Site Management Plan

Peekskill Landing Site
City of Peekskill,
Westchester County, New York
ERP Site No. B00183

CHA Project Number: 13043.3100.31000

Prepared for:

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Revisions to Final Site Management Plan:

Revision No.	Submitted Date	Summary of Revision
1	12/13/11	Addressed Informal Comments Provided by NYSDEC
2	8/1/13	Certify Following Easement Recording

CERTIFICATION

I, the undersigned, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Based upon my personal activities and my direct supervision of the persons directly responsible for preparing this Site Management Plan, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

For Clough Harbour & Associates LLP:

(Professional Seal)

Michael E. Hollowood
Printed Name of Certifying Engineer

Signature of Certifying Engineer

7/31/13
Date of Certification

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Registration State

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LIST OF ACRONYMS & ABBREVIATIONS

ACM	Asbestos-Containing Material
AMSL	Above Mean Sea Level
AOC	Area of Concern
ASP	Analytical Services Protocol
ASTM	American Society of Testing & Materials
BASE	Building Assessment and Survey Evaluation
BFB	Bromofluorobenzene
C&D	Construction & Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHA	Clough Harbour & Associates LLP
CIH	Certified Industrial Hygienist
COC	Certificate of Completion
CRZ	Contamination Reduction Zone
CSP	Certified Safety Professional
CVOC	Chlorinated Volatile Organic Compound
DFTPP	Decafluorotriphenylphosphine
DQO	Data Quality Objective
DUSR	Data Usability Summary Report
EAP	Emergency Action Plan
EC	Engineering Control
ECB	Erosion Control Blanket
ELAP	Environmental Laboratory Approval Program
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
ESA	Environmental Site Assessment
ESC	Erosion and Sediment Control
EWP	Excavation Work Plan
EZ	Exclusion Zone
FPS	Feet per Second
GC	Gas Chromatography
HASP	Health & Safety Plan
HAZWOPER	Hazardous Waste Operations & Emergency Response
HDPE	High Density Polyethylene
HEPA	High Efficiency Particle Arrestor
HSC	Health & Safety Coordinator
HST	Health & Safety Technician
HVAC	Heating, Ventilation & Air Conditioning
IC	Institutional Control
IDLH	Immediately Dangerous to Life or Health
LNAPL	Light Non-Aqueous Phase Liquid
MC	Medical Consultant
MOSF	Major Oil Storage Facility
MS	Mass Spectrometry
MS	Matrix Spike

MSD	Matrix Spike Duplicate
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
MUC	Maximum Use Concentration
NIOSH	National Institute for Occupational Safety and Health
NOI	Notice of Intent
NRC	National Response Center
NTU	Nephelometric Turbidity Unit
NYCRR	New York Code, Rules & Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O&M	Operation & Maintenance
OSHA	Occupational Safety & Health Administration
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PEL	Permissible Exposure Limit
PFE	Pressure Field Extension
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works
PPE	Personal Protective Equipment
PPM	Parts Per Million
PRAP	Proposed Remedial Action Plan
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAR	Remedial Alternatives Report
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
RDWP	Remedial Design Work Plan
REC	Recognized Environmental Condition
REL	Recommended Exposure Limit
RI	Remedial Investigation
ROD	Record of Decision
RPD	Relative Percent Difference
RRT	Relative Retention Time
SAC	State Assistance Contract
SCBA	Self-Contained Breath Apparatus
SCG	Standard, Criteria, and Guidance
SCO	Soil Cleanup Objective
SCS	Soil Conservation Survey
SMP	Site Management Plan
SO	Safety Officer
SOP	Standard Operating Procedure
SPDES	State Pollutant Discharge Elimination System

SSD	Sub-slab Depressurization
SSDS	Sub-slab Depressurization System
SSP	Steel Sheet Pile
STP	Sewage Treatment Plant
SVI	Soil Vapor Intrusion
SVOC	Semivolatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan
SZ	Support Zone
TAGM	Technical & Administrative Guidance Memorandum
TAL	Target Analyte List
TCC	The Chazen Companies
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TMP	Tax Map Parcel
TOGS	Technical & Operational Guidance Series
TWA	Time-Weighted Average
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UV	Ultraviolet
VOC	Volatile Organic Compound
VTSR	Validated Time of Sample Receipt
WC	Water Column

1.0 INTRODUCTION & DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program for the Peekskill Landing Property (hereinafter referred to as the "Site") under the New York State (NYS) Environmental Restoration Program (ERP) administered by New York State Department of Environmental Conservation (NYSDEC). The Site was remediated in accordance with State Assistance Contract (SAC) No. C302832, Site No. B00183, which was executed on March 31, 2003 and last amended on March 31, 2008.

This Site Management Plan (SMP) was prepared to address activities at the Peekskill Landing Property following the completion of the remedial construction completed in October 2009 through September 2010. This plan will be updated on an as-needed basis and all changes will be submitted to NYSDEC for approval.

1.1.1 SMP Organization

This SMP has been divided into seven (7) major sections, including:

Section 1: Summarizes the purpose of the SMP, provides the Site background, and summarizes the investigations and remedial actions completed at the site.

Section 2: Engineering Control/Institutional Control Plan

Section 3: Site Monitoring Plan (including cover system and Site-Wide Inspection requirements)

Section 4: Operation & Maintenance Plan (soil cover system)

Section 5: Provides requirements for inspections of the Site and reporting & certification requirements to the NYSDEC.

Section 6: Excavation Work Plan (for all intrusive Site activities)

Section 7: Health and Safety Plan Requirements (minimum requirements)

1.1.2 General

The City of Peekskill entered into a SAC with the NYSDEC to remediate an approximately 4.7-acre property located in City of Peekskill, Westchester County, New York. This SAC required the Remedial Party, the City of Peekskill, to investigate and remediate contaminated media at the Site. A vicinity location map of the Site is included as Figure 1. A post-remediation site survey showing the location and boundaries of this 4.7-acre Site is provided in Appendix A. The boundaries of the

Site are more fully described in the Metes and Bounds Site description that is also included in Appendix A and is part of the Environmental Easement.

After completion of the remedial work described in the Remedial Design Work Plan (RDWP) dated September 2008 and the Final Engineering Report (FER) dated June 2013, some contamination was left in the subsurface at this Site, which is hereafter referred to as "remaining contamination." This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Clough Harbour & Associates LLP (CHA), on behalf of the City of Peekskill, in accordance with the requirements in NYSDEC Draft DER-10; Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the Site.

1.1.3 Purpose

The Site contains contamination left after completion of the remedial action. Engineering Controls (ECs) have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Westchester County Clerk, will require compliance with this SMP and all ECs and ICs placed on the Site. The ICs place restrictions on Site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the Site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the Site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; and (3) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) a soils management plan for implementation of remedial collection, containment, and treatment.

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the environmental easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the (SAC) No. C302832, Site No. B00183 for the Site, and thereby subject to applicable penalties.

1.1.4 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Site is located in the City of Peekskill, County of Westchester, New York and is identified as Tax Map Parcel (TMP) Nos. 32.8 and 32.12 on the City of Peekskill Tax Maps. The Site is an approximately 4.7-acre area bounded by the Metro-North Railroad to the north and east, Peekskill Riverfront Green Park to the south, and the Hudson River to the west (see Figure 1). The boundaries of the Site are more fully described in Appendix A – Site Metes and Bounds.

1.2.2 Site History

1.2.2.1 Past Uses & Ownership

Historical research indicates that the subject site was used for industrial/commercial purposes from the mid-1800's and into the early 1990s, after which time the Site was vacated. The Site is reportedly comprised of lands entirely reclaimed from the Hudson River, and the majority of the Site was filled following construction of the adjacent railroad. Based on a review of available documentation, historical operations that were conducted at the Site included, but are not limited to the following activities/operations:

- Coal storage;
- Lumber yard;
- Stove works/manufacturing (metal working, finishing, and plating);
- Boat maintenance/repair;
- Office space; and
- Foundry operations.

The most recent industrial activities that were conducted at the Site consist of the operations associated with the former Tallix Inc. art foundry that was located on the southern portion of the Site. Operations at the Tallix, Inc. facility reportedly consisted of bronze metal working and sculpting. It is also reported that from 1986 to sometime after 1989, the New York Telephone Company occupied three buildings (including the former Tallix Inc. facility) on the southern portion of the Site. The New York Telephone Company reportedly used the Site for office space, vehicle maintenance and a storage/staging area.

1.2.2.2 Previous Reports & Investigations

There were several previous environmental site investigations conducted at the site to determine if the historical industrial activities have negatively impacted the Site. In addition, CHA has completed additional investigations and design efforts that provide supplemental site characterization information along with procedures and protocols to be implemented during the remedial program. Deliverables that document these efforts include the following:

- *Remedial Design Report, Peekskill Landing,* Clough Harbour & Associates LLP, March 24, 2009
- *Remedial Design Work Plan & Conceptual Design, Peekskill Landing,* Clough Harbour & Associates LLP, December 17, 2007.
- *Soil & Water Management Plan, Peekskill Landing Environmental Restoration Project,* Clough Harbour & Associates LLP, December 16, 2007.
- *Pre-Design Sampling Report, Environmental Restoration Site,* Clough Harbour & Associates LLP, November 2007.
- *Record of Decision,* New York State Department of Environmental Conservation, March 2006.
- *Remedial Investigation and Alternatives Analysis Report* (RI/AAR), Clough Harbour & Associates LLP; December 19, 2005.
- *Environmental Site Assessment for the Peekskill Waterfront Property*; Ecosystems Strategies, Inc., June 1998.
- *Site Investigation of the Peekskill Waterfront Development Site;* Lawler, Matusky & Skelly Engineers (LMS), September 1989.

The RI was completed to define the nature and extent of contamination resulting from the historic site activities. The first phase of the RI was conducted between August and September 2004. During the first phase, numerous surficial and subsurface soil, groundwater, and sediment samples were obtained to determine the nature and the extent of contamination. As a result of relatively low level groundwater contamination identified on the northern portion of the site, a second phase of the

investigation was conducted from June through July 2005 to further delineate the extent of groundwater contamination on the northern portion of the site.

The Record of Decision (Appendix B), prepared by NYSDEC, presents the selected remedy for the Peekskill Landing site in conceptual detail. The ROD is based on the Administrative Record of the NYSDEC, and the public's input to the February 2006, Proposed Remedial Action Plan, prepared by NYSDEC.

The Pre-Design Sampling Report (PDSR) details the results of the supplementary site investigation conducted prior to the Remedial Design Work Plan & Conceptual Design. The PDSR largely corroborated the results of the RI. However, elevated Mercury levels reported in the Remedial Investigation were determined in the PDSR to not be indicative of a source area requiring remediation.

The Soil and Water Management Plan was prepared by CHA to define the procedures and requirements to be followed during the implementation of the remedial tasks at the Site. The SWMP summarized project phasing, and detailed site controls, proposed excavation activities, transportation of contaminated materials, wastewater management, and site restoration. Constituents of the site controls described in the SWMP include erosion and sediment controls, site access and work zones, and an air-monitoring plan. Also included in the SWMP are safety and health considerations, including responsibilities of the contractor, appropriate elements of the Health and Safety Plan (HASP) to be prepared by the contractor, and HASP non-compliance consequences and outcomes.

The Remedial Design Work Plan & Conceptual Design is a precursor to the Remedial Design Report, presenting conceptual design elements, as well as an outline of the Site Management Plan (SMP) for post-construction activities.

The Remedial Design Report was prepared to outline the means of implementing the remedy selected in the ROD and quality control and quality assurance procedures and protocols to be applied to construction. The Remedial Design Report was submitted in March 2009 and final design/bid documents for the remedial construction at the Site were approved on May 13, 2009. The bid documents were made available to contractors on May 26, 2009, and the construction contract for the remedial construction was fully executed on October 1, 2009.

1.2.3 Geologic Conditions

According to the United States Department of Agriculture, *Soil Survey of Putnam and Westchester Counties, New York* dated September 1994, the soils present at the Site consist of Udorthents. The properties and characteristics of these soils are highly variable; however, Udorthents can generally be described as somewhat poorly drained soils that have been altered mainly by filling.

Based on a review of the Surficial Geologic Map of New York; Lower Hudson Sheet (Cadwell, 1989), the surficial geology at the Site is mapped as glacial till. The till unit can be classified as a variable texture and usually poorly sorted diamict that is deposited beneath the glacier ice sheet (Cadwell 1989). During the August 2004 Site investigations, the till unit was not encountered in any

of the test pits or soil borings. In general, the surficial Site geology consisted of an 8 to 18 foot thick fill layer, below which natural soils consisting of a river deposited silt and clay unit is present. Although previous reports have indicated that the thickness of the fill material could be as much as 28 feet, the maximum thickness of the fill material encountered during the RI was 18 feet.

Bedrock underlying the Site consists of Upper Ordovician crystalline rock of the Cortlandt Complex (Fischer 1970). The rock associated with this formation consists of a hornblende norite that is comprised primarily of feldspar and pyroxene. It should also be noted that the northern portion of the Site is mapped as being in close proximity to a potential contact between the Cortlandt Complex and the Manhattan Formation (Fischer, 1970), which consists of peltic schist and amphibolite units. According to previous investigation data, bedrock was encountered at the Site at depths ranging from 30 to 130 feet bgs. Bedrock however, was not encountered at the Site during the investigations conducted as part of the Remedial Investigation.

The environmental investigations conducted to date confirmed the presence of on-site fill materials. The Site is comprised entirely of lands reclaimed from the Hudson River as a result of filling activities. The source of the fill materials is unknown. The test pit and soil boring subsurface data collected as part of this investigation identified the presence of fill material consisting of asphalt, ash, coal ash, cinders, wood, railroad crossties, brick, slag, miscellaneous debris, silty sand and various fill soils on the subject property similar to those described by previous environmental investigation reports. As noted previously, the depth of the fill material varied across the Site from 8 to 18 feet below ground surface (bgs).

1.2.3.1 Site Hydrogeology

Groundwater was encountered at the Site at depths ranging from approximately three feet to six feet bgs. Groundwater recharge on-site occurs from on-site precipitation and infiltration, and from groundwater flow onto the Site. Given the close proximity to the Hudson River, groundwater at the Site is also tidally influenced by the river.

During the course of the investigations, water levels were collected from the on-site monitoring wells on multiple occasions and the groundwater elevation data was used to prepare piezometric maps. It was determined that groundwater generally flows to the west towards the Hudson River during both rising and falling tide conditions; however, the overall gradient across the Site varies significantly as a result of tidal influences. Although the data collected to date has not indicated a significant change in groundwater flow direction based on tidal influences, it is likely that during times of low groundwater recharge and high river elevation, there is the potential that the groundwater flow direction could vary as a direct result of the river influence.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

The Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the Site. The results of the RI are described in detail in the following reports:

- *Pre-Design Sampling Report, Environmental Restoration Site,* Clough Harbour & Associates LLP, November 2007.

- *Remedial Investigation and Alternatives Analysis Report* (RI/AAR), Clough Harbour & Associates LLP; December 19, 2005.

The following activities were conducted during the combined investigations:

- Research of historical information;
- Collection of five (5) background soil samples (one duplicate);
- Collection of nine (9) surface soil samples;
- Installation of 40 test pits and collection of 18 representative subsurface soil samples during the test pit program;
- Installation of nine (9) soil borings and nine (9) monitoring wells to facilitate the collection of soil and groundwater samples;
- Collection and analysis of 13 additional discrete groundwater samples using a Geoprobe (Phase 2);
- An assessment of public and private water supply wells in the area; and
- Collection and analysis of five (5) aquatic sediment samples.

