment and enable the recovery of PCB DNAPL;

- Allowing installation of either a sheet pile wall or construction of a sloped shoreline cover system along the shoreline in areas that do not require containment of PCB DNAPL;

- Containing the remaining on-site contamination in the Northwest Area using a shoreline barrier in conjunction with a groundwater control and treatment system, a soil cover system, and monitoring to address groundwater and storm water management;

- Elimination of a slurry wall from the Northwest Corner containment area;

- Construction and operation of a recovery system for PCB DNAPL; and

- Excavating and sampling outfalls and associated pipe bedding from Building 52.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on this proposed amendment. This is an opportunity for public participation in the remedy selection process. The information here is a summary of what can be found in greater detail in reports that have been placed in the Administrative Record for the site. The public is encouraged to review the reports and documents, which are available at the following repositories:

Hastings Public Library
7 Maple Avenue
Hastings-on-Hudson, NY 10706
Mon - Wed: 9:30 - 8:30, Thur: 9:30 - 6:00,
Sat: 9:30 - 5:00, Sun 1:00 - 5:00
Phone: (914) 478-3307

NYSDEC Region 3 Office
21 South Putt Corners Road
New Paltz, NY 12561-1696
Attention: Michael Knipfing
Monday - Friday: 8:30 - 4:30
Phone: (845) 256-3154

Village Clerk
Municipal Offices
7 Maple Avenue
Hastings on Hudson, NY 10706
Mon - Fri: 8:30 - 4:00
Phone (914) 478-3400

A public comment period has been set from January 11, 2012 to February 10, 2011to provide an opportunity for you to comment on these proposed changes. A public meeting is scheduled for January 26, 2011 at James Harmon Community Center beginning at 7:00 PM.

At the meeting, a description of the original ROD and the circumstances that have led to proposed changes in the ROD will be presented. After the presentation, a question and answer period will be held, during which you can submit verbal or written comments on the proposal. We encourage you to review this summary and attend the meeting.

Written comments may also be sent to:

William Ports, Project Manager
NYS Dept. of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
(518) 402-9662

Comments will be summarized and responses provided in a Responsiveness Summary.

The Department may modify the proposed amendment based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed amendment identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD) Amendment. The ROD Amendment 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 site is located on approximately 28 acres along the Hastings-on-Hudson waterfront, separated from the village commercial district by railroad tracks. The site is bounded on the north and west by the Hudson River and to the south by the Tappan Terminal site. A former marina borders the site to the north.

Site Features: Most of the site is covered by pavement or concrete building slabs. One building remains at the site (Building 52). The shoreline consists of areas of loosely-placed rip rap and concrete rubble in the north and decaying wooden bulkheads, docks and piers in the central area. Two former boat slips are present along the waterfront, both of which have filled in to a shallow depth with naturally-deposited sediment. The shoreline south of the South Boat Slip consists of modern steel sheeting.

Current Zoning and Uses: The site is zoned general industrial, and is the subject of planning studies by the Village of Hastings-on-Hudson. The current owner, ARCO Environmental Remediation LLC,

leases a portion of the site for the storage of new automobiles. Several temporary trailers are in use for security and remedial activities.

Historical Uses: The site is the former Anaconda Wire and Cable Company, which ceased operations in 1974. Wire manufacturing operations caused the release of PCBs and metals to site soil, groundwater and sediments. A site investigation was performed in 1986-87 in connection with a potential real estate development. This investigation led to the discovery of high levels of PCBs beneath the northwest corner of the site.

Operable Units: The site is divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit 1 (OU1) is the on-site soils area west of the railroad tracks. OU2 is the off-site impacts to the Hudson River.

Site Geology and Hydrogeology: The landmass of the property was constructed by placement of fill material into the Hudson River until the early 1900s. This fill material is approximately 10-20 feet thick along the railroad tracks, and 20-40 feet thick along the river. Beneath the fill layer lies the Marine Silt, which is a structurally weak clayey silt material that is approximately 40 feet thick along the shoreline. Beneath the Marine Silt lies the Basal Sand unit, a very dense sand and gravel material, into which all structural piles for site buildings were placed. Groundwater is approximately 2 to 8 feet below ground surface in the fill material, and is influenced by tidal variation. Groundwater in the Basal Sand unit is confined by the Marine Silt unit and is present in an artesian condition. The shoreline shows signs of historical erosion due to storm events and wave action. Low-lying parts of the site have been flooded during larger storms.

Operable Unit (OU) Number 01 is the subject of this document.

A Record of Decision was issued previously for OU 01 in March 2004.

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 restricted residential use as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for restricted use of the site.