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following Standards, Criteria and Guidance values (SCGs):

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Sediment SCGs were based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments", January 1999.

1.3.1 Areas of Concern

No significant source areas have been identified at the Site. The contamination at the Site is dispersed randomly throughout the site and is generally limited to relatively low levels of semi-volatile organic compounds (SVOCs) and metal contamination in the soils. Contamination present is believed to be associated with historic industrial operations conducted at the Site and the presence of on-site historic urban fill, ranging from 18 to 28 feet bgs, across the Site.

Portions of the Site have historically been used for industrial purposes since the late 1800s. Historic operations include a coal yard, foundry operations, a stove works/metal manufacturing, plating, fire brick works, shipping depot, etc. Although these operations have the potential to generate hazardous

residuals, previous investigations have not identified any significant source areas or widespread contamination associated with them. Due to lack of historical documentation, the exact location of many of the former operations could not be definitively identified. Additionally, the Site is located immediately adjacent to the active Metro-North rail line. Operations associated with the existing railroad tracks date back to the late 1800's and operations associated with the railway systems have the potential to negatively impact the Site.

Historical subsurface data has indicated that the depth of the on-site fill material ranges from 18 to 28 feet below ground surface (bgs) across the Site. It is reported that the fill materials were observed to contain coal ash, slag, crushed brick, and/or concrete. Fill materials of similar nature often contain elevated levels of metals and semi-volatile organic compounds (i.e. petroleum breakdown products, coal tars, and asphalt) and may contribute to the contamination detected across the Site.

1.3.2 Nature of Contamination

As described in the RI Report, surficial and subsurface soil, groundwater and sediment samples were collected to characterize the nature and extent of contamination. The primary contaminants of concern that exceed their SCGs are SVOCs and metals.

The SVOCs of concern are benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and benzo(a)pyrene. These chemicals are part of a group of compounds called polynuclear aromatic hydrocarbons (PAHs), which are primarily byproducts of the incomplete burning of organic materials.

Metals were also detected in soil at the Site at concentrations above SCGs. Specifically, the metals most commonly detected at the Peekskill Landing Site included arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, zinc, and mercury.

Volatile Organic Compounds (VOCs), including benzene, toluene and xylenes were detected in groundwater samples from one onsite monitoring well and in three Geoprobe samples at the north end of the Site. The presence of these compounds is considered to be related to an adjacent former Manufactured Gas Plant (MGP) site located to the east of the northern portion of the Site.

1.3.3 Extent of Contamination

1.3.3.1 Surface Soil

Prior to the remedial action, surface soil samples were obtained to delineate the nature and extent of surface contamination at the Site. A total of nine (9) surface soil samples were obtained from across the Site. Each sample was analyzed for SVOCs, polychlorinated biphenyls (PCBs), and metals. The analysis revealed that the surface soil contains contamination in the form of SVOCs and metals. The SVOCs benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and benzo(a)pyrene were detected at ranges from 0.25 to 1.7 parts per million (ppm), 0.37 to 1.9 ppm, and 0.21 to 1.4 ppm, respectively. At least one compound exceeded the respective SCGs in each of the nine (9) samples collected. No PCBs were detected. It should be noted that following the remedial activities for the site, the surface soils were covered by approximately one foot of clean cover soils.

Surface soil was also sampled at four background locations. Background samples are collected to observe soil quality at nearby, off-site locations which should not be impacted by past site operations. Sampling revealed that six metals had average background concentrations above TAGM 4046 values. These metals are: arsenic (9.8 ppm), chromium (12.8 ppm), copper (28.1 ppm), nickel (14.1 ppm), selenium (4.4 ppm), and zinc (78.3 ppm). The TAGM permits the use of background concentrations as recommended cleanup objectives.

In the nine (9) surface samples collected on-site, eight metals exceeded recommended cleanup objectives: arsenic, chromium, copper, lead, nickel, silver, zinc, and mercury.

1.3.3.2 Subsurface Soil

To characterize the fill material at the Site, a total of 40 test pits were excavated. Excavation continued until natural soils were encountered or it was determined that deeper excavation would not be practical. The depths of the test pits ranged from 4.5 to 11 feet bgs and usually extended past groundwater which was encountered at depths ranging from 4.5 to 6.5 feet bgs. Each test pit was visually inspected and screened in the field for contaminants with a photoionization detector (PID). Representative soil samples were collected from the test pits to characterize the subsurface contamination.

The subsurface soil contamination is similar in nature to that of the surface soil. SVOCs were detected, primarily PAH compounds, in 10 of the 17 soil samples collected during the test pit program. These include benzo(a)anthracene ranging at 0.06 to 4.3 ppm, benzo(b)fluoranthene at 0.05 to 3.0 ppm, chrysene at 0.08 to 4.5 ppm, benzo(a)pyrene at 0.04 to 2.6 ppm, dibenzo(a,h)anthracene at 0.09 to 0.15 ppm and benzo(k)fluoranthene from 0.12 to 1.4 ppm which are all present at concentrations above recommended cleanup objectives.

Eight metals exceeded SCGs including: arsenic, cadmium, copper, lead, nickel, silver, zinc, and mercury. Mercury was detected above the TAGM value at one location (114 ppm versus 0.1 ppm). Further investigation later identified the mercury exceedance as an isolated, anomalous incident.

1.3.3.3 Groundwater

During the investigation, nine (9) boreholes were advanced to depths ranging from 12 to 20 feet bgs. The borings were then converted into two inch PVC monitoring wells (monitoring wells MW-4 through MW-12) for assessment of groundwater quality. The wells were screened with slotted screens set to straddle the water table. Samples were analyzed for VOCs, SVOCs, PCBs and priority metals.

Analysis revealed that the groundwater quality at the Site has been minimally impacted. Only one well, MW-4 (Figure 2), exhibited any exceedances of standards. Elevated levels of benzene, toluene, and xylenes were detected in the well. To further assess this finding groundwater samples were collected from 13 Geoprobe points.

Three groundwater samples exceeded the groundwater standard for benzene, which was detected at concentrations ranging from 1.1 to 25 µg/L. Standards for ten SVOCs were exceeded at a total of five (5) locations.

It should be noted that monitoring wells MW-4 through MW-12, which were installed during the RI, were properly abandoned during remedial construction in accordance with DER-10. Contamination was not detected in groundwater samples collected from these wells during the Remedial Investigation. Historically, three monitoring wells were previously installed at the Site (MW-1 through MW-3); however, these wells were never located during the RI or remedial construction. The locations of the abandoned monitoring wells are shown on Figure 2.

Several additional wells were installed on the northern portion of the site by Consolidated Edison to evaluate the impacts from the adjacent former MGP site. These wells remain at the site and are also shown on Figure 2.

1.3.3.4 Sediments

Due to the potential for contaminant exposure at nearby McGregory Brook, five sediment samples were obtained from the brook. Three of these samples were collected to assess upgradient conditions.

The results of the sampling showed PAHs and metals present in the sediments above SCGs. However, the contaminant concentrations in these sediments were generally consistent with those in the samples collected from the upgradient/background locations. Benzo(a)anthracene and chrysene were detected in both Site samples ranging from 1.2 to 2.3 ppm and 1.4 to 2.1 ppm, respectively. The sediment sample collected at the mouth of McGregory Brook contained concentrations higher than upgradient, but it is likely that this is due to the tidal influx of sediment from the Hudson River. Several inorganic compounds were also detected; however, concentrations were comparable to background concentrations. Since there was no evidence of migration into the Hudson River, no river sampling was conducted.

1.3.3.5 Underground Storage Tank

During the remedial construction activities a 500 gallon, steel underground tank was encountered on the northern portion of the Site. The tank was removed during the remedial construction activities, during which, there were no evidence of impacts associated with the tank. The former use or contents of this tank are unknown. One sample was collected from the tank excavation directly beneath the tank and analyzed for VOCs and SVOCs. There were no VOCs detected at levels above the laboratory reporting limit. Although several SVOCs were detected in the sample, the level of SVOCs was consistent with the levels of SVOCs observed across the Site.

1.4 SUMMARY OF REMEDIAL ACTIONS

The Peekskill Landing Site was remediated in accordance with the NYSDEC approved Remedial Design dated May 2009.

1.4.1 Summary of Remedial Activities

The following is a summary of the major Remedial Actions performed at the Site:

1. The installation of rip rap revetment was completed to provide shoreline stabilization. This shoreline stabilization was performed to protect the Site cover soils and included three key components:

    - Installation of new riprap revetment for the southern and northernmost shoreline areas where little to no existing shoreline protection was present;
    - Repair of existing riprap revetment to those areas where riprap revetment has historically provided adequate shoreline protection; and
    - Installation of a future waterfront-access walkway at a 12H:1V slope, underlain with new riprap revetment. Refer to Figure 3 for the location of the waterfront-access walkway.

    The shoreline was divided into seven sections (cross-sections A through G) as part of the stabilization process. Shoreline cross-sections A, B & E had little existing shoreline protection and new riprap revetment was installed in these sections. The existing riprap in Sections D and E was used in the design for the new riprap revetment. New rock was placed amongst the existing stone that was on the slope. The contractor then adhered to the special conditions as laid out in the specification and contract drawing for each cross-section. After the rip rap was placed, toe and crest elevations were collected at multiple locations in each cross-section to verify the design specifications had been met. Drawings depicting the riprap cross-section locations and the cross-section elevations are included in Appendix D.

    For newly constructed revetment sections (cross sections A, B, and E), the revetment generally included a woven geotextile placed upon the subgrade, a twelve (12) inch layer of bedding stone, and a three to four foot thick layer of armor stone. Large toe stones were

placed at the bottom of the revetment section. For those areas where improvements were made to existing revetments, the slope was generally re-graded to meet the specified profile, and a one to two foot layer of armor stone was added to the top of the existing revetment.

2. The construction and maintenance of a soil cover system to prevent human exposure to remaining contaminated soil/fill remaining at the Site. The soil cover system consists of a non-woven geotextile and a minimum of one-foot layer of barrier protection soil, consisting of a minimum of six inches of compacted select fill and six inches of topsoil capable of supporting vegetative growth. The soil cover system was constructed per the detail noted in Plan C-1 (Appendix C), which was submitted to and approved by NYSDEC. The soil cover material meets the NYSDEC unrestricted soil cleanup objectives.

3. To minimize future erosion and damage to the soil cap from flooding and debris deposition on the Site by seasonal river fluctuation, the remedial design included placement of additional select fill in excess of the one-foot of proposed cover soils on the northern portion of the Site. This additional fill raised the grade to a level approaching the flood elevation across much of the Site. Much of the fill in excess of the required one foot was placed below the geotextile demarcation layer.

4. Execution and recording of an Environmental Easement to restrict land use and prevent future exposure to any contamination remaining at the Site.

5. Development and implementation of a SMP for long term management of remaining contamination as required by the Environmental Easement, which plans for: (1) Institutional and Engineering Controls (ICs/ECs), (2) monitoring, (3) operation and maintenance, and (4) reporting.

Remedial activities were completed at the Site in September 2010.

1.4.2 Removal of Contaminated Materials from the Site

The only material transported off-site was clearing and tidal debris, scrap metal, and C&D debris. The majority of this material was generated during clearing/grubbing at the Site performed between October 13, 2009 and October 30, 2009. The Site was cleared of trees, stumps, shrubs, scrap metal, concrete, and other debris. The material was placed in roll-offs and transported to various permitted waste facilities for disposal.

1.4.3 Site-Related Treatment Systems

No long-term treatment systems were installed as part of the Site remedy.

1.4.4 Remaining Contamination

The contamination that was identified at the Site during the remedial investigation phase of the project still remains at the Site. The selected remedy included a minimum of one foot of clean soil

cover over the entire Site to prevent exposure to the contaminated soils. The details of the previous CHA site investigations that characterize the nature and extent of contamination are available for review in CHA's *Remedial Investigation/Alternative Analysis Report*, dated December 2005, *Pre-Design Sampling Report* dated November 2007, and *Remedial Design Report* dated September 2008. The nature and extent of identified contamination, which remains at the Site, is summarized earlier in this report in Sections 1.2.3 and 1.2.4.

The contaminant concentrations at the Site did not change due to the nature of the remedial action completed at the Site. The remedial action was implemented to reduce exposure to the contamination by creating a barrier. Since contaminated soil, groundwater, and soil vapor remain beneath the Site after completion of the Remedial Action, Institutional and Engineering Controls are required to protect human health and the environment including a demarcation barrier, described below.

1.4.4.1 Demarcation Barrier

Prior to placement of clean cover materials (barrier layer), a geotextile fabric was placed over the entire site to serve as a demarcation layer for any future intrusive ground activities (e.g. utility upgrades or landscaping) following site remediation. All remaining contaminated Site soils are located beneath the demarcation layer. The demarcation barrier consisted of a non-woven geotextile fabric that was placed on the prepared subgrade. For those areas where no significant grade changes occurred, the demarcation layer was placed directly on the existing ground surface and the topsoil was not removed from the surface in these areas. Vegetation was cleared to the extent necessary to facilitate the placement of the geotextile. The approximate elevation of the demarcation barrier is illustrated by Figure 3.

The non-woven geotextile is a continuous needle punched geotextile that was not heat-set or bonded. All seams were overlapped in accordance with design specifications. The non-woven geotextile is resistant to ultraviolet light degradation and has 80 percent strength retention when tested according to ASTM D 4355, 500 hour Xenon arc test. The non-woven geotextile also meets the following specifications:

Table 2-1. Non-Woven Geotextile Specifications

Property	Test Method	Qualifier	Value
Tensile Strength	ASTM D 4632	MARV	160 lbs
Burst Strength	ASTM D 3786	MARV	305 psi
Puncture Strength	ASTM D 4833	MARV	95 lbs
Trapezoidal Tear	ASTM D 4533	MARV	60 lbs
A.O.S.	ASTM D 4751	Range	Sieve No. 70-100

Should the soils on-site beneath the demarcation layer need to be excavated, the need to implement the Excavation Work Plan discussed later in this SMP would be triggered.

2.0 ENGINEERING & INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Since remaining contaminated soil and groundwater, and potentially soil vapor, exists beneath the Site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the Site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the Site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the Site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover System

Exposure to remaining contamination in soil/fill at the Site is prevented by a soil cover system placed over the Site. This cover system is comprised of a minimum of 12 inches of clean imported soil. The Excavation Work Plan provided in Section 6 of this SMP outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and

any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in Section 5 of this SMP.

A demarcation barrier has been installed beneath the soil cover to provide a visual barrier between the existing Site soils and the soil cover layer materials. The demarcation barrier consists of a continuous filament, non-woven geotextile as described in Section 1.4.4.1 of this SMP.

Procedures for monitoring the soil cover system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the Site, occurs (see Section 3.4.1).

2.2.1.2 Shoreline Stabilization

Shoreline stabilization was completed to protect the remedy from inundation and erosion. Improvements to the existing shoreline protection features were completed to prevent erosion to the remedial design at the Site. A new riprap revetment was installed on the southern and northernmost shoreline areas with little or no existing shoreline protection and the riprap revetment was repaired in those areas where riprap revetment has historically provided adequate shoreline protection. Additionally, a feature that would accommodate a future waterfront-access walkway with a 12H:1V slope was installed, underlain with new riprap revetment.