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 Department and ARCO entered into Consent Orders in 1995 and March 2005. These Orders obligate ARCO to implement a RI/FS and RD/RA for OU1.

The PRPs for the site declined to implement a remedial program when requested by the Department for OU2. 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 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.

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 the March 2004 ROD for OU1, which is included as 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
- soil
- sediment
- surface 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 March 2004 ROD for OU1 which is included as Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

polychlorinated biphenyls (PCB)	lead
copper	zinc
beryllium	

As illustrated in the original 2004 ROD for OU1 of this site, the contaminant(s) of concern exceed the applicable SCGs for:

soil
groundwater

Since the issuance of the Feasibility Study (FS) and ROD, significant new information about the site has been obtained. The most significant finding is the presence of separate phase PCB material, including liquid PCBs, beneath and off-shore of the Northwest Corner of the site, and along the alignment of the sheet pile wall specified in the original 2004 OU1 ROD. The extent of separate phase PCB is shown in Figure 3.

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.*

For OU-1: The site is completely fenced, which restricts public access. Some contaminated soils remain at the site below concrete and/or clean fill; therefore, people will not come in contact with contaminated soil unless they dig below the surface materials. Contaminated groundwater at the site is not used for drinking or other purposes as the site is served by a public water supply that obtains water from a different source not affected by this contamination. For OU-2: People using the river for recreational purposes such as swimming and boating may come into direct contact with site related contaminants.

The river is not a source of potable water in this area. People may come in contact with contaminants present in shallow sediment while entering and exiting the river. Fish in the river are likely to contain the same contaminants that are present in surface water and sediment; therefore, people who consume fish from the river are likely to be consuming these contaminants as well. For specific advisories on fish consumption in this area please refer to NYSDOH's Health Advise on Eating Sportfish and Game. http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/docs/advisory_booklet_2011.pdf

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.

The primary contaminants of concern for the site are PCBs (Aroclors 1260 and 1262) and metals, including copper, lead, and zinc from historic wire manufacturing operations. For OU1, soil and groundwater beneath the site are contaminated with PCBs and metals, including beryllium, above standards, criteria and guidance values. For OU2, PCBs and metals have also contaminated Hudson River surface water and sediments, and site-related PCBs have been detected in resident fish.

The site presents a significant environmental threat due to ongoing releases from contaminated soils and/or sediments to groundwater, surface water and the Hudson River ecosystem. Metals in sediment pose a toxicity threat to benthic organisms, and PCBs in sediment pose a toxicity and bioaccumulation threat to fish and wildlife.

SECTION 7: SUMMARY OF ORIGINAL REMEDY AND PROPOSED AMENDMENT

7.1 Original Remedy

In the March 2004 ROD for OU1 the NYSDEC selected partial excavation, long-term containment, and deed restrictions. The components of the original remedy were as follows:

- Excavation and off-site disposal of PCB-contaminated soil to a maximum depth of 9 feet in the Northwest Corner and along the Northern Shoreline of the site;

- Containment of remaining deep contamination in the Northwest Corner and Northern Shoreline areas using a slurry wall, sealed sheet pile bulkhead, and an impermeable cap;

- Outside of the Northwest Corner and Northern Shoreline containment areas, excavation, to a maximum depth of 12 feet, of all PCB-contaminated soil. For the few areas where PCB contamination exceeds 12 feet, soil would either be excavated by alternative methods, or contained within a watertight sheet pile structure and capped;

- Excavation of lead "hot spots" in shallow soils, corresponding to lead levels between 2,160 ppm and 43,200 ppm;

- Installation of a watertight steel sheet pile bulkhead along the site shoreline;

- Installation of a 2-foot thick barrier system, consisting of a demarcation layer and soil cover over areas not covered by an impermeable cap;

- Institutional controls to prevent exposure to contaminated soils and groundwater beneath the site, and to preserve the integrity of the cover system and containment cells;

- Annual certification that the institutional controls are in place and effective; and

- Long term monitoring.

7.2 New Information

Since the issuance of the FS and ROD, significant new information about the site has been obtained. The most significant finding is the presence of liquid PCB material beneath and off-shore of the Northwest Corner of the site, and along the alignment of the sheet pile wall specified in the original 2004 OU1 ROD. Sheet piles cannot be driven through this material without dragging down or creating a conduit for migration of PCBs into the underlying aquifer. In addition, environmental and geotechnical investigations conducted for OU2 led to a better understanding of the relationship between the OU2 alternatives under consideration and the remedy for OU1. Geotechnical evaluations conducted for OU2 determined that the full extent of contamination beneath the river could not be removed without de-stabilizing the Northwest Corner shoreline and causing a collapse. Because PCB DNAPL was also found beneath the river in this area, the original alignment of the sheet pile wall would not have fully contained this material. Also, pilot tests conducted on both vertical and angled wells have determined that recovery of PCB DNAPL is feasible. An evaluation of groundwater treatment technologies has determined that the low level of PCBs dissolved in groundwater can be feasibly removed by a system of adsorptive panels or canisters installed in the containment wall. With new options for removing PCB DNAPL and treating dissolved contamination, certain elements of the fully-enclosed containment system, the upgradient slurry wall and impermeable membrane, are no longer needed. Therefore, based on the new information submitted, and the need to integrate the proposed remedy for OU2, the Department is proposing to amend the Record of Decision (ROD) for Operable Unit No. 1 at the Harbor at Hastings Site.