The riprap provides a small footprint option that does not create a vertical face, i.e. does not promote significant wave reflection. The slope of the revetment did not exceed 1V:2H. Therefore, wave energy will be dissipated on the rough slope of the riprap protecting the materials behind it. The back detail, drainage features and tie-in to the remediation cover system limits the risk of erosion of the contaminated soils during storm events up to the 100-year event. The structure itself has been designed to withstand the 100-year storm event.

The armor stone used for revetment has a minimum unit weight of 156 lb/ft^3 based upon water having a unit weight of 64 lb/ft3, and in accordance with ASTM C 127. Stones were angular to sub-rounded in shape; the least dimension of any stone was not less than one-third the greatest dimension of the fragment. Stone was graded and generally conformed to the following gradation requirements:

Table 2-2. Riprap Specification Table

Armor Gradation	Weight (lbs)	
	Riprap Armor	Filter/Underlayer
100% of rock	1650	155
50% of rock	670	65
15% of rock	370	30

Procedures for monitoring the shoreline stabilization system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the Site, occurs.

2.2.1.3 Sub-slab Depressurization Systems & Sub-slab Ventilation

Based upon the remedy for the site, some residual contamination (both soil and groundwater contamination) remains at the Peekskill Landing Site below the soil cover. On the northern portion of the Site, where VOCs were detected in the groundwater, the potential for vapor intrusion into any future buildings proposed at the Site exists. The vapors could potentially enter a building through cracks or penetrations in the building foundations and concrete slab flooring systems, particularly when the zone of impacted soil is in direct contact with the structures. The vapors typically rise into the building space due to the difference in interior and exterior air pressures. Since the pressure beneath the concrete slab is typically several times greater than the interior pressure in the building, the vapors tend to migrate into the building due to the pressure differential.

Soil vapor that contains volatile organic compounds and enters a building can adversely impact indoor air quality. There are a number of factors that affect the likelihood and rate of vapor intrusion into a building.

Although no buildings/structures are proposed as part of this contract, if in the future any buildings are proposed, the need for soil vapor mitigation systems such as a sub-slab depressurization system will be evaluated following NYSDEC and NYSDOH guidance.

2.2.2 Criteria for Completion /Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in NYSDEC DER-10.

2.2.2.1 Soil Cover System

The soil cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

2.2.2.2 Riprap Revetment

The riprap revetment is a permanent control and the quality and integrity of this riprap revetment will be inspected at regular intervals in perpetuity.

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls (ICs) are required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the Site to include passive recreational uses only. Adherence to these Institutional Controls on the Site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;

- All Engineering Controls must be operated and maintained as specified in this SMP;

- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP;

- Groundwater monitoring must be performed as defined in this SMP; and

- Data and information pertinent to Site Management must be reported at the frequency and in a manner defined in this SMP.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

The Site also has a series of Institutional Controls in the form of Site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Site include:

- The Site may only be used for passive recreational use, provided that the long-term Engineering and Institutional Controls included in this SMP are employed;

- The Site may not be used for a higher level of use, such as unrestricted or restricted residential, schools, or other use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;

- All future activities on the Site that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- The use of the groundwater underlying the Site is prohibited without treatment rendering it safe for intended use (e.g. potable water, process water, irrigation, etc.) and written approval from the Westchester County Department of Health;

- The potential for vapor intrusion must be evaluated for any building developed on the Site, and any potential impacts that are identified must be monitored or mitigated;

- Vegetable gardens and farming on the property are prohibited;

- The Site owner or remedial party will annually submit to NYSDEC a written statement that certifies, under penalty of perjury, that:

    1. Controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC.

2. Nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP.

This certification shall be made by an expert that the NYSDEC finds acceptable. Additional information regarding the requirements of the annual certification is included in Section 5 of this SMP. NYSDEC retains the right to access the Site at any time in order to evaluate the continued maintenance of any and all controls.

2.3.1 Excavation Work Plan

The Site has been remediated for restricted use, which includes passive recreational, use. Any future intrusive work that will penetrate the soil cover, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system or shoreline revetment will be performed in compliance with the Excavation Work Plan (EWP) that is included as Section 6 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site.

Since a HASP should be task specific as well as Site specific, an activity specific HASP should be developed for each task or type of task that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and to all other applicable Federal, State and local regulations. While much of the information in the Site-specific HASP will be the same each time, the hazard/task analysis will need to be specific for each intrusive task to be performed at the Site. The minimum requirements for all HASPs that are to be developed for the Site are included Section 7.0 of this SMP.

Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and resubmitted with the notification provided in Section 1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The Site owner and associated parties preparing the documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of water derived or associated with excavations, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as foundations and bridge footings). The Site owner will ensure that Site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.3.2 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination and the potential for soil vapor intrusion (SVI) has been identified, an SVI evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential

exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include, at a minimum, a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York." Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary (un-validated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation. Any SVI sampling results, evaluations, and follow-up actions would be summarized in the next Periodic Review Report.

2.4 INSPECTIONS & NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the Site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive Site-wide inspection will be conducted annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If Site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the Site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the Site owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the State Assistance Contract (SAC), 6NYCRR Part 375, and/or Environmental Conservation Law.

- 15-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to any engineering control (e.g. riprap revetment or cover system) that reduces or has the potential to reduce the effectiveness of said control or other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48-hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the Site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the State Assistance Contract (SAC), and all approved work plans and reports, including this SMP. All Environmental Easements will also be conveyed.

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing.

Notifications to NYSDEC should be made to the following:

Project Manager, Site ID B00183
NYSDEC Remedial Bureau C
625 Broadway
Albany, NY 12233-7014

2.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions (e.g. flooding, hurricanes, etc.). While there are numerous other types of emergencies (e.g. terrorism threats, power blackouts, pandemics, etc.), the most likely event to impact the engineering controls constructed at the Site would be severe weather, such as a flooding event that scours the soil cover system.

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to a qualified environmental professional. These emergency contact lists must be maintained in an easily accessible location at the Site.

Table 2-3. Emergency Contact Numbers

Medical, Fire & Police	**911**
NYSDEC Spills Hotline	(800) 457-7362
National Response Center (for Pollution Toxic Chemical Oil Spills)	(800) 424-8802
Poison Control Center	(800) 222-1222
Dig Safely New York – Utility Clearance (3-day notice required for utility mark out)	(800) 962-7962 or 811

Note: Contact numbers are subject to change and should be updated as necessary.

Table 2-4. Support Contact Numbers

City of Peekskill Planning Department	(914) 734-4212
CHA, Inc. – Environmental Consultant/Environmental Professional	(518) 453-4500
NYSDEC Division of Environmental Remediation	(518) 402-9662
New York State Department of Health	(800) 458-1158
Westchester County Department of Health	(914) 813-5000

Note: Contact numbers are subject to change and should be updated as necessary.

2.5.2 Map and Directions to Nearest Health Facility

Site Location: Intersection of North Water Street and Main Street
Peekskill, New York 10567

Nearest Hospital Name: Hudson Valley Hospital Center

Hospital Location: 1980 Crompond Road
Cortlandt Manor, New York 10566

Hospital Telephone: (914) 734-3333

Directions to the Hospital: (see Figure 4 for a map of directions to hospital)

1. Exit Riverfront Green Park onto Hudson Avenue
2. Take the first left onto South Water Street
3. Take the next left onto North Water Street
4. Take the first right onto Main Street
5. Turn right at North Broad
6. Turn left at NY-35 E/US-202 E/Crompond Road

Total Estimated Distance: 2.4 miles
Total Estimated Time: 6 minutes

2.5.3 Response Procedures

As appropriate, the fire department and other emergency response groups will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (Table 2-1). The list will also be posted prominently at the Site (at least one list in each on-Site structure and one in each management and/or maintenance office) and made readily available to all personnel at all times. Finally, a copy of this list will be maintained by the Site owner(s).

2.5.3.1 Spill Response Procedures

Spill Response Procedures

1. Immediately upon evidence that a spill or release has occurred, facility personnel shall call the City of Peekskill Planning Department at (914) 734-4212 and inform them of the pertinent facts related to the spill event (i.e., location, source of spill, immediate threats).

2. Secure the spill site.

3. Check for immediate threats or people in danger.

4. Evaluate exposures to response personnel, the public, and the environment.

5. Call environmental services contractor, as necessary, for assistance with spill containment and cleanup.

6. If there is no risk to human safety, begin to contain the spill using spill containment equipment such as absorbent materials, pads, etc. All cleanup personnel will utilize appropriate personal protective equipment (PPE), such as gloves, boots, coveralls, eye protection, etc.

7. Barricade the point of release and the point at which the discharge exits the building (if applicable) with oil absorbent materials.

8. Prevent the flow into storm drains or other points of concern using oil absorbent booms and other materials to the extent possible.

9. Call Emergency Response (Fire Department) for assistance if necessary or if the surrounding community is affected.

10. Call the State Spill Hotline at (800) 457-7362 within two hours of discovery of the spill.

11. Call the National Response Center at (800) 424-8802 if the spill has reached navigable water or adjoining shorelines.

Spill Incident Reporting

All spills must be reported to the NYSDEC Spill Hotline at (800) 457-7362 unless they meet all of the following criteria:

- The spill is known to be less than 5 gallons
- The spill is contained and under control
- The spill has not and will not reach the State's waterways
- The spill is cleaned up within 2 hours of discovery.

When reporting a spill, the following information should be documented and provided to the NYSDEC for each reportable spill:

- The facility address and phone number
- Date and time of the discharge
- Type of material discharged
- Estimated total quantity of material discharged
- Source and/or cause of the discharge
- A description of all affected media
- Any damages or injuries caused by the discharge
- Actions being used to stop, remove, and mitigate the effects of the discharge
- Whether an evacuation may be needed
- The names of the individuals and/or organizations who have also been contacted

Methods of Disposal of Recovered Materials

All materials recovered from spill response measures will be appropriately containerized and labeled as to contents, including the date and nature of the contamination. City officials or designated representatives will make a hazardous waste evaluation of the containerized waste in accordance with the requirements of 6 NYCRR Part 371. In the event that the material is determined to be a regulated hazardous waste, it will be managed and disposed of in accordance with the appropriate requirements of 6 NYCRR Part 374 and 376, including manifesting of the hazardous waste.

In the event that the recovered material is determined to be non-hazardous, it will be managed and transported in accordance with the requirements of 6 NYCRR Part 364. Only appropriately trained and/or certified vendors and/or contractors will be utilized to perform cleanup and disposal services.

2.5.3.2 Evacuation Procedures

It is not always necessary to evacuate the Site during an emergency. However, if there is a catastrophic failure of the Site engineering controls, a significant release that poses threat to the human health, or a significant weather event that poses a threat to the Site, evacuation may become necessary. It is important that occupants on the Site are prepared and plan for such evacuations in advance.

Site Evacuation

In the event it is necessary to evacuate the Site, emergency responders (e.g. police or fire departments) will coordinate such evacuations and determine when it is safe to return to the Site. If an evacuation is ordered, all persons on the Site should heed all safety personnel instructions relative to evacuation routes from the Site and/or follow the general flow of traffic. Site occupants will be prohibited to congregate at the Site limits or evacuation line during emergency events.

2.5.3.3 Contingency Plan Amendments

The Site owner will notify the NYSDEC of any amendments to the Contingency Plan a minimum of 60-days prior to implementing the proposed changes. The procedures noted in this SMP are general in nature given that the Site was vacant at the time the SMP was prepared. However, as the Site is developed, more detailed plans, particularly evacuation plans, will be prepared.

3.0 SITE MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site and the soil cover system. Monitoring of other Engineering Controls is described in Section 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Assessing achievement of the remedial performance criteria.
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Annual inspection and periodic certification.

3.2 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year, with the first inspection being completed 18 months following the NYSDEC's issuance of the certificate of completion. Site-wide inspections will also be performed after all severe weather conditions (e.g. 10-year frequency storm of more, flooding events, hurricanes, tornadoes, etc.) that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix F). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;

- Compliance with permits and schedules included in the Operation and Maintenance Plan; and

- Confirm that Site records are up to date.

The following subsections summarize some of the Site ECs that will be reviewed during each Site-Wide Inspection.

3.2.1 Soil Cover System Monitoring

The soil cover system will be inspected on an annual basis to determine whether or not there is damage that needs to be repaired to maintain the intended level of protection. The soil cover system at the Site incorporates a non-woven geotextile demarcation layer and a minimum of six inches of a compacted barrier layer and a six inch top soil layer. The most likely problems to occur with the soil cover system include settlement (total and differential) of the Site, erosion of surface soils, loss of vegetative cover on the Site, and potential intrusive activities associated with the installation of future Site amenities.

Annual inspections of the Site will be performed to identify and document any damage or problems that may have developed with time after installation of the soil cover system. A Site-Wide Inspection Checklist, which has been included in Appendix F, will be completed during each of the annual inspections and will be appended to the periodic monitoring reports submitted to the NYSDEC. Additionally, severe condition inspections of the soil cover should be completed after any of the severe conditions listed below:

- After a flooding event/storm surge in the Hudson River;
- After a significant storm event in excess of the 10-years storm frequency;
- After an earthquake; or
- Other weather events that potentially impacted the integrity of the soil cover system.

The following list provides a summary of the types of damage that are most typical for soil cover systems and the recommended repair procedures:

1. **Shallow depressions (less than 6 inches in impervious areas or less than 12 inches in green space areas) where the demarcation barrier is not exposed:** In areas where shallow depressions are discovered in the cover system, the soil cover system may be repaired by placing additional clean soil in the area of the depression, grading it to maintain positive drainage, and compacting the soil prior to re-establishing the finished surface (e.g. vegetative cover).

2. **Deep depressions and/or sink holes (greater than 6 inches in imperious areas or greater than 12 inches in green space areas):** Deep depressions, especially adjacent to the revetment, may be attributable to subsurface erosion and scouring which will need to be investigated prior to making repairs to reduce the likelihood of future reoccurrence.

Following the requirements of the Excavation Work Plan (Section 6), the area should be excavated to explore for the cause of the depression. After identifying the source of the depression and when the subsurface repair is complete, the demarcation layer will need to be repaired by placing a new piece of 6-ounce non-woven geotextile over the repaired area. The fabric should overlay the existing demarcation barrier by a minimum of 12-inches in all directions.

All materials used to repair the soil cover layer (top 12 inches) must be from a documented source of "virgin" soil or from off-site borrow soils meeting the NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6. . Analytical data is required to demonstrate imported material meets the requirements of the remedial program, unless an exemption is granted by the Department in accordance with Part 375 and DER-10. Department approval must be granted prior to importing any material without analytical testing. All materials shall be graded and compacted in appropriate size lifts for the material being placed. Details regarding imported materials to be used as backfill are provided in Section 6.10.

3. **Eroded areas of the soil cover or ruts:** Areas where erosion of the cover soil is observed should be repaired by replacing the eroded soil and compacting it prior to re-establishing the vegetative cover. Drainage paths should be rerouted to prevent future erosion problems, and appropriate erosion and sedimentation controls (ESCs) should be temporarily installed (e.g. silt fence, hay bales, rock check dams, etc.).

4. **Bare spots:** Bare spots on the top of the soil cover system will be repaired by re-working soil cover, re-seeding, fertilizing and mulching.

5. **Damage due to excavation:** It is anticipated that the demarcation layer will be damaged from time to time due to addition of Site amenities, installation of landscaping features, installation of new utilities work, etc. All such work should be done in accordance with the Excavation Work Plan (Section 6).

6. **Vector activity:** The annual Site-wide inspection should identify the presence of any live vectors, dead vectors, animal tracks, droppings, feeding areas, or dens. If the visual observations determine that there is a presence of burrowing vectors on-Site, a professional exterminator will be contacted to develop and implement a plan to control the vector population.

7. **Overgrowth of vegetation:** The use of shallow rooting plants is highly encouraged at the Site to avoid breaching of the demarcation barrier that would trigger the need to utilize the Excavation Work Plan. Additionally, the lawn/grass areas of the Site shall be mowed periodically to prevent establishment of "woody" vegetation that may potentially damage the soil cover system.

3.2.2 Shoreline Stabilization

The shoreline riprap revetment was designed as an erosion control element to reduce erosion to the Site caused by the Hudson River. Annual inspections will be required to ensure the integrity of this EC. The Site-Wide Inspection Checklist includes a list of items that will be observed during the annual inspections. While these inspections are not intended to be full structural inspections or inspections for safety, the riprap revetment and erosion control matting will be inspected for the following at a minimum:

1. Significant deflection that indicates that the erosion control barriers are under excessive stress.

2. Evidence of physical damage from ice or debris.

3. Evidence of erosion to the cover system in the vicinity of the revetment.

4. Evidence of slope failure or settlement associated with the riprap revetment.

5. Presence of significant debris that has the potential to damage any of the shoreline erosion control systems.

3.2.3 Drainage Systems

A majority of the Site drains via sheet flow towards the Hudson River. However, stabilized graded channels were constructed in several areas adjacent to the Metro North Railway, and there is the potential for natural preferential drainage pathways to develop that could result in significant erosion to the Site. Inspection of the drainage system should be conducted during each quarterly inspection as well as after all major storm events (10-year storms or greater). After completing a representative number of inspections with no issues noted, a request to reduce the inspection frequency of the drainage system will be made, based upon the historical performance of the drainage system. The drainage system inspection should identify any erosion, siltation, settlement, or restriction to the flow of water on the Peekskill Landing site. All eroded or settled areas should be repaired by replacing and compacting the eroded material or replacing and compacting additional material, followed by re-installation of erosion control matting and/or re-seeding to prevent additional erosion.

3.2.4 Existing Structures

Any and all monitoring well covers, fences, gates, and any other on-site structures should be checked to insure that they are undamaged and have been secured. Any damaged structures should be repaired using suitable methods based on the nature of the structure and damage. All structures should be re-secured immediately.

3.3 MONITORING REPORTING REQUIREMENTS

Forms and other information generated during annual monitoring events and inspections will be kept on file with the owner. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan (Section 5.0) of this SMP.

If any monitoring occurs at the Site, all monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report summarizing the monitoring event findings will also be prepared, subsequent to each sampling event in the event that one of the following occurs:

- The sampling results show a significant increase (greater than 15%) in the concentration of any groundwater contamination in a given well, unless said increase is to a value less than its groundwater standard, criteria or guidance value (SCG); or
- Measureable NAPL is encountered; or
- Sheens are encountered in an area where they were not previously encountered.

The letter report will include the following, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater, sub-slab vapor, indoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, Site inspection reports, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized in Table 3-3 below.

Table 3-3. Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency
Groundwater Monitoring Program	Annual basis. Report must be submitted to NYSDEC within 90 days of annual sampling event.
Site Wide Inspection	Annual basis. Report must be submitted to NYSDEC within 90 days of annual sampling event. First report due 18 months following DEC issuance of Certificate of Completion.

**The frequency of events will be conducted as specified until otherwise approved by NYSDEC in writing.*

4.0 OPERATION & MAINTENANCE PLAN

The site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems or active treatment systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

If in the future it is determined that a mechanical system such as sub-slab depressurization system is required at the Site this SMP will be updated to include an Operation and Maintenance Plan.

5.0 INSPECTIONS, REPORTING & CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan of this SMP. At a minimum, a Site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate site-wide inspection form which is contained in Appendix F. This form is subject to NYSDEC revision. Additionally, color photos must be included with the periodic review report documenting Site conditions.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the Site during the reporting period will also be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

The results of the inspection and Site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items,
- The Site remedy continues to be protective of public health and the environment and is performing as designed in the RDWP and FER (i.e. all EC/ICs are performing and there is no change in use of the Site that would result in a change in level of protection of public health or the environment).

5.2 CERTIFICATION OF ENGINEERING & INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a qualified environmental professional will prepare the following certification:

> "For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;

- The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;

- Nothing has occurred that would impair the ability of the control to protect the public health and environment;

- Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;

- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;

- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;

- Use of the Site is compliant with the environmental easement;

- The engineering control systems are performing as designed and are effective;

- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program; and

- The information presented in this report is accurate and complete.

- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] for the Site."

The signed certification will be included in the Periodic Review Report described below.

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the Certificate of Completion is issued. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A (Final Site Survey and Metes and Bounds Description). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site;

- Results of the required annual Site inspections and severe condition inspections, if applicable;

- Results of all site inspections, including but not limited to the inspection forms and other records generated for the Site during the reporting period in electronic format;

- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;

- If monitoring is required, data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;

- If applicable, results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format. In addition, the laboratory performing the analyses will also be required to provide the data in an electronic data deliverable (EQuIS format) for electronic submission to the NYSDEC.

- A Site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the Site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
    - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
    - The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the Site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation. Finally, the addresses for these agency offices are as follows:

NYSDEC Central Office:
Attn: Project Manager, Site ID B00183
NYSDEC Remedial Bureau C
Division of Environmental Remediation
625 Broadway

Albany, New York 12233-7014
Phone: (518) 402-9662

NYSDEC Regional Office:
Attn: Region 3 Hazardous Waste Remediation Engineer
NYSDEC Region 3 Headquarters
21 South Putt Corners Road
New Paltz, New York 12561-1696
Phone: (845) 256-3137

5.4 CORRECTIVE MEASURES PLAN

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a corrective measures plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the corrective measures plan until it is approved by the NYSDEC.

6.0 EXCAVATION WORK PLAN

As previously indicated, the Site contains contamination left after the completion of the remedial action. The specific types and concentrations of remaining contaminants at the Site are further described in Section 1.4.3 of this SMP. This Excavation Work Plan (EWP) will be implemented for all intrusive activities at the Site following the completion of the remedial action. Specifically, all activities that involve intrusive activities beneath the Site demarcation barrier and/or the groundwater table will necessitate the implementation of this EWP as well as the preparation of a site-specific, task-specific Health and Safety Plan. Such activities may include, but are not limited to, the following:

- The excavation of Site soils to install new structures, such as building foundations, light pole bases, retaining walls, holding tanks, mooring dolphins/anchors, etc.
- The excavation of Site soils to install new underground utilities.
- The excavation of Site soils to alter Site surfaces and/or change the Site grades.
- The installation of landscaping, particularly trees or shrubs that will require excavation deeper than 12-inches.

The objective of this EWP is to set forth guidelines for the management of soil, groundwater, and air quality during future intrusive activities at the Site. Following the guidelines in the EWP will provide protection of human health and the environment during and subsequent to the redevelopment construction at the Peekskill Landing Site.

It should be noted that simple excavations may only require compliance with a portion of the EWP. For example, excavation of a small volume of soil from above the water table that is directly loaded for off-site disposal would not require the stockpiling or fluids management provisions of this template.

It is noted that the northern portion of the site is potentially impacted from contamination that has migrated from the adjacent Pemart Ave-Peekskill MGP site, located to the north of the Site. Additional data regarding this contamination is provided in Appendix N of the Final Engineering Report for the Peekskill Site.

All workers involved with work below the demarcation layer will be trained on the technical elements of 29 CFR 1910.132 by a qualified individual. For any excavation below the geotextile layer, a photograph record consisting of the following photographs is to be provided to NYSDEC:

1. Pre-existing conditions,
2. Exposed geotextile before penetration,

3. Segregated piles, erosion control measures, any groundwater/surface water control measures, and final extent of the excavation,
4. Restored geotextile layer after backfilling, and
5. Restored one-foot cover.

Verification that the one-foot cover, after settlement/compaction, has been restored will need to be provided.

6.1 NOTIFICATION REQUIREMENTS

At least fifteen (15) days prior to the start of any activity that is anticipated to encounter remaining contamination and/or penetrate the demarcation barrier, the Site owner or their representative will notify the NYSDEC. Currently, this notification will be made to:

NYSDEC, Central Office
Section Chief
Section D, Bureau E
625 Broadway
Albany, NY 12233-7017

This notification will include:

- A detailed description of the work to be performed, including the location, the areal and vertical extent of the disturbance, plans for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;

- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;

- A schedule for the work, detailing the start and completion of all intrusive work;

- A summary of the applicable components of this EWP;

- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;

- A copy of the contractor's health and safety plan, in electronic format, that meets the requirements of Section 7 of this SMP;

- Identification of disposal facilities for potential waste streams;

- Identification of sources of any anticipated backfill, along with all required chemical testing results.

6.2 SOIL TESTING & SCREENING METHODS

6.2.1 Waste/Soil Characterization Sampling

Depending on the anticipated amount of soil that will be excavated for off-site disposal and the amount of space available on-Site to stage the excavated soils, it may be preferable to direct load the material to be disposed of off-site directly into trucks for immediate hauling to the disposal facility. Direct loading of the materials requiring off-site disposal will also reduce the need to handle the material multiple times. If direct loading of materials is determined to be desirable, pre-excavation sampling and analysis will be required to obtain approval from the disposal facility to accept the excavated material.

Regardless of whether pre-excavation samples are collected or whether characterization samples are collected from on-Site stockpiles, the sampling frequency will be specified by the disposal facility based upon the total volume of material requiring disposal. For larger projects, the sampling frequency should be one (1) sample per very 1,000 CY of material requiring disposal at a minimum; however, in no case should the frequency be less than one (1) sample per work area. The sampling program will require the collection of both grab samples and composite samples. Unless otherwise specified by the disposal facility, samples collected for VOC analysis will be discrete grab samples and other analyses will be performed on composite samples. The basic sampling methodology is described below. However, depending on the complexity of the sampling program, NYSDEC may require that a project specific Field Sampling Plan be submitted to the Department for approval.

Grab Samples

The grab samples shall be collected by personnel wearing a freshly donned pair of latex gloves (or equivalent) and appropriately decontaminated, stainless steel hand tools or disposable polyethylene scoops. The samples should be immediately placed into the appropriately pre-preserved laboratory containers and labeled. The labeled containers should then be placed on ice and cooled to 4° Fahrenheit.

Composite Sampling

The composite samples shall be collected from various depths and locations in each work area that is representative of the entire work zone. Each composite will be formed from five equally sized, discrete sub-sample soil samples. The samples can be collected by hand with a fresh pair of gloves and appropriately decontaminated stainless steel hand tools or disposable polyethylene scoops. The sub-samples will then immediately be placed into a stainless steel bowl and covered with aluminum foil between the addition of each subsample. While composite sampling will not be utilized for samples collected for VOC analysis, the bowl will be covered between the additions of each sub-sample to minimize the potential for volatilization of any semi-volatile contaminates that may have been present in the soil.

Once all five of the sub-samples are added to the bowl, the soil samples will be thoroughly homogenized using a stainless steel or disposable polyethylene spoon/scoop and immediately transferred to the appropriate laboratory containers and managed in a similar manner as the grab samples. The locations of each soil sample should be identified on a map or sketch and submitted to the NYSDEC along with the analytical results.

The soil samples will be submitted to a laboratory certified under the New York State Department of Health's Environmental Laboratory Approval Program (ELAP) for analysis following appropriate chain-of-custody protocols, in accordance with Section 3.3 of this SMP. The specific analytical waste characterization requirements of the waste disposal facility may vary and shall be verified prior to sampling. The parameters required for waste disposal characterization will likely include following:

- Target compound list (TCL) VOCs by NYSDEC Analytical Services Protocol (ASP) 95-1.
- TCL SVOCs by NYSDEC ASP 95-2
- TCL PCBs by NYSDEC ASP 95-3.
- Target Analyte List (TAL) metals and cyanide by NYSDEC ASP.
- Toxicity Leaching Characteristic Procedure (TCLP) Extraction
- Hazardous Waste Characteristics as defined under the Resource Conservation and Recovery Act (RCRA), including ignitability, corrosivity, and reactivity.
- pH via EPA Method 9045
- Percent Solids via Method 160.3
- Paint Filter Test via Method 9095
- Additional analyses as required by the disposal facility.

6.2.2 Field Screening Methods

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all future excavations into known or potentially contaminated material (remaining contamination) at the Site. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil. In the event that field screening during the work identifies areas of unexpected contamination, or conditions that differ from the pre-excavation sampling, work activities shall be stopped and additional soil samples will need to be collected to further characterize the samples.

Field screening methods are only necessary for invasive activities below the demarcation layer. Soils removed from below the demarcation layer may be returned to the general proximity below the demarcation layer from which they were excavation. Any excess soils from below the demarcation layer must be characterized for offsite disposal.

6.3 STOCKPILE METHODS

If temporary stockpiling of Site soils is determined to be necessary, all excavated materials beneath the demarcation barrier will be required to be stockpiled on temporary containment pads within the exclusion zone (see Section 7 for requirements to establish work zones). The temporary containment pads will be of sufficient size to store up to a minimum of 110 percent of the maximum amount of soil that will be stockpiled prior to re-use or off-site disposal. At a minimum, any soil containment pads will include the following:

1. A sufficiently large area with accessibility for trucks and construction equipment. The area shall be relatively flat and away from drainage inlets on the waterfront.

2. A 10-mil thick polyethylene sheeting liner with a minimum of two-foot wide overlaps between successive rows.

3. A minimum of a one-foot high soil berm shall be constructed around the perimeter of each pad to control runoff/run-on to and from the stockpiles. Gravel/stone ramps with gentler slopes will be constructed at locations of ingress and egress for each pad. If excavation activities involve soils with significant moisture content, the stockpile area will be constructed to collect and contain water such that it does not drain into the Hudson River or outside of the work zone.

4. Soil stockpiles that will remain in place for more than one (1) week will also be continuously encircled with silt fence.

5. Hay bales and other erosion and sediment controls will be installed as needed near catch basins, surface waters, and other discharge points.

6. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC.

6.4 MATERIALS EXCAVATION & LOAD OUT

A qualified environmental professional or person under their supervision will oversee all intrusive work and the excavation and load-out of all excavated material from beneath the demarcation layer. The current owner of the Site and its contractors are solely responsible for safe execution of all intrusive and other work performed under this EWP. The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the

Site. The following minimum procedures will be required for all intrusive activities extending beneath the demarcation barrier at the Site:

1. Provide a minimum of three (3) working days of notice to Dig Safely New York (1-800-962-7962) for utility clearance.

2. Provide appropriate notification to NYSDEC pursuant to Section 6.1 of the SMP.

3. Establish Site Controls, including, but not limited to the following:

    - Installation of appropriate sediment and erosion controls
    - Identification of appropriate work zones
    - Identification of air monitoring stations
    - Construction of containment pads
    - Construction of decontamination pads

4. Excavate all soil cover materials above the demarcation barrier and stage them separately. For reference, the approximate elevation of the geotextile demarcation layer is illustrated by Figure 3. Erosion and sediments controls should be established around these stockpiles, but covering of the piles is not required unless covers are utilized as an erosion control measure or a means to control dust. These soils may be re-used on Site without characterization sampling.

5. Cut through the demarcation barrier in the excavation area with caution. Effort should be made to minimize the area of disturbance. The demarcation barrier must not be "pulled" from areas adjacent to the excavation.