7.3 Proposed Changes

The proposed changes include:

- The alignment of the sheet pile wall, which previously would have followed the existing shoreline, will extend into the Hudson River to provide containment and allow for the recovery of PCB DNAPL located beneath the sediment in this area. The containment element for the Northwest On-Site Contamination (formerly identified as the Northwest Corner and Northern Shoreline Area) will be modified to include recovery of DNAPL; containment of DNAPL by a sheet pile wall with sealed

joints installed along the new shoreline alignment; and treatment of groundwater to remove PCBs.

- The proposed change to the shoreline protection component of the remedy is the installation of either a steel bulkhead or an engineered slope along the shoreline in areas which do not require containment of separate phase PCB material. This change allows the flexibility of using the engineered slope instead of the steel bulkhead in areas that do not require PCB containment. In addition to protecting the shoreline, the engineered slope will be designed to prevent the migration of contaminated soil particles into the Hudson River.

- Construction and operation of a recovery system for PCB DNAPL, consisting of a series of vertical and angled wells and an active pumping system to remove fluid PCB material as it collects.

- The outfalls and associated pipe bedding from Building 52 will be excavated, sampled and removed or decommissioned as approved by the Department.

SECTION 8: EVALUATION OF PROPOSED CHANGES

8.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD. The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable the contamination present within the soils and fill on site, and thereby eliminate the significant threat posed by the presence of hazardous wastes at the site.

- Eliminate the potential for direct human or animal contact with the contaminated soils or groundwater on site.

- Eliminate the threat to surface waters and sediments by eliminating surface run-off and subsurface releases of fill from the site.

- Eliminate, to the extent practicable, the migration of PCBs, metals and other contaminants into the Hudson River by surface and subsurface erosion of contaminated soils, transport of contaminated groundwater, and migration of PCBs in both elastic material and petroleum phases.

- Prevent, to the extent possible, migration of contaminants at the site to groundwater and surface water.

Further, the remediation goals for the site include attaining to the extent practicable:

- Provide for attainment of SCGs for groundwater quality at the limits of the site.

8.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a

brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the original Feasibility Study.

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

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

The proposed ROD amendment remedy will be more protective of human health and the environment when compared to the original remedy. The revised sheet pile wall alignment in the Northwest Corner provides better overall protection of human health and the environment than the original alignment by more effectively containing PCB DNAPL; enhancing PCB DNAPL recovery options; and preventing PCB contaminated groundwater from entering the Hudson River. It provides better containment of the PCB source area when compared to the original remedy based on the new information regarding the nature and extent of PCB DNAPL. Groundwater treatment will be equally protective of the environment and will be monitored.

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

The most important SCGs of concern are the ambient groundwater and surface water standards (6NYCRR Parts 700-705) and the 6NYCRR Part 375 Soil Cleanup Objectives (SCOs) for PCBs. The installation of the sheet pile wall creates a barrier to the groundwater flow to the river and allows collection and treatment of groundwater and DNAPL in the northwest extension area of the site. The engineered sloped shoreline will also prevent the discharge of particles in the historic fill to the Hudson River, which will be equivalent to the original remedy in the areas of the site where separate phase PCB material is not a concern. The provision for an engineered sloped shoreline is also consistent with recent Department shoreline protection guidance, issued in 2007, which identifies a hierarchy of approaches to be used for shore line stabilizations, with preference given to biotechnical approaches over vertical sheet pile bulkheads, where feasible and appropriate. The removal of the former outfalls and pipe bedding from Building 52 will remove additional PCB source areas which may contribute to exceedances of the ambient groundwater standards. The proposed amendment will fully contain the PCB DNAPL which provides the best option for source control of the PCB DNAPL.

The revised sheet pile alignment will need to address the SCGs found in 6NYCRR Part 608 and Environmental Conservation Law Article 15 due to the proposed filling into the Hudson River. This requirement will address the associated filling of approximately 0.88 acres of the Hudson River. Mitigation will be necessary for placement of fill in any river areas which raises the existing sediment grade. The filling activities will be mitigated through the creation of new wetlands areas or improvement of degraded wetlands.

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

3. Short-term 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.

The short-term impacts of vehicle traffic, contaminated material excavation and handling, and soil backfill will represent noise, dust and emission concerns which will need to be controlled with health and safety plans and engineering controls. The proposed changes represent a decrease in short term impacts due to the generation of less noise and disturbance to the community and the river due to a reduced length of sheet pile wall installation. The short term impacts due to the excavation volume, potential odors, truck traffic and project duration will be equivalent to the original remedy. However, routine procedures will be used to monitor and mitigate odor and dust resulting from the construction activities.

4. 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.

The revised sheet pile wall alignment will provide a higher degree of long-term effectiveness than the original location which would have passed through the PCB DNAPL and PCB material. The PCB DNAPL in the Northwest Corner Area will be contained, collected from the new land area created within the Hudson River, and properly disposed off-site.

Both the original remedy and the proposed change will require monitoring of the groundwater. The risk associated with the potential release of contaminated groundwater under the proposed alternative will be equivalent to the original alternative.

The time needed to achieve compliance with groundwater SCGs across the site is expected to be equivalent for the proposed amended remedy due to the depth of excavation of PCB contaminated soil.

5. 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.

The proposed amendment will create a barrier and remove PCB DNAPL for off-site disposal, which will provide a permanent reduction in volume. Similarly, PCBs dissolved in groundwater will be removed by a passive recovery system, avoiding the potential for discharge into the river. By comparison, the remedy selected in the 2004 ROD would have relied more heavily on containment, and may not have reduced the volume through treatment. New information indicates, the original remedy may have increased the potential mobility of PCB DNAPL contamination by driving the sheets through the DNAPL along the shoreline which could have created a pathway into uncontaminated zones. The proposed amendment will reduce the mobility of this contamination by creating a barrier beyond the known limits of contamination, and allowing further delineation and recovery in the Northwest Extension Area. The proposed amended remedy will therefore provide a greater reduction in mobility of PCBs than the original remedy.

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

The proposed amendment and original remedy pose different implementability challenges at this site. The proposed modification of the sheet pile wall alignment is more technically implementable in comparison to the original remedy because it will avoid the known area of PCB DNAPL and will not result in the potential destabilization of the shoreline during pre-clearing of the rip-rap at the shoreline. The modified alignment will also avoid creating or causing a pathway for PCB migration of the newly identified PCB DNAPL in the subsurface along the wall alignment into deeper uncontaminated zones. Administratively, the construction of the sheet pile wall further out into the Hudson River may be more difficult because it will require permits and approval from the United States Army Corps of Engineers and approval of a wetlands mitigation plan. Installation of groundwater treatment at the shoreline instead of construction of a slurry wall and impermeable cover is more readily implementable.

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 estimated present worth cost to carry out the amended remedy is $163,000,000, including annual costs for 30 years. The estimated present worth to complete the original remedy was $63,000,000 including annual costs for 30 years. The cost to construct the amended remedy is estimated to be $155,000,000 and the estimated average annual cost is $271,000 per year for 30 years.

The costs are significantly different between the original remedy and amended remedy because the new information obtained during the 50 percent design and subsequent work has been used to update the cost estimate from the original Feasibility Study. The major changes in cost include updated pricing, additional scope items identified during the 50 percent design process, an allowance for work associated with Building 52, a modified approach to shore stabilization, the DNAPL extraction system and the relocation of existing utilities.

Shore stabilization was included in the original OU-1 remedy cost; however, the costs for the new sheet pile wall which extends into the Hudson River (estimated to be approximately $36,000,000) are now included in the OU-2 cost estimate and therefore not included in the OU-1 amended remedy estimate.

This final criterion is considered a modifying criterion and is considered after evaluating those above. It is focused upon after public comments on the proposed ROD amendment have been received.

8. Community Acceptance. Concerns of the community regarding the proposed changes 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 final remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 9: PROPOSED CHANGES

The Department is proposing to amend the Record of Decision (ROD) for the Harbor at Hastings Site OU1.

The estimated present worth cost to carry out the amended OU1 remedy is $163,000,000. The estimated present worth to complete the original remedy was $63,000,000. The cost to construct the amended remedy is estimated to be $155,000,000 and the estimated average annual cost for 30 years is $271,000.