6. Excavate Site soils utilizing field screening procedures. To minimize potential cross-contamination on-Site via tracking and reduce the amount of required decontamination, the following work practices should be implemented:

    - Efforts will be made to advance the excavation face towards the excavator such that the tracks on the machine do not come into contact with the potentially impacted soils.
    - Where possible, all trucks will be loaded adjacent to the excavation. Care will be taken to ensure that impacted soil is not spilled on the sides of the trucks as they are loaded and that the trucks do not drive through contaminated soils. The area will be inspected after loading of each truck to ensure that no soils have spilled; if any spilled soils are observed they will be immediately removed from the area. If wet, unsaturated soils are encountered, dry soils will be placed near the rear tailgate of the

truck and wetter soils will be placed near the front of the truck. If the soils are saturated, liners will need to be installed in the dump box or the soils will be stabilized prior to loading to avoid drippage out of the truck during the hauling process.

- If excavation below the water table is expected, a plan to manage spillage from saturated soils will be developed and implemented. A plan will be developed and implemented to ensure that placement of soils back into the hole will result in minimal settling.

- Efforts will be made to minimize the amount of equipment and machinery that comes into contact with the impacted soils. Clean zones are not to be impacted by equipment that comes in contact with potentially contaminated soils.

7. If field screening processes indicate a change in material is encountered (e.g. change in color, noticeable odors, etc.), the newly encountered material should be stockpiled and characterized separately.

8. If excavation beneath the water table is required, the material will need to be dewatered prior to placement back on-Site or transportation off-site for disposal. Additional measures should be implemented to collect all water on the containment pads for future off-site disposal (e.g. construction of a sump on containment pad).

A truck wash/decontamination pad will be operated on-Site. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking. The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

6.5 MATERIALS TRANSPORT OFF-SITE

The following requirements have been established for all materials being transported off-site:

1. All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly registered and placarded. In addition to a Part 364 permit, all haulers will maintain appropriate shipping papers and/or waste manifests (6 NYCRR Part 372). Emergency response procedures and emergency telephone numbers will be maintained in all vehicles, and operators will be trained in emergency response procedures.

2. Loaded vehicles will be in compliance with load height and weight regulations.

3. Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

4. Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers or mesh/open weave type covers will be prohibited. Before soils capable of producing free liquids are loaded, the truck receiving the load is to be lined.

5. All trucks will be washed prior to leaving the Site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

6. Route 9 is a major thoroughfare which should be used to access the Site from the north and south. Additionally Route 202/6 should be used to connect to Route 9 when approaching the Site from the east. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of City mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; and (g) community input.

7. Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Trucks operators shall comply with all applicable regulations relative to idling engines in accordance with 6 NYCRR Subpart 217-3; however, under no circumstances shall truck engines be left idling on Site for more than 15 minutes.

8. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during intrusive activities.

9. Queuing of trucks will be performed on-Site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

6.6 MATERIAL DISPOSAL OFF-SITE

All soil/fill/solid waste excavated from below the demarcation layer and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate (i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction & demolition (C&D) debris recycling facility, etc.). Actual disposal quantities and associated

documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted soil cleanup objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

6.7 MATERIAL RE-USE ON-SITE

"Reuse on-Site" means reuse on-Site of material that originate from the Site and which does not leave the Site during the excavation. Soils excavated above the demarcation barrier and segregated from Site soils containing remaining contamination may be re-utilized anywhere on-Site. Equipment used to excavate soils below the demarcation layer will be decontaminated before it is used to place clean soils. Materials excavated from beneath the demarcation barrier shall be directly loaded into trucks (if pre-excavation characterization samples indicated that need for off-site disposal) or placed onto temporary soil containment pads.

If there is no visual, olfactory or screening evidence of gross contamination, then soils excavated from below the demarcation layer may be replaced to the same general vicinity below the demarcation layer. Chemical characterization will only be needed if visual, olfactory or screening evidence indicates gross contamination.

Soil excavated from beneath the demarcation layer desired for re-use on-Site and which exhibits visual, olfactory or screening evidence of gross contamination must be sampled for the following criteria at a frequency of one (1) sample per very 1,000 CY of material excavated; however, in no case should the frequency be less than one (1) sample per work area:

- TCL VOCs by NYSDEC ASP 95-1.
- TCL SVOCs by NYSDEC ASP 95-2
- TAL metals and cyanide by NYSDEC ASP.

Many of these parameters are the same as those collected for waste characterization purposes as described in Section 6.2.1. If the material has already been characterized in preparation of the potential need for off-site disposal, additional sampling may not be necessary. However, should the material be staged on-Site for reuse initially, the material must be sampled in accordance with the above requirements. If the samples do not meet the chemical criteria established in this section of the EWP, additional sampling of the material may be required for waste characterization purposes.

Material generated during excavation activities that originates below the demarcation layer may be re-used on-site below the demarcation layer provided it is not grossly contaminated and contaminant concentrations do not exceed the soil cleanup objective (SCO) for the protection of groundwater. Although not expected, grossly-contaminated media is defined by the NYSDEC as "soil, sediment, surface water or groundwater which contains sources of substantial quantities of mobile

contamination in the form of NAPL that is identifiable either visually, though strong odor, by elevated contaminant vapor levels, or is otherwise readily detectable without laboratory analysis."

Material may be re-used on-site according to the following table:

Table 6-1. On-site Soil Re-use

Original Location of Soil	Acceptable Use
Above Demarcation Layer	Re-use allowed without restriction; however, top 6" of soil cover in vegetated areas must be capable of supporting vegetation
Below Demarcation Layer	Re-use below demarcation layer, provided it is not grossly contaminated. If there is evidence of gross contamination, then sampling will be required and appropriate disposition of soils sampling will be determined on a case-by-case basis.

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-Site. Contaminated on-Site material, including historic fill and contaminated soil, that is acceptable for re-use on-Site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

6.8 FLUIDS MANAGEMENT

Groundwater monitoring well purge and development waters will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. If historical record of sampling results indicate the presence of contamination or in the event that the purge water exhibits physical evidence of contamination (e.g. odor, sheen, etc.), then it will be collected, properly labeled, and stored for future disposal/treatment. Purge water for which the historical record of sampling results does not indicate the presence of contamination and which does not indicate the presence of contamination based on visual and olfactory characteristics will be discharged to the ground surface immediately adjacent to the monitoring well from which it was extracted. Visual and olfactory indications will be used as secondary considerations only to ensure proper management of purge waters that had no history of contamination.

Dewatering and decontamination fluids will not be recharged back to the land surface or subsurface of the Site, but will be containerized on-site and handled, transported and disposed in accordance with applicable local, State, and Federal regulations. During excavation activities, in order to properly manage any groundwater, collection of water on-site will be done in a manner to prevent the migration of particulates or soil/fill, and to prevent damage to the existing subgrade materials. Water may be pumped into a vacuum truck and transported off-site or may be pumped and stored in drums or temporary storage tanks (e.g. polyethylene tanks or frac tanks) that are approved and labeled in accordance with United States Department of Transportation (USDOT) requirements. The water collected will be sampled by the contractor on a frequency of one sample per every ten drums or one sample per every 2,000 gallons of water collected in larger vessels. However, more frequent sampling may be directed by the NYSDEC or the disposal facility (e.g. a local publicly-owned treatment works (POTW)), should observable changes in the water quality be identified in the field.

The water samples will be analyzed for TCL VOCs and TCL SVOCs, and the TAL metals and any other parameters required by the selected disposal facility for characterization purposes. It is anticipated that pretreatment of particulate matter in the water will be required such that the turbidity of the water is at or below 50 Nephelometric turbidity units (NTUs) through filtering of settling processes prior to shipment.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

6.9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the Record of Decision (ROD) and this SMP. Materials being reused in accordance with Section 6.7 of this SMP should be placed beneath the demarcation barrier, with the exception of clean soils that were previously segregated as clean material above the demarcation barrier. Prior to restoring the cover system, a demarcation barrier, consisting of a six ounce non-woven geotextile, will be replaced as a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. The replacement of this demarcation layer will include a two-foot overlap.

After the demarcation barrier is placed, clean, imported soils (unless reusing prior soil cover material) must be placed to a minimum thickness of twelve (12) inches over the top of the demarcation barrier. If the finish surface is grass, the top layer of soil cover material (minimum six (6) inches) shall be capable of supporting vegetation (e.g. topsoil). If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the 'Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

6.10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site. All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Specifically for this Site, all off-site borrow/imported fill soils will be from a documented source of "virgin" soil/rock or from off-site borrow soils meeting the NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6. Before fill from an offsite source is brought onsite, the following documentation must be submitted to the NYSDEC for approval:

1. **Virgin Soil Materials:** If the Contractor designates a source as "virgin" soil, written documentation shall be provided to the Owner and Engineer to document that the soil is native material from areas not having supported any known prior industrial or commercial

development or agricultural use and is not now, nor has ever been, identified as a suspected depository for chemical, toxic, hazardous, or radioactive wastes. Additionally, one grab sample will be collected for every 5,000 cubic yards of material and analyzed for TCL VOCs. Similarly, one composite sample prepared from at least five equally sized sub-samples will be collected for every 5,000 cubic yards of material and analyzed for TCL SVOCs, pesticides, PCBs, and TAL metals. The soil will be considered acceptable for use as backfill provided that all parameters are below NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6.

2. **Non-Virgin Soil Materials:** Off-site borrow soils will be documented as having originated from locations having no evidence of disposal or release of hazardous, toxic or radioactive substances, solid wastes or petroleum products. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site. The materials cannot be defined as solid waste in accordance with 6 NYCRR Part 360-1.2(a) and must be free of deleterious and organic materials. Non-virgin soils will be tested via the collection of one grab sample to be analyzed for TCL VOCs and one composite sample prepared from at least five equal size sub-samples each to be analyzed for TCL SVOCs, pesticides, PCBs, and TAL metals. The soil will be considered acceptable for use as backfill provided that all parameters are below NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6.

   The sampling frequency for non-virgin soils will be one composite sample per 500 cubic yards of materials borrowed from each source areas. If more than 1,000 cubic yards of soil are borrowed from a given off-site source, and both samples from the first 1,000 cubic yards meets the NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6, the sample collection frequency will be reduced to one sample for every 2,500 cubic yards of additional soils from the same source up to 5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, the sampling frequency may be reduced to one sample per every 5,000 cubic yards, provide that the early samples met NYSDEC's Unrestricted Use Soil Cleanup Objectives established in Table 375-6.8(a) of 6 NYCRR Subpart 375-6.

The environmental professional and/or engineer will be responsible for determining the need for additional material testing, such as particle size analysis, maximum dry density determination, moisture content, Atterberg limits, etc. for geotechnical purposes.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases. Stockpiles will be limited to a maximum size of 500 cubic yards. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

6.11 SITE CONTROLS

The Site controls implemented at the Site will minimize the potential for detrimental impacts to the environment and human health associated with the proposed excavations and handling of potentially impacted soils and/or remaining contamination. All appropriate Site controls must be in place prior to conducting any intrusive activities at the Site.

6.11.1 Stormwater Pollution Prevention

Prior to beginning any intrusive activities, appropriate erosion and sediment controls (ESCs) will be installed. This section is intended to provide general guidelines for installing and maintaining ESCs; however, the appropriate ESCs need to be selected on a case-by-case basis given the location of the activity, the size on the disturbance, the proximity of the activity to the Hudson River or other discharge points, etc. For activities resulting in a disturbance of one (1) acre or more of land, a Notice of Intent (NOI) should be filed with NYSDEC seeking to gain coverage under State Pollution Discharge Elimination System (SPDES) General Permit and an updated Stormwater Pollution Prevention Plan (SWPPP) describing the intended ESCs to be utilized should be submitted to NYSDEC for approval. All erosion and sediment controls should be designed and installed in accordance with the NYSDEC's Standards and Specifications for Erosion and Sediment Control, dated August 2005 or later.

All SWPPPs, if required, must fulfill all permit requirements and will provide the following minimum information:

- A background discussion of the scope of the construction/remedial project.
- A description of proposed soil erosion and sediment controls.
- A description of the type and frequency of maintenance activities required to support the control measure.
- Spill prevention measures
- Certifications

The SWPPP will also include a contingency plan to be implemented in the event that heavy rain events are determined to be impacting water quality in the Hudson River due to intrusive activities being conducted at the Site. All descriptions of proposed features and structures at the Site will include a description of structure placement, supporting engineering data, construction scheduling, and references to established detailed design criteria. The SWPPP will conform to all requirements as established by applicable regulatory agencies.

Proven soil conservation practices will be incorporated in future work plans involving intrusive activities to mitigate soil erosion, off-site sediment migration, and water pollution from erosion. These practices may combine both vegetative and structural measures. Some measures will be

permanent in nature and become part of the completed project (design features such as drainage channels and grading). Other measures will be temporary and serve only during the construction stage. The contractor will remove temporary measures at the completion of construction and stabilization of the Site. The selection of erosion and sediment control measures will be based on several general principles, including:

- The minimization of erosion through project design (maximum slopes, phased construction, etc.).
- The incorporation of temporary and permanent erosion control measures.
- The removal of sediment from sediment-laden storm water before it leaves the Site.

The use of appropriate temporary erosion control measures such as silt fencing and/or hay bales will be required around all soil/fill stockpiles and un-vegetated soil surfaces during redevelopment activities. These methods are described below. Stockpiles shall be graded and compacted as necessary to provide positive surface water runoff and dust control. Stockpiles of soil/fill will be placed a minimum of twenty feet from the Site boundaries and as far away from the Hudson River as practical.

Temporary Erosion Control Measures

Prior to any intrusive activity, temporary erosion and sediment control measures shall be installed and maintained until such time that permanent erosion control measures are installed and effective. Additional sediment control measures may also be necessary. Structural measures, such as those described below, will be designed and installed to provide the required sediment and erosion control:

- Silt fencing
- Straw bales
- Temporary vegetation/mulching
- Fiber reinforced plastic sheeting and turbidity curtains (work adjacent to River)
- Redirection of surface water

Re-grading and cover activities may result in sheet flow to various areas of the Site, and therefore, silt fencing will be used as the primary sediment control measure for disturbed areas. Prior to extensive clearing, grading, excavation, and placement of cover soils, silt fences will be installed along all construction perimeter areas to prevent sedimentation in low areas and drainage areas. The location and orientation of silt fencing will be determined based upon the planned intrusive activities, drainage pathways, etc. Breaks and overlaps in the silt fencing may be required to allow construction vehicles access to the construction areas, but will be minimized. Intermediate silt fencing will be used upslope of perimeter areas where phased construction activities are occurring. This measure will effectively lower sheet flow velocities and reduce sediment loads to perimeter fencing. In addition, silt fencing around soil stockpiles will be required. The perimeter silt fences will remain in place until construction activities in the area are completed and vegetative cover or other erosion control measures are adequately established.

Straw bales will be used to intercept sediment-laden runoff from storm water channels as needed during various phases of intrusive activities. Additional straw bale dikes may be necessary in some areas during some phases of construction. Use of straw bales will be limited to swales and/or diversion ditches where the anticipated flow velocity will not be greater than five feet per second (fps). Where flows may eventually exceed five fps along a swale or diversion ditch, an intermediate straw bale barrier will be installed up-gradient of the final bale barrier. The intermediate bale barrier will effectively reduce flow velocities and sediment load to the final barrier. Straw bale barriers will remain in place until construction activities contributing sediment to the barrier are complete and vegetative cover or other erosion control measures are adequately established.

In areas where activities will not resume for a period in excess of two weeks, the disturbed areas will be seeded with a quick germinating variety of grass or covered with a layer of straw mulch. The temporary cover will act to stabilize the soil and reduce erosion. As construction progresses, areas containing temporary vegetation or straw mulch can be covered without removal of the temporary vegetation or mulch.