The elements of the proposed amended remedy listed below are identified as unchanged, modified or new when compared to the original 2004 ROD:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Green remediation principals 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 (modified)

2. At the Northwest Corner of the site and along the Northern Shoreline, excavation of surface soil (0-12 inches) containing greater than 1ppm PCB and subsurface soil containing greater than 10 ppm PCB to a maximum depth of 9 feet. Outside of the Northwest Corner and the Northern Shoreline areas, excavation of surface soil (0-12 inches) containing greater than 1ppm PCB and subsurface soil containing greater than 10 ppm PCB, to a maximum depth of 12 feet. (modified)

3. Outfalls and associated pipe bedding from Building 52 that are potential PCB source areas will be excavated, sampled and removed, or decommissioned as approved by the Department. (new)

4. Excavation of shallow soils from the southern portion of the site that are identified as "lead hotspots". These correspond to lead levels between 2,160 ppm and 43,200 ppm. (unchanged)

5. In conjunction with OU2, installation of a sheet pile wall within the Hudson River to provide containment and allow for the recovery of PCB DNAPL onshore and offshore of the northwest corner of the site. The location and alignment of the proposed sheet pile wall will be verified during the remedial design

to minimize filling into the Hudson River. The area behind the sheet pile wall will be filled with soil and/or lightweight aggregate as approved by the Department. The sheet pile wall will include sealed joints, installation of tie-rods, upland anchors, and cathodic protection. The wall system will also include groundwater filtration units to adsorb contaminants that may be present in groundwater discharging to the river. (new)

6. The shoreline south of the northwest area, will either be a steel bulkhead or construction of a sloped shoreline cover system. The sloped shoreline cover system will be designed and constructed such that no additional fill material will be placed into the Hudson River, and will require the removal of sediment or fill below the current sediment or water elevation for placement of a cover system. The sloped shoreline cover system will be designed with the following layers: an isolation layer of soil or geotextile designed to prevent the migration of contaminated soil particles into the Hudson River; an erosion protection layer; and a habitat/surface substrate layer. The habitat/surface substrate layer will be designed to restore aquatic, intertidal and stream bank habitats while taking into account erosional forces, such as waves and currents. (new)

7. Construction and operation of a recovery system for PCB DNAPL, consisting of a series of wells and an active pumping system to remove fluid PCB material as it collects. (new)

8. A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). However, pile-supported structures will not be permitted in any areas where PCB material is potentially present. Where the soil cover is required, it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential 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 with appropriate natural species. (modified)

9. Imposition of an institutional control in the form of an environmental easement for the controlled property, that will:

a. require 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. allow the use and development of the controlled property for restricted-residential, uses as defined by Part 375-1.8(g) which are consistent with the remedial elements, although land use is subject to local zoning laws;

c. restrict the use of groundwater and/or surface water as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH or Westchester County DOH;

d. prohibit agriculture or vegetable gardens on the controlled property with the exception of community gardens with the approval of the Department; and

e. require compliance with the Department approved Site Management Plan. (new)

10. A Site Management Plan will be 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 Easement discussed in Paragraph 9 above.

Engineering Controls: The soil cover discussed in Paragraph 8; groundwater treatment system; and PCB DNAPL recovery system.

This plan includes, but may not be limited to:

i. an Excavation and Sediment Management 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, groundwater and/or surface water use restrictions, which include a prohibition on pile supported structures over areas with PCB material;

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 engineering controls.

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

i. monitoring groundwater quality and elevation to assess the performance and effectiveness of the remedy;

ii. soil cover system inspection and maintenance as necessary to ensure its function is not impaired by erosion or activities at the site;

iii. shore protection system (sheet pile and sloped areas) will be periodically monitored for erosion, corrosion, damage or deterioration;

iv. shoreline elevation; and

v. a schedule of monitoring and frequency of submittals to the Department;

c. an Operation and Maintenance Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of for any mechanical or physical components of the remedy. The plan

includes, but is not limited to:

i. compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;

ii. maintaining site access controls and Department notification; and

iii. providing the Department access to the site and O&M records (modified)