The following minimal checks will be made throughout the duration of intrusive activities to ensure the continued performance of the ESCs:

- Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

- Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Accumulated sediment will be removed when fifty (50) percent of the storage capacity of the straw bale barrier has been reached in order to maintain performance of the barrier and prevent overtopping or failure of the straw bale barrier.

- All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Accumulated sediment on the up-gradient side of the silt fence will be removed whenever fifty (50) percent of the storage capacity of the fence has been reached in order to maintain performance of the fence and reduce the likelihood of a structural failure of the fence.

- Removed sediment will be stockpiled and characterized for the same parameters as the excavated soils screened for reuse at a rate of one sample per every 500 cubic yards of sediment collected. Sediment that meets the criteria in Section 6.7 can be stockpiled and reused as fill at the Site; however, any sediment exceeding the criteria in Section 6.7 will be managed as impacted and will be disposed of off-site. Sediment laden straw bales that have lost their structural integrity and/or effectiveness will be disposed of off-site as a solid waste.

- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

- Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

- Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

Permanent Erosion Control Measures

Permanent erosion control measures and facilities will be incorporated into the Site as part of the redevelopment of the property and all future intrusive activities as appropriate. Permanent ESCs and facilities will be installed as early as possible during construction phases. Parking and building systems associated with redevelopment will not be permitted to include dry wells or other subsurface injections/disposal piping or facilities. Preventing erosion and scour of the final soil cover system will be a critical component of all future intrusive activities. Therefore, permanent erosion control measures will incorporate a combination of design features to limit overall erosion and sediment problems by ensuring that the restored soil cover is designed based on the following criteria, particularly in green space areas:

- Maximum slope of 33 percent (3 Horizontal:1 Vertical) to limit erosion.
- Minimize the potential contact with, and migration of, waste fill.
- Provide a medium for the growth of vegetation to control erosion.

Design features incorporated into the construction plans to control erosion will include limiting steep slopes, routing runoff to surface water collection channels, limiting flow velocities in the collection channels to the extent practical, and lining collection channels, where appropriate. In areas where flow will be concentrated (i.e.; collection channels) the channel slopes and configuration will be designed to maintain channel stability.

Following the placement of final cover soils over re-graded areas, a re-vegetation program will be implemented to establish permanent vegetation in pervious areas. Vegetation serves to reduce erosion, enhance evapotranspiration, and improve runoff water quality. Future lawn areas will be seeded in stages as construction is completed with a minimum of one-hundred pounds of seed per acre.

In addition to the above seed mixture, mulch, mulch blankets, or synthetic fabric will be placed as appropriate to prevent erosion during turf establishment. Mulch will be placed on all slopes less than fifteen percent and a mulch blankets will be used on all slopes greater than fifteen percent. Synthetic erosion control fabric will only be placed in drainage ditches and swales. As an aid to turf establishment, seeded areas will be fertilized with a starter fertilizer.

6.12 CONTINGENCY PLAN

If underground tanks, drums or other previously unidentified contaminant sources (e.g. stained soils) are found during post-remedial subsurface excavations or development related construction,

excavation activities will be suspended until sufficient equipment is mobilized to address the condition. Identification of unknown or unexpected contaminated media identified by screening during intrusive Site work will be promptly communicated by phone to NYSDEC's Project Manager as well as the Site Owner. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. Finally, the environmental professional will call the 24-hour emergency response contractor (see contact information in Section 2.5.1 of this SMP) to mobilize appropriate response personnel and equipment to manage the source area.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TCL volatiles and semi-volatiles, PCBs & TAL metals), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

These findings, including spill reports, analytical results, field notes, maps depicting the extent of the impacted area, remedial action descriptions, etc. will also be included in the periodic reports prepared pursuant to Section 5 of the SMP.

According to § 56-0509 (Liability limitation) of the Environmental Conservation Law, liability limitation does not apply to relieve any municipality, successor in title, lessee, or lender from liability arising from causing the release or threat of release at the property subject to such project of any contamination after the effective date of the ERP contract.

6.13 COMMUNITY AIR MONITORING PLAN

Air monitoring will be performed at the Site during all intrusive activities that will disturb the soils beneath the demarcation barrier in accordance with the most current New York State Department of Health (NYSDOH) *Generic Community Air Monitoring Plan (CAMP),* and Appendix 1A of DER-10. All air monitoring will be conducted on a real-time basis using both hand-held field instruments and perimeter air monitoring stations. All air monitoring readings will be recorded in a logbook and made available for review by both the NYSDEC and NYSDOH. The CAMP developed for the Site consists of two primary components. The fugitive dust control plan is discussed in 6.13.1 while the vapor control plan is discussed in Section 6.13.2. Air monitoring will be conducted both upwind and downwind of the construction areas and will be compared to assess if the construction activities are causing potential airborne migration of contaminants.

"Continuous monitoring" will be required for all ground intrusive activities, such as soil excavation and handling, installation or repairs to subsurface utilities, installation of landscaping beneath the demarcation barrier, etc. "Periodic monitoring" for VOCs will be required during non-intrusive activities such as the collection of soil samples and the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. In

some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities.

The CAMP is not intended for use in establishing action levels for worker respiratory protection that are otherwise described in Site-specific HASPs prepared for the intrusive Site activity. Rather, its intent is to provide a measure of protection for the downwind community (i.e. off-site receptors including residences and businesses and on-Site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of the proposed remedial work activities. Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP will help prevent the intrusive activities from spreading contamination off-site through the air.

In addition to air monitoring, the faces of any open excavations below the demarcation barrier will be covered with 10-mil thick polyethylene sheeting to control fugitive dust and odors at the Site at the end of each day, unless all excavations are backfilled.

6.13.1 Fugitive Dust Control

Fugitive dust control measures will be implemented during all intrusive excavation/construction activities. Fugitive dust is described as discrete particles, liquid droplets or solids, which become airborne and contribute to air quality as a nuisance and threat to human health and the environment.

The United States Environmental Protection Agency (USEPA) has set the standard for particulate matter that may impact human health as those particulates less than ten microns in diameter (PM_{10}), regardless of whether the particulate materials are contaminated or not. This number is based upon values considered to be protective of human health with an adequate margin of safety. The primary standards established to protect human health are a fugitive dust concentration of a maximum of 150 micrograms per cubic ($\mu g/m^3$) meter of a 24-hour averaging period and 50 $\mu g/m^3$ over an annual average time.

The NYSDEC's DER-10 Appendices 1A & B – NYSDOH Generic Community Air Monitoring Plan and Fugitive Dust and Particulate Monitoring provides guidance for monitoring particulate matter at impacted sites and suppressing fugitive dust.

The following particulate monitoring program and fugitive dust suppression program, as identified in NYSDEC'S DER-10 Appendices 1A & B, will be implemented at the Peekskill Landing Site property:

1. Reasonable fugitive dust suppression techniques will be employed during all Site activities which may generate fugitive dust.

2. Particulate monitoring will be employed during the handling of soil/materials beneath the demarcation barrier or when activities on Site may generate fugitive dust from exposed

waste or contaminated soil. Such activities shall also include the excavation, grading, or placement of clean fill, and control measures therefore should be considered.

3. Particulate monitoring will be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM_{10}) in size with the following minimum performance standards:

   - Object to be measured: dust, mists, aerosols
   - Size range: <0.1 to 10 microns (μm)
   - Sensitivity: 0.001milliagram per cubic meter (mg/m^3)
   - Range: 0.001 to 10 mg/m^3
   - Overall Accuracy: ±10% as compared to gravimetric analysis of stearic acid or reference dust
   - Operating Conditions:
     Temperature: 0 to 40 degree Celsius (^oC)
     Humidity: 10 to 99 percent Relative Humidity
   - Power: Battery operated with a minimum capacity of eight hours continuous operation
   - Automatic alarms are required to indicate exceedance of the action level

   Particulate levels will be continuously monitored at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring shall be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. In addition, fugitive dust migration should be visually assessed during all work activities.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the entity operating the equipment to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action levels for dust monitoring are as follows:

   - If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

   - If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped

and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are effective in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the Site and the monitoring equipment does not measure PM_{10} at or above the action level. Since this situation has the potential to transport contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

   - Applying water on haul roads.
   - Wetting equipment and excavation faces.
   - Spraying water on equipment during excavation and dumping.
   - Hauling materials in properly tarped and watertight containers.
   - Restricting vehicle speeds to ten miles per hour or less.
   - Covering excavated areas and material after excavation activity ceases.
   - Reducing the excavation size and/or number of excavations.
   - Utilizing dust suppressing spray foams.

   Experience has shown that utilizing the above-mentioned dust suppression techniques, within reason as not to create excess water which would result in unacceptable wet conditions and the need to manage the excess water, the chance of exceeding the 150 micrograms per cubic meter action level during Site remediation/intrusive activities is remote. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. If the dust suppression techniques being utilized at the Site do not lower particulates to an acceptable level, work must be suspended until appropriate corrective measures are approved to remedy the situation. The use of dust suppressant materials (e.g. calcium chloride) will not be permitted without the written authorization of the NYSDEC. Also, the evaluation of weather conditions will be necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, intrusive activities may need to be temporarily suspended.

9. All readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Organic vapor will be conducted simultaneously with the dust monitoring program and is described further below.

6.13.2 Organic Vapor Control

Based upon the investigation conducted at the Site and the documented remaining contamination, minor emissions of organic vapors are expected during intrusive activities. Based upon the NYSDOH's Generic CAMP, VOCs will be monitored at the downwind perimeter of the immediate work area (i.e. the exclusion zone) on a continuous basis or as otherwise specified when the potential for VOC emissions exist. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions.

The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but are less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but is no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level in the downwind work area perimeter exceeds 25 ppm, the Major Vapor Emission Response Plan will be initiated. Under this plan, the following actions will be taken:

    a. All work will be halted.

    b. All Emergency Response Contacts identified in the Site-Specific Health and Safety Plan, including the local police and fire departments, will be contacted by the Site Safety Officer.

    c. The NYSDEC, NYSDOH, and the Site owner will be notified of the situation.

d. Air monitoring will be conducted at 15 minute intervals at a 20-foot offset from the exclusion zone. If two successive readings are measured by the field instrument and documented, the work may resume following the previously described monitoring plan.

4. All fifteen minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

6.13.3 Air Monitoring Station Locations

The prevailing wind direction is generally to the east, but varies greatly on a day to day basis, and sometimes even through the course of a day. Therefore, the monitoring locations will need to be adjusted on a daily or more frequently basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Multiple air monitoring stations may be established to ensure adequate coverage, even during times of variable winds. The Site is long and narrow, so the location of the air monitoring stations will also be based upon the actual location of the intrusive activities.

6.13.4 Exceedances

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers within 24 hours of the exceedance.

6.14 ODOR CONTROL PLAN

If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all significant odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the Site owner's environmental professional, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, the following specific odor control measure will be used on a routine basis:

1. Limiting the area of open excavations and size of soil stockpiles.

2. Reducing the speed of excavation activities.

3. Shrouding open excavations with tarps and other covers.

4. Consider weather factors when planning daily activities (e.g. wind direction).

5. Using foams to cover exposed odorous soils.

6. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:
    a. Direct load-out of soils to trucks for off-site disposal.
    b. Use of chemical odorants via spray or misting systems.
    c. Use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

Additionally, polyethylene sheeting will be placed over the face of all excavations not backfilled at the end of the day to reduce emission of VOC and SVOC vapors and reduce fugitive dust generation.

6.15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

1. Dust suppression will be achieved through the use of a dedicated on-Site water truck for road wetting for larger intrusive projects. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles. Fire hoses and/or garden hoses equipped with sprayers will be utilized for smaller type projects. Water used for dust suppression will be potable water.

2. Clearing and grubbing of larger sites will be done in stages to limit the size of the area of exposed, un-vegetated soils vulnerable to dust production.

3. Gravel will be used on access roadways to provide a clean and dust-free road surface.

4. On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

5. Paved areas will be swept clean on a daily basis, or more frequently as needed, to reduce the potential for dust generation.

6. Traffic speeds, particularly for construction traffic, will be reduced.

7. Stockpiles and excavations will be covered with tarps and polyethylene sheets, as previously described, will be used to reduce the potential for dust generation.

7.0 HEALTH & SAFETY PLAN REQUIREMENTS

All contractors performing redevelopment, improvement, maintenance, or other intrusive activities on the Site will be required to prepare a Site-specific and activity-specific Health and Safety Plan (HASP) which must be prepared by a qualified person in accordance with the most recently adopted and applicable general industry (29 CFR 1910) and construction (29 CFR 1926) standards of the federal Occupational Safety and Health Administration (OSHA), US Department of Labor, as well as any other federal, state or local applicable statutes or regulations. This section provides the minimum requirements for a HASP, but should not be construed as the HASP, as it is not activity specific. In addition, newly adopted regulations may require additional Health and Safety requirements that exceed the minimum outlined in this SMP. The Contractor will not be permitted to commence with construction/intrusive activities until the HASP has been reviewed by the NYSDEC and the QEP providing the periodic certifications.

Submittal of the HASP for review does not waive any responsibility of the Contractor to ensure that the HASP is adequate to comply with all regulations or compliance by personnel. Neither the Site owner, nor the NYSDEC, assume, in any manner, the control or responsibility of the Contractor to provide safe working conditions of the contractor's employees or subcontractors in requiring the Contractor to follow general safety requirements. The contractors shall maintain the following items on the Site at a minimum:

- A copy of the HASP
- First aid kit
- Fire extinguisher(s)
- Personal protective equipment (PPE)
- Air monitoring equipment and calibration equipment
- Spill containment equipment and cleanup materials

To facilitate the creation of appropriate HASPs by the contractor(s) performing work on the Site, the range of concentrations of contaminants detected in soil and groundwater samples collected at the Site prior to the completion of the remedial construction have been included in Appendix B.

7.1 COMPLIANCE

Compliance with the HASP is required and consistent disregard for the provisions of the HASP by the remedial Contractor and/or his subcontractors or employees shall be deemed just and sufficient to cause for stoppage of work by the Owner. In order to justify stoppage of work, the Contractor and/or his subcontractors or employees must violate the same item multiple times. A single inadvertent omission is not cause for stoppage of work. In accordance with 29 CFR 1910.120 employers shall develop and implement a written safety and health program for their employees involved in hazardous waste operations. The program shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency response for hazardous waste operations.

All on-Site workers must comply with the requirements of the HASP. The Contractor's HASP must comply with all applicable federal and state regulations protecting human health and the environment from the hazards posed by activities during intrusive Site activities. The project design documents will further specify the health and safety requirements of this project. However, the general health a safety responsibilities and definitions are summarized below.

7.2 HEALTH & SAFETY DEFINITIONS

1. **Authorized Visitor:** The Safety Officer (SO) has primary responsibility for determining who is qualified and may enter the Site. The Site Safety Officer will only allow authorized visitors with written proof that they have been medically certified and trained in accordance with 29 CFR 1910.120 (40-Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) training) to enter the contamination reduction zone and/or exclusion area.

2. **Contamination Reduction Zone:** An area at the Exit Point of the Exclusion Zone through which all personnel, vehicles, and equipment must enter and exit. All decontamination of vehicles and equipment and removal of personal protective clothing and breathing apparatus must take place at the boundary between the Exclusion Zone and the Contamination Reduction Zone.

3. **Contractor Support Zone:** An area of the Contractor Work Area outside the Exclusion Zone, accessible for deliveries and visitors. No persons, vehicles, or equipment may enter these areas from the Exclusion Zone without having gone through specified decontamination procedures in the adjacent Contamination Reduction Zone.

4. **Contractor Work Area**: An area of the project Site including the Support Zone, access roads, staging areas, and the Exclusion Zone.
5. **Exclusion Zone:** The innermost area within the Contractor Work Area that encloses the area of contamination. Protective clothing and breathing apparatus as specified in the health and safety requirements and in the Contractor's approved HASP must be worn.

6. **Health and Safety Coordinator (HSC):** The HSC shall be a Certified Industrial Hygienist (CIH) or Certified Safety Professional (CSP) retained by the Contractor. The HSC will be responsible for the development and implementation of the HASP.

7. **Health and Safety Technicians (HST):** The HST(s) will be the Contractor's on-Site personnel who will assist the SO in the implementations of the HASP, in particular, with air monitoring in active work areas and maintenance of safety equipment.

8. **Medical Consultant (MC):** The MC is a physician retained by the Contractor who will be responsible for conducting physical exams as specified under the Medical Monitoring Programs in this section.

9. **Monitoring:** The use of direct reading field instrumentation to provide information regarding the levels of gases and/or vapor, which are present during remedial action.

Monitoring shall be conducted to evaluate employee exposures to toxic materials and hazardous conditions.

10. **Project Personnel:** Project personnel include the Contractor, subcontractor, and Federal, and State, and local Representatives, working or having official business at the Project Site.

11. **Project Site:** The project Site includes the entire Peekskill Landing Property, but may be reduced for smaller, localized intrusive activities.

12. **Safety Officer (SO):** The SO will be the Contractor's on-Site person, who will-, be responsible for the day-to-day implementation and enforcement of the HASP.

13. **Staging Areas:** Areas within the Exclusion Zone for the segregated temporary staging of uncontaminated and contaminated soil and debris.

14. **Work:** Work includes all labor, materials, and other items that are part of Site redevelopment activities and any activities which are included as part of this SMP.

7.3 RESPONSIBILITIES

The Contractor shall:

1. Be responsible and liable for the health and safety of all on-site personnel and off-site community impacted by the Site redevelopment activities.

2. Ensure all OSHA health and safety requirements are met (29 CFR 1910 – General Industry Safety and Health Standards and 29 CFR 1926 – Construction Industry Safety and Health Standards) and be responsible for compliance with all federal and state regulations.

3. Perform all work in a safe and environmentally acceptable manner. The Contractor will provide for the safety of all project personnel and make all reasonable efforts to protect the environment and community during the remedial activities. Barricades, warning lights, roped-off areas, and proper signs shall be furnished in sufficient amounts and locations to safeguard the project personnel and public at all times.

4. Designate a safety officer (SO) who shall be assigned full-time responsibility for all tasks herein described under this HASP and be on-Site during all remedial activities. In the event the SO cannot meet his responsibilities, the Contractor shall be responsible for obtaining the services of an "alternate" SO meeting the minimum requirements and qualifications. No work will proceed on this project in the absence of an approved SO.

5. Ensure that all project personnel have obtained the required physical examination prior to and at the termination of work covered by the contract.

6. Be responsible for the pre-job indoctrination of all project personnel with regard to the HASP and other safety requirements to be observed during work, including but not limited to

(a) potential hazards, (b) personal hygiene principles, (c) personal protection equipment, (d) respiratory protection equipment usage and fit testing, and (e) emergency procedures dealing with fire and medical situations.

7. Be responsible for the implementation of this HASP and the Emergency Contingency and Response Plan.

8. Provide and ensure that all project personnel are properly clothed and equipped and that all equipment is kept clean and properly maintained in accordance with the manufacturer's recommendations or replaced as necessary.

9. Will perform all Site redevelopment work and activities included in this SMP in a safe and environmentally acceptable manner. The Contractor will provide for the safety of all project personnel and the community for the duration of the redevelopment activities.

10. Have sole and complete responsibility for safety conditions for the project, including safety of all persons (including employees).

11. Maintain a chronological log of all persons entering the project Site. It will include organization, date, and time of entry and exit. Each person must sign in and out.

12. Maintain and keep available safety records, up-to-date copies of all pertinent safety rules and regulations, material safety data sheets, the Contractor's Site-specific HASP, and the emergency response plan.

13. Hold safety meetings, including routine on-Site safety meetings.

14. Stop work whenever a work procedure or a condition at the work Site is deemed unsafe by the SO.

7.4 ELEMENTS OF THE HEALTH & SAFETY PLAN

A Site-specific HASP will be prepared in accordance with OSHA regulations and 29 CFR 1910.120. The will contain the following elements at a minimum:

1. Site description/characterization and history.
2. Health and safety team key personnel and organization.
3. Emergency contacts
4. Site entry objectives
5. Safety meeting and pre-entry briefing requirements
6. Safety training requirements
7. Medical surveillance requirements
8. Hazard analysis/evaluation, including physical, biological, and chemical hazards
9. Air monitoring requirements and action levels
10. Personal protective equipment (PPE) requirements
11. Site control measures and work zones

12. Decontamination requirements (personnel & equipment) and procedures
13. Hazard communication and need for Material Safety Data Sheets (MSDSs)
14. Emergency procedures/contingency plan
15. Spill containment program
16. Emergency medical care (e.g. first aid) and route to nearest hospital
17. Standard Operating Procedures (SOPs)
18. Confined space (as applicable)
19. Lockout/tagout (as applicable)
20. Hot work permits and safe work practices (as applicable)
21. Ladder/scaffolding safety (as applicable)
22. Competent Person requirements for excavations (as applicable)
23. Emergency Equipment/First Aid Requirements
24. Emergency Response and Contingency Plan.
25. Record keeping requirements
26. Certification and agreement

The following subsections provide a more detailed synopsis of the minimum requirements of a HASP needed to perform intrusive activities at the Site.

7.4.1 Site Description & History

This section of the HASP should provide a general introduction and purpose of the HASP, as well as identify the Site history, the neighboring property uses, the Site topography, and meteorological data. Most of this information is provided in Section 1.0 of this SMP. Meteorological data will vary by season in which the intrusive activities are planned and should be considered when preparing the HASP. For example, working during the winter time could result in cold exposure to Site personnel, hinder proper operation of real-time air monitoring instruments, etc. Snow and ice in the river could also have significant impacts on safe operations. Similarly, working in the summer time could introduce workers to heat stress, UV exposure, more vector activity, potential for thunderstorms, etc.

7.4.2 Project Personnel & Organization Structure

All personnel involved with the intrusive activities of the Site have a role in implementing the HASP. The following list summarizes the personnel that should be identified for each project/activity:

7.4.2.1 Off-Site Personnel

Title:	**Project Manager**
Description:	Responsible for defining project objectives, allocating resources, determining the chain of command, and evaluating program outcome. Also has authority to direct response operations and assumes total control over Site activities.
Contact:	To be determined

Title:	**Scientific Advisor**

Description:	Guides the Project Manager in scientific matters.
Contact:	To be determined

Title:	**Medical Consultant**
Description:	Responsible for conducting physical exams as specified under the Medical Monitoring Programs
Contact:	To be determined

Title:	**Health & Safety Coordinator (HSC)**
Description:	Overall responsibility for developing and implementing health and safety standards and the HASP, procuring appropriate personal protective clothing and equipment, staff training, etc.
Contact:	To be determined

7.4.2.2 On-Site Personnel

This section should identify all on-Site personnel and should be task specific.

Title:	**Safety Officer (SO)**
Description:	Advises the field team on all aspects of health and safety issues, recommends stopping work if any operation threatens worker or public health and safety.
Contact:	To be determined

Title:	**Health & Safety Technician (HST)**
Description:	Responsible to assist the SO in implementation of the HASP, particularly the air monitoring activities in the work area
Contact:	To be determined

Title:	**Site Supervisor/Field Team Leader**
Description:	Responsible for field team operations.
Contact:	To be determined

Title:	**Work Party**
Description:	Performs field operations
Contact:	To be determined

7.4.3 Emergency Contacts

Emergency contacts are identified in Section 2.5.1 of this SMP and directions to the nearest hospital are provided in Section 2.5.2.

7.4.4 Site Entry

7.4.4.1 Site Entry Objectives

The objective of each intrusive activity should be identified in this section (e.g. to install a new waterline service). This section should describe all steps or procedures involved with the anticipated activity, including activity setup, performance of the activity, testing of soils, and restoration of the soil cover system.

7.4.4.2 Safety Meetings

To ensure that the HASP is being followed, the task Safety Officer (SO) will conduct a safety meeting prior to entry to the Site or the initiation of any Site activity (pre-entry briefing), if any conditions change, and before work commences each day.

7.4.4.3 Safety Training

The task SO will confirm that every person assigned to a task has had adequate training for that task and that the training is up-to-date by checking with the HSC.

All training will have been conducted and certified in accordance with the Occupational Safety and Health Administration (OSHA) regulations as outlined in 29 CFR 1910.120.

7.4.4.4 Medical Surveillance

The intent of medical surveillance is to monitor and reduce health risks to employees potentially exposed to hazardous materials and to provide baseline medical data for each employee involved in intrusive work activities. It is also intended to determine all personnel's ability to wear personal protective equipment such as chemical resistant clothing and respirators.

Medical examinations will be administered to all trained personnel on a pre-employment, post-employment, and annual basis. Additionally, exams will be performed as warranted by symptoms of exposure or specialized activities.

7.4.5 Hazard Evaluation

This section of the HASP must provide an assessment of general hazards that may be encountered during intrusive activities at the Site. Site hazards that potentially could be encountered at the Site include three primary groups, including physical, biological, and chemical hazards, each of which is discussed below. Mitigation and controls will include work procedures, work/rest regimen, vapor and dust control measures, PPE, and respiratory protection as appropriate.

7.4.5.1 Physical Hazards

Physical hazards such as the following may be encountered on Site:

- Slip/trip/fall (e.g. from curbing, debris, steep topography, ice, etc.)
- Ultraviolet rays
- Lifting strains (e.g. from generators, drums, equipment)
- Heavy machinery and vehicles (e.g. excavators, drill rigs)

- Flying debris (e.g. debris from drilling equipment)
- Noise (e.g. elevated noise levels associated with heavy equipment)
- Heat/cold stress (see Section 7.4.13.3)

7.4.5.2 Biological Hazards

Biological hazards such as the following may be encountered on Site:

- Poisonous plants – poison ivy, poison oak, poison sumac
- Insects/animals – deer ticks, mosquitoes, rabid animals, snakes, stray animals

7.4.5.3 Chemical Hazards

Based upon past environmental investigations completed at the Site, Site personnel may be exposed to the chemicals identified in Appendix B of this SMP. The primary contaminants on the Site, include VOCs, SVOCs (namely PAHs), PCBs, and heavy metals. The Contractor shall ensure that OSHA Permissible Exposure Levels (PELs) and the National Institute for Occupational Safety and Health (NIOSH) are not exceeded for on-site personnel.

The potential exposure mechanism that can transport particulates and contaminants from the areas of the intrusive activity to other areas of the Site as well as beyond the boundaries of the Site are:

- Contaminated dust projected by air currents
- Failure to adhere to proper decontamination procedures
- Contact with the surface water and groundwater

7.4.5.4 Flammable Hazards

As a precautionary measure the following shall be implemented to address flammable hazards.

- Use a fire extinguisher only to escape or to fight very small fires. Do not attempt to fight large fires.

- Field vehicles must have at least one ABC rated fire extinguisher.

- Heavy equipment used for excavation must have an ABC rated fire extinguisher located on the equipment.

- Explosive or flammable materials and liquids will be stored only in approved facilities.

- Smoking is not permitted on the Site or in any work areas.

- Do not use equipment that may generate a spark where there is a potential of explosive gases or vapors.

- Hot work (i.e.: cutting, grinding, welding, torching) shall not be allowed in the work area(s) unless a comprehensive Hot Work Permit is completed and authorized.

7.4.5.5 Hazard Identification & Control

Hazard controls generally consist of the following specific safety procedures: Training, Engineering Controls, Air Monitoring and PPE Selection. All Site personnel are required to use the PPE appropriate to their work task and potential exposures as outlined in the HASP. The levels of PPE assigned to each activity will be based on available information on the estimation of exposure potential associated with each work task. An example analysis is shown in the following table:

Table 7-1. Example Hazard Identification Analysis

AFFECTED PERSONNEL	TASK/ OPERATION	HAZARDS	HAZARD CONTROL
Exclusion Zone Personnel	Boring/Well Installation & Sampling of soil and ground water wells	Potential Exposure to volatile, semi-volatile, heavy metals, PAHs.	Exposure to chemical hazards: - Stand upwind when possible - Minimize direct contact - Avoid walking through discolored areas, puddles, leaning on drums or contacting anything that may; be contaminated. - Don appropriate PPE - Level D PPE work as a minimum - >10ppm organic vapor for 5 minutes, upgrade to Level C. - >200ppm organic vapor for 5 minutes upgrade to Level B
Exclusion Zone Personnel	Boring/Well Installation & Sampling of soil and ground water wells	Inclement weather	- Cease Site activities during electrical storm - Cease Site activities in extreme temps
Exclusion Zone Personnel	Boring/Well Installation & Sampling of soil and ground water wells	Back Injury	- Use mechanical lifting device when possible - Use buddy system when lifting heavy or awkward objects - Do not jerk or twist body while lifting

7.4.6 Hazard/Task Analysis

Potential physical hazards that may be associated with potential on-site activities are listed in the in Table 7-2 on the following page. The table provides a summary of typical physical Site hazards only. Additional hazards should be listed that are specific to the proposed intrusive activity.

7.4.7 Air Monitoring & Action Levels

7.4.7.1 Air Monitoring Equipment

The following environmental monitoring instruments shall be used on Site at the specified intervals.

Table 7-2. Example Physical Hazards Analysis

Hazards:	Precaution
1) Skin and/or eye contact with contaminated soil and/or groundwater, decontamination solutions, and sample preservation agents. 2) The inhalation of volatile organic vapors during Site activities. 3) The inhalation of contaminated dusts and other airborne particles during Site activities.	- Wear the required personal protective equipment when conditions or activities indicate the need for it. - Avoid walking through puddles, and contacting other potential sources of contaminants such as drums. - Keep airborne dust levels to a minimum by wetting down surfaces.
Physical injuries, such as abrasions, insect bites, back injuries, slips, trips, falls.	- Avoid slippery surfaces when possible. - Practice safe lifting techniques. - Know the location of other Site workers at all times, especially before moving and/or starting up heavy equipment such as drill rig or truck. - Be observant of possible insect nesting areas. - Have a first aid kit on hand.
Noise	- Avoid standing near noise generating equipment. - Utilize appropriate hearing protection
Heat and cold stress	- Dress appropriately, wear dry clothing. - Take frequent breaks during extreme weather conditions. - Refer to the section on heat stress or cold stress, as appropriate for additional precautions.
Fire	- Have a fire extinguisher on hand. - Keep ignition sources away from flammable materials and atmospheres.
Security	- Stay alert to neighborhood activities

Photoionization Detector (PID)

A PID with a 10.6 eV lamp shall be used during tasks that require any intrusive activities. At a minimum, the PID should be utilized at the start of all intrusive activities, whenever obvious contamination is noted, and at least every 15 to 30 minutes through the duration of the intrusive activities. PID measurements shall be taken in the breathing zone of on-Site personnel, in low areas where flammable vapor may accumulate, in the headspace of soil and water samples, downwind of intrusive activities, and around the perimeter of the exclusion zone, as appropriate.