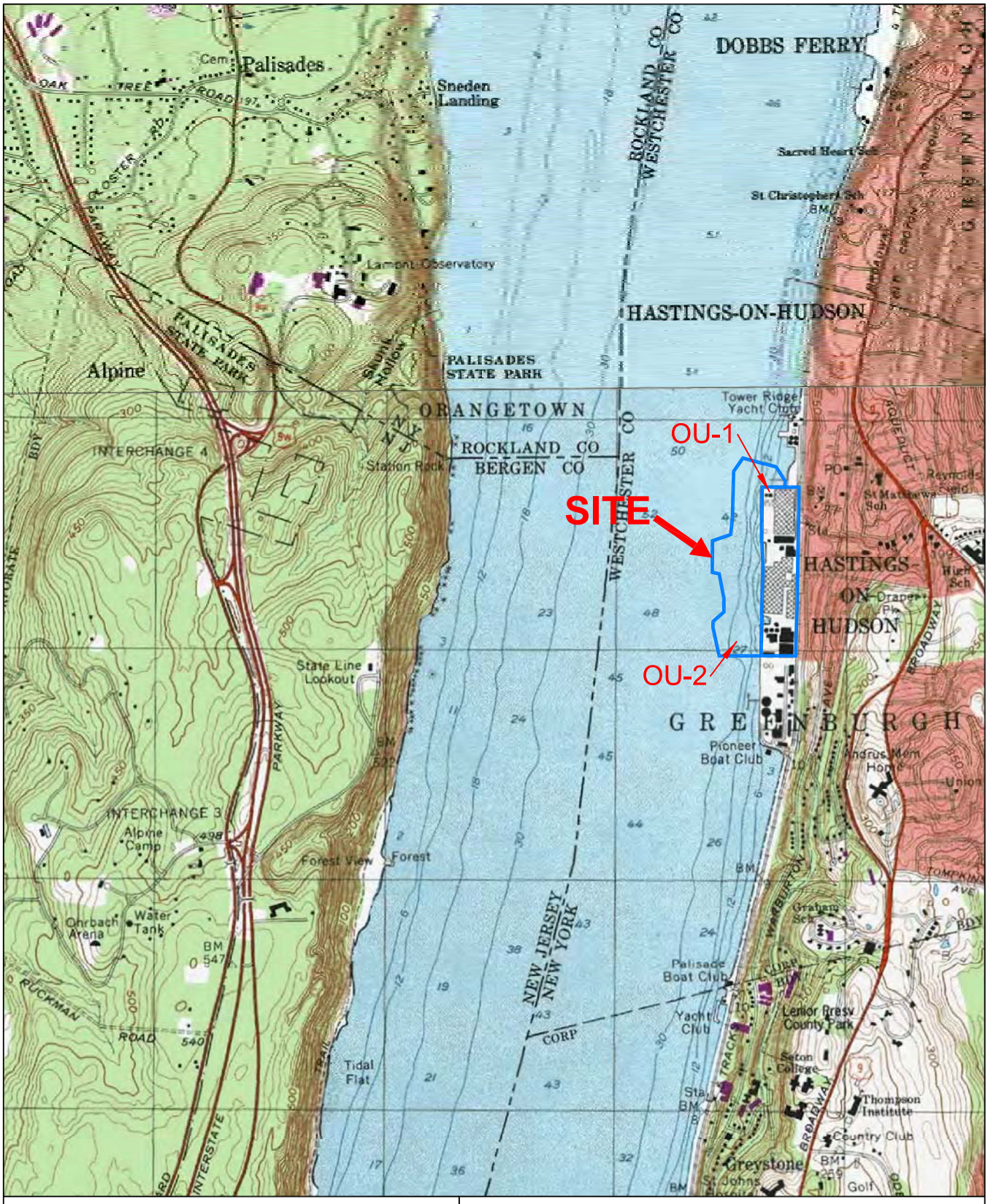
SECTION 10: NEXT STEPS

As described above, there will be a public meeting and comment period on the proposed changes to the selected remedy. At the close of the comment period, the Department will evaluate the comments received and prepare a responsiveness summary which will be made available to the public. A notice describing the Department's final decision will be sent to all persons on the site mailing list.

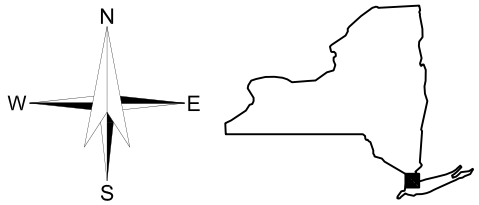
If you have questions or need additional information you may contact any of the following:

William Ports, Project Manager
NYS Dept. of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
518-402-9662

Nathan Walz
NYS Department of Health
Bureau of Environmental Exposure Investigation
547 River Street
Troy, NY 12180
(518) 402-7880



SITE COORDINATES: 40°59'36"N 73°53'9"W



U.S.G.S. QUADRANGLE: HASTINGS-ON-HUDSON, NEW YORK

HALEY & ALDRICH

NYSDEC SITE #3-60-022
1 RIVER STREET
HASTINGS-ON-HUDSON, NEW YORK

Site Location

SCALE: 1:24000
MAY 2011

FIGURE 1

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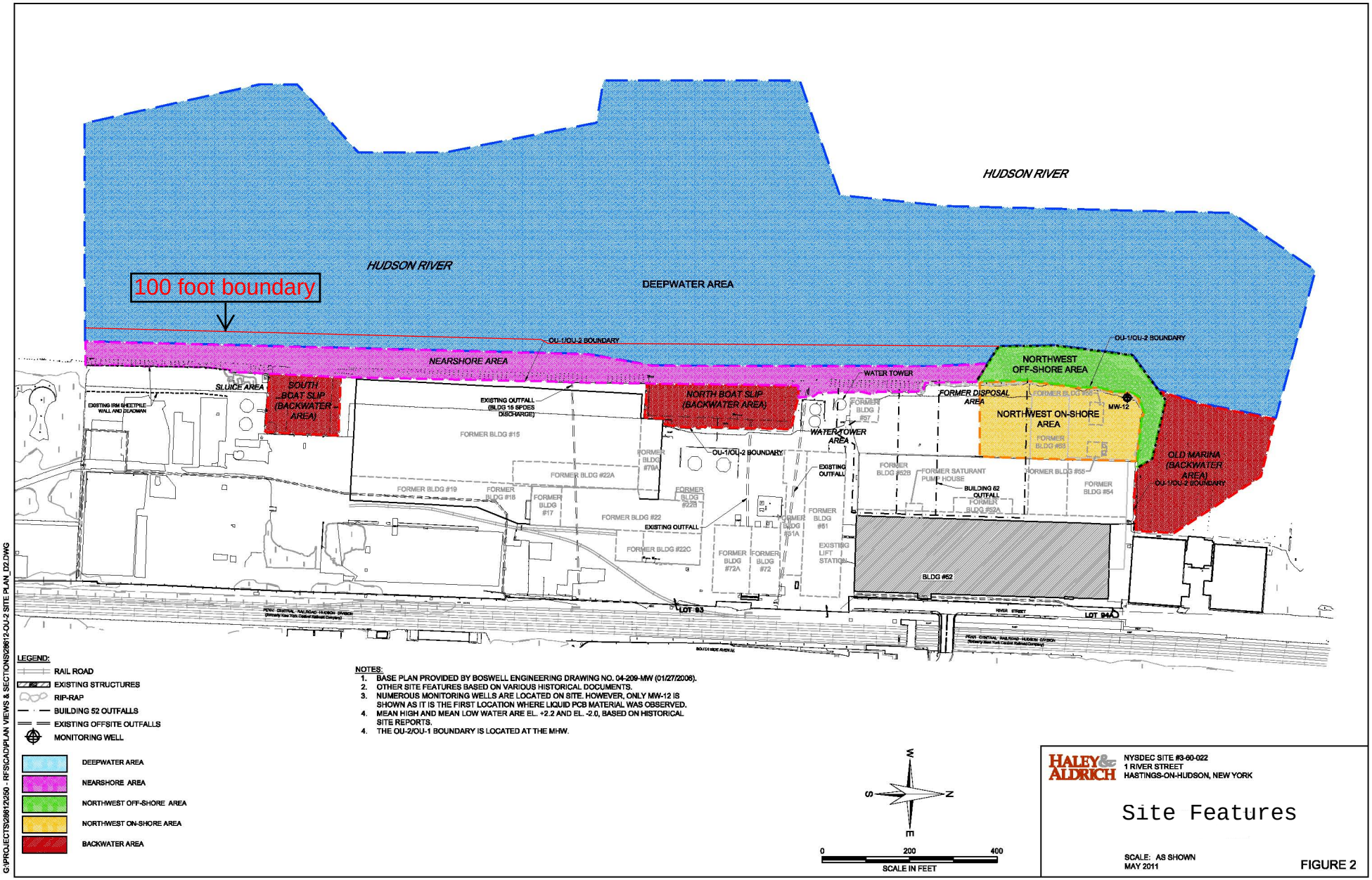

LEGEND:

- RAIL ROAD
- EXISTING STRUCTURES
- RIP-RAP
- BUILDING 52 OUTFALLS
- EXISTING OFFSITE OUTFALLS
- MONITORING WELL
- DEEPWATER AREA
- NEARSHORE AREA
- NORTHWEST OFF-SHORE AREA
- NORTHWEST ON-SHORE AREA
- BACKWATER AREA

NOTES:

1. BASE PLAN PROVIDED BY BOSWELL ENGINEERING DRAWING NO. 04-209-MW (01/27/2006).
2. OTHER SITE FEATURES BASED ON VARIOUS HISTORICAL DOCUMENTS.
3. NUMEROUS MONITORING WELLS ARE LOCATED ON SITE. HOWEVER, ONLY MW-12 IS SHOWN AS IT IS THE FIRST LOCATION WHERE LIQUID PCB MATERIAL WAS OBSERVED.
4. MEAN HIGH AND MEAN LOW WATER ARE EL. +2.2 AND EL. -2.0, BASED ON HISTORICAL SITE REPORTS.
4. THE OU-2/OU-1 BOUNDARY IS LOCATED AT THE MHW.

N W E S

0 200 400

SCALE IN FEET

HALEY & ALDRICH

NYSDEC SITE #3-60-022
1 RIVER STREET
HASTINGS-ON-HUDSON, NEW YORK

Site Features

SCALE: AS SHOWN
MAY 2011

FIGURE 2

G:\PROJECTS\26812\250 - RFS\CAD\PLAN VIEWS & SECTIONS\26812-QU-2 SITE PLAN_D2.DWG

HA-209A
HA-208A
HA-209
HA-207
HA-206
RB-03
RB-06
HA-204
HA-203B
SD4
HA-205
RB-08
HA 226
HA-207A
HA-205A
HA-202
ROCKS
HA-203A
HA-203
-15
HA-201
HARW-3A
HARW-4A
DB-21
HARW-1A
HARW-1
HARW-6
HARW-3
HARW-4
HA-107
HA-106
HA-105
DB-23
MW-12
HARW-2
HARW-5
GB-20
HARW-8
HA-104
HA-102
HARW-3B
HARW-6A
HAOW12A
FORMER BLDG #53
MW-10
HARW-7
DB-19
DB-20
DB-15
FORMER BLDG #56
HA-103
HA-118
DB-13
DB-11
DB-18
DB-26
HARW-9
HA-118A
SB-159
HA-114
DB-25
DB-12
HA-117
DB-16
HA-117A
HA-115
HA-116
RUINS
-10
-5

LEGEND:

- EXISTING STRUCTURES
- DNAPL BARRIER
- OU-2/OU-1 BOUNDARY
- APPROXIMATE ASSUMED RECOVERAL DNAPL EXTENTS
- INVESTIGATED RECOVERABLE DNAPL EXTENTS
- RIP-RAP
- POTENTIAL FORMER WOODEN BULKHEAD
- EXPLORATION LOCATION TO MARINE SILT INTERFACE
- HA-XX EXPLORATION LOCATION WHERE MARINE SILT WAS NOT ENCOUNTERED DUE TO REFUSAL
- MONITORING WELL LOCATION
- HISTORICAL SAMPLE LOCATION (DEPTH VARIES)
- HISTORICAL SAMPLE LOCATION (DEPTH VARIES)
- ANGLED EXPLORATION LOCATION
- ANGLED WELL LOCATION WITH SCREENED INTERVAL

SAMPLE LEGEND:

LIQUID PCB MATERIAL
SEMISOLID PCB MATERIAL
TRACE PCB MATERIAL

- LIQUID PCB MATERIAL OBSERVED
- SEMISOLID PCB MATERIAL OBSERVED
- TRACE PCB MATERIAL OBSERVED
- NO PCB MATERIAL OBSERVED
- INFERRED POTENTIAL PCB MATERIAL LOCATION
- RECOVERY WELL

NOTES:

1. BASE PLAN PROVIDED BY BOSWELL ENGINEERING DRAWING NO. 04-209-MW (01/27/2006).
2. HISTORICAL SURVEY INFORMATION PROVIDED BY PARSONS IN JULY 2005.
3. MEAN HIGH AND MEAN LOW WATER ARE EL. +2.2 AND EL. -2.0, BASED ON HISTORICAL SITE REPORTS.
4. RIP-RAP DESIGNATION IN THE RIVER IS BASED ON INTERPRETATION OF SIDE SCAN SONAR DATA PROVIDED BY AQUASURVEY INC. IN NOVEMBER 2007.
5. HA-100 SERIES BORING LOCATIONS ON SHORE SURVEYED BY BOSWELL ENGINEERING IN SEPTEMBER 2007 & APRIL 2008.
6. HA-200 SERIES BORING LOCATIONS OFF SHORE WERE LOCATED USING A GLOBAL POSITIONING SYSTEM.
7. CURRENTLY AVAILABLE DATA COLLECTED DURING DNAPL IRM PILOT TESTS, SUPPLEMENTAL NORTHWEST CORNER INVESTIGATION AND HISTORIC BORINGS.

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SCALE IN FEET

HALEY & ALDRICH

NYSDEC SITE #3-60-022
1 RIVER STREET
HASTINGS-ON-HUDSON, NEW YORK

PCB MATERIAL LOCATIONS AND DNAPL EXTENTS IN THE NORTHWEST CORNER

SCALE: AS SHOWN
SEPTEMBER 2011

FIGURE 3

G:\PROJECTS\28612\250 - RFS\COMMUNICATIONS\2011-09-29 DEC FIGURE\28612-PCB MATERIAL EXTENTS_DF.DWG

Figure 4: Conceptual Model of PCB Migration