The PID shall be calibrated daily following manufacturers recommendations. Calibration data shall be recorded in daily logs by the SO or HST.

Quad Alarm Gas Monitor

Combustible gas levels, oxygen, carbon monoxide, and hydrogen sulfide concentrations shall be monitored if during the course of the activities, waste is encountered. The gas monitor shall be calibrated daily following manufacturers recommendations. Calibration data shall be recorded in daily logs by the task SO or HST.

Dust

Dust levels shall be visibly monitored. If it appears dust levels are increasing, a particulate meter shall be utilized following the manufacturer's recommendations.

Temperature

Ambient temperature should be monitored throughout the work day for potential heat stress or cold stress conditions. Based upon observed weather forecasts, a thermometer shall be utilized to monitor on-Site temperatures whenever the expected low temperature for the day is anticipated to be less than 20° Fahrenheit or the anticipated high temperature is anticipated to be in excess of 90° Fahrenheit.

7.4.7.2 Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions. Each action level is determined by the concentration level (above background level) and the ability of the personal protective equipment to protect against that specific contaminant. The action levels are based on concentrations in the breathing zone.

Should action levels be reached, work operations shall cease until further evaluation is performed and safe levels are prevalent. If ambient levels are measured which exceed the action levels in areas accessible to the public or unprotected personnel, necessary Site control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented before commencing activities at the specific work site. If through engineering controls and monitoring, safe levels (below action levels) cannot be achieved, an upgrade in personal protection equipment shall be mandated by the task SO, or operations shall cease in that portion of the Site. The maximum action levels at the Site are as follows:

- Volatile Organic Compounds (VOCs) (PID monitor) = consistent readings of >5ppm sustained for 5 minutes

- Atmospheric gases (Quad Alarm)
  - Combustible gases = >10% LEL, requires an SCBA
  - Oxygen = 19.5%-23.5%, above or below requires an SCBA
  - Carbon Monoxide = >35ppm, requires an SCBA
  - Hydrogen Sulfide = >10ppm, requires an SCBA
- Temperature = body core temperature of < 36°C (96.8°F) for cold stress

In addition to health and safety air monitoring, a CAMP must be implemented for all intrusive activities, as described in Section 6.13 of this SMP.

7.4.8 Personal Protective Equipment

7.4.8.1 General Information

The purpose of personal protective clothing and equipment is to shield or isolate individuals from the chemical and physical hazards that may be encountered during work activities. The level of protection required must correspond to the level of hazard known, or suspected, in the specific work area.

There are four basic levels (A, B, C, and D) of personal protection as established by the United States Environmental Protection Agency (USEPA). Level A provides the highest level of protection and Level D provides the lowest. The levels of personal protection are briefly defined below.

- ***Level D*** will consist of field clothes, outer gloves (if soil/water contact is likely), steel toe and shank safety boots, safety glasses (for splash hazards), and a hard hat (if overhead hazards are present).

- ***Modified Level D*** will consist of Tyvek coverall, safety glasses (for dust/splash hazards) outer gloves with disposable inner gloves, steel toe and shank work boots, over boots if free product is encountered or as otherwise specified, hearing protection and, if overhead hazards are present, such as during drilling, a hard hat. Safety glasses must also be worn during drilling and excavating activities.

- ***Level C*** will consist of the same equipment as listed for modified Level D with the addition of a full-face air purifying cartridge equipped respirator.

- ***Level B***, if required for working on this project site, consists of the same equipment as listed for Level C with the substitution of a full-face Self-Contained Breathing Apparatus (SCBA) in place of a full-face air purifying respirator.

- ***Level A*** is not anticipated for this project.

When wearing Level C, B, or A, all junctures between the chemical protective coverall (i.e., Tyvek suit) and boots, gloves, and respirator must be taped. The suit must be placed over the boots and gloves. When taping, remember to leave a tab for easy removal. Stress spots in the suit must also be taped, such as under the arms, down the zipper, and up or across the back.

Personal protective equipment has been selected consistent with the hazards associated with the expected field activities. Personal protective equipment (PPE) is available in various sizes to provide a good fit for all personnel. PPE must be stored in a clean location with access by site workers. Site workers are responsible for maintenance and storage of equipment at the Site.

7.4.8.2 Task Specific Requirements

Based on evaluation of the potential hazards for the Site, the initial levels of PPE appropriate for most anticipated intrusive activities is **Modified Level D** based on the potential route of contact and the potential contaminants, although this may be modified based upon the actual planned activity. In this plan, Modified Level D is presented as a modified protection level which consists of, at a minimum, hard hat, safety glasses, work boots, long pants, disposable Tyvek suits/coveralls, latex/nitrile gloves, rubber boots or hazmat boot covers or work boots, and other weather appropriate clothing. Respiratory protection and an upgrade in PPE to Level C shall be incorporated only where required by Site conditions. The following additional requirements should also be considered:

- A hard hat is only required when personnel are working around heavy machinery or vehicle (e.g. drilling operations) or when working in the right-of-way or an adjacent roadway and increased visibility is necessary.

- Safety glasses are only required when personnel are working around heavy machinery or vehicle (e.g. drilling operations) where there is a potential for debris to fly into worker's eyes.

- A reflective safety vest must be worn while working within the right-of-way or an adjacent roadway or when increased visibility is necessary, such as working around heavy equipment or when working at dawn/dusk.

- Tyvek suits and latex/nitrile gloves are only required to be worn during intrusive activities when soil and water samples are being handled. Tyvek suits and gloves are not required for non-intrusive activities (e.g. survey services and utility feasibility study).

- Hearing protection shall be required at the discretion of the SHSO, but at a minimum, must be utilized by all on-Site personnel when the drill rig hammer is being utilized to advance the soil sampler.

- No changes to the specified levels of PPE shall be made without first obtaining approval of the SO and the Project Manager. If action levels are reached, work shall cease and the SO and his advisors shall perform further evaluations. If necessary, an upgrade in PPE shall be mandated.

- If an upgrade to Level C PPE is required, air purifying respirators equipped with organic vapor/acid gas/HEPA cartridges will be utilized. Organic vapor/acid gas/HEPA cartridges are the appropriate canister for use with the involved substances. All respirators used will be approved by NIOSH and/or the Mine Safety and Health Administration (MSHA) and their

use shall be consistent with OSHA regulations in 29 CFR 1910.134. All on-Site personnel wearing a respirator shall have respirator clearance from a qualified occupational health physician. In addition, the respirator wearers on Site shall perform qualitative fit tests to ensure proper fit of the face seal of the respirator. Documentation certifying fit-testing will be provided and kept as part of the Site records. Inspection logs shall be completed, signed and kept with the HASP. Filter cartridges used shall be of the same manufacturer as the respirator and shall be changed on a daily basis at a minimum and/or if breathing becomes difficult. Air purifying respirators shall not be used if any of the following conditions exist:

  - Oxygen deficiency
  - Immediately Dangerous to Life or Health (IDLH) concentrations of specific substances
  - Entry into an unventilated or confined area which has not been characterized
  - Presence or potential presence of unidentified contaminants
  - Contaminant concentrations are unknown or exceed designated maximum use concentrations (MUCs)
  - Identified gases or vapors have inadequate warning properties
  - High relative humidity, may reduce protection offered by sorbent

- The need for Level A or Level B PPE is not anticipated for tasks covered by this HASP. Should Level C PPE be deemed insufficient based upon the conditions encountered in the field, all work activities will temporarily cease and the HASP will be updated prior to continuing any on-Site activities.

Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of the SO and task manager based upon air monitoring results and the following.

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor or dust emission.
- Change in work task that will increase the exposure or potential exposure with hazardous materials.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in Site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.

7.4.9 Site Control Measures

7.4.9.1 Work Zones

All Site work zones will be clearly marked as applicable and discussed with all on-Site personnel. Site personnel will be responsible for delineating and maintaining the work zones. Site work zones shall consist of the exclusion, support, and contamination reduction zones as required.

The **exclusion zone** (EZ) is the zone which contamination is most likely to be encountered. For most intrusive activities, the exclusion zone is considered to be the actual area of the intrusive activity plus a 50 foot buffer surrounding the intrusive activity. Flow of personnel and equipment into and out of the zone will be monitored throughout the activity. While in the exclusion zone all personnel must wear the specified PPE.

The **contamination reduction zone** (CRZ) will be determined based upon the location of the intrusive activity and prevailing wind conditions at the Site. Personnel working inside the exclusion zone will decontaminate or dispose all soiled clothing in the contamination reduction zone each time the exclusion zone is exited, if the clothing worn becomes soiled. Appropriate equipment, supplies, and personal PPE will be made available in the contamination reduction zone to facilitate the protection and decontamination of personnel working in the exclusion zone.

A s**upport zone** (SZ) will be established in close proximity to the Contamination Reduction Zone, but again, the exact location will be based upon the actual location of the intrusive activity.

7.4.9.2 Communication

Communication shall be accomplished by a combination of person to person verbal correspondence, the use of cellular phones, and by verbal signals or hand signals depending on the pre-design programming task. Communication procedures will be reviewed at the Safety Meeting before entering the exclusion zone.

7.4.9.3 Site Security Measures

The contamination reduction zone and support zone shall be clearly marked as appropriate and reviewed at the Safety Meeting. All personnel shall report to the SO upon entering and exiting the Site so that everyone will be accounted for.

7.4.10 Decontamination

All decontamination activities will be performed on-Site within the contamination reduction zone. Decontamination pads will be constructed in a similar manner to the temporary containment pads described in Section 6.3 of this SMP. Preferably, one decontamination pad will be constructed for personnel and small hand tools/instruments, while a second pad is constructed for heavy equipment. The contractor will be responsible for ensuring that the decontamination activities do not result in erosion of the existing soils on the Site and that the water is not discharging into a surface water body. All water derived from decontamination processes will be collected and characterized for off-site disposal.

7.4.10.1 PPE

At a minimum, all non-disposable personnel protective clothing will be decontaminated by first washing the soiled items with a non-phosphate detergent and potable water mixture, followed by potable water and distilled water rinses. All disposable/expendable PPE and clothing will be placed into plastic trash bags for off-site disposal. At a minimum, all equipment that comes into contact with contaminated soil and groundwater will be decontaminated with a high-pressure steam cleaner.

7.4.10.2 Small Equipment & Hand Tools

Small hand tools and equipment (e.g. hand augers, split spoon soil samplers, etc.) will be decontaminated as appropriate, but, at a minimum, prior to removal from the Site. The recommended decontamination procedure for equipment used during the performance of the pre-design programming tasks is:

- Wash and scrub with distilled water and low phosphate detergent
- Distilled water rinse

7.4.10.3 Heavy Equipment

Heavy equipment, such as a hydraulic excavator, may be utilized during the intrusive activities. All heavy equipment will be decontaminated with a pressure steam cleaner in the CRZ prior to demobilization of the equipment and all wash water generated from the steam cleaning operations will be collected for off-site treatment.

7.4.11 Hazard Communication

In compliance with 29 CFR 1910.1200, any hazardous materials brought on-Site by any personnel will be accompanied with an appropriate Material Safety Data Sheet (MSDS). The SO will be responsible for maintaining the MSDSs on Site, reviewing them for hazards that working personnel may be exposed to, and evaluating their use on Site with respect to compatibility with other materials including personal protective equipment, and their hazards. Should the SO deem the material too hazardous for use on-Site, the party responsible for bringing the material on Site will immediately remove it from the Site.

7.4.12 Emergency Procedures

On-Site emergencies can range in intensity from minor to serious conditions. Various procedures for responding to Site emergencies are listed in this section. The designated SO is responsible for contacting local emergency services in emergency situations (however, others must assume responsibility if the situation warrants). An injured person shall be accompanied by another worker at all times.

The following emergency procedures will be used by on-site personnel. The SO shall be notified of any on-Site emergencies and be responsible for ensuring that the appropriate measures are followed. Non-emergencies will be treated on-Site and documented and then directed to seek further medical attention. All occupational injuries and illnesses will be reported, recorded, and investigated.

On-Site personnel will be equipped with a cellular telephone for communication. Other emergency equipment, including a first aid kit will be on-Site at all times. In the case of a medical emergency, workers and the SO will communicate to determine the nature of the emergency and the location. After it is determined whether there is an actual emergency, he/she will instruct someone to call for an ambulance. Cellular telephones would to be used to place such a call.

If an emergency evacuation of the Site must take place, all personnel on-Site will immediately stop work, shut off all equipment, and assemble at the entrance to the Site. After assembly of all personnel, the Site will be evacuated using vehicles parked in the support zone. All vehicles will be parked facing out to enable a quick exit from the Site. If time permits, as determined by the SO, emergency decontamination will take place. This will consist of a wash and rinse of over boots, removal of disposable clothing, and washing of hands and face. After exiting the Site, all personnel will reassemble near the park entrance. If the head count reveals someone is still on Site, the SO and his/her assistant will look for the person(s), using appropriate personal protection.

The SO will also be responsible for determining whether or not the emergency warrants complete evacuation of the Site. If so, the SO will coordinate the evacuation of all building/Site occupants with the property manager.

7.4.12.1 Personnel Injury

Upon notification of personnel injury the nature of the injury will be assessed, the appropriate first aid shall be initiated and, if necessary, contact shall be made for an ambulance and with the designated medical facility. If the injury increases the risk to others, activities on Site will stop until the added risk is removed or minimized.

7.4.12.2 Fire/Explosion

Upon notification of fire or explosion, all Site personnel shall assemble at a safe distance upwind of the involved area. The SO shall alert the appropriate fire department.

7.4.12.3 PPE Failure

If any Site worker experiences a failure or alteration of PPE that affects the protection factor that person and his/her buddy shall immediately exit the exclusion zone. Re-entry shall not be permitted until the equipment has been repaired or replaced.

7.4.12.4 Chemical Exposure

If any Site worker experiences adverse effects due to chemical exposure, the appropriate first aid procedures shall be followed according to the MSDS for that chemical. The person shall at a minimum be moved to fresh air. Whenever possible, personnel should be decontaminated before administering first aid.

Workers should go to the support zone as soon as any of the following acute symptoms of exposure are experienced:

- Rotten egg odor (indicates hydrogen sulfide)
- Sweet almond-like odor (indicates cyanide presence)
- Headache

- Nausea or vomiting
- Fatigue
- Weakness
- Confusion
- Dizziness
- Irritation of eyes, nose, throat
- Dermatitis
- Chills
- Chest tightness
- Cough
- Muscle spasms
- Staggered gait
- Increased salivation
- Indigestion
- Diarrhea
- Irritability
- Metallic taste in mouth

7.4.12.5 Spill Containment

If on-Site work results in the accidental spill or release of oil or hazardous materials, containment to the extent possible will be required by on-Site personnel (in proper PPE). Containment should include the use of absorbent pads or materials, diking with soils, covering and/or diverting spills from sewers, drains, surface water bodies, etc. For spills that cannot be controlled by on-Site personnel or are above the reportable quantities, the SSO or designee will secure the area and notify the NYSDEC Spills hotline and notify appropriate emergency personnel through the 9-1-1 system.

7.4.13 Emergency Medical Care

7.4.13.1 Nearest Hospital

See Section 2.5.2 for directions to the nearest hospital.

7.4.13.2 On-Site First Aid

A first aid kit containing those items as described in American National Standard (ANSI) Z308.1-1998 "Minimum Requirements for Workplace First-aid Kits" shall be maintained and stored within the Contamination Reduction Zone. General first aid procedures are identified in the list below:

Skin/Eye Contact: Flush eyes and/or skin thoroughly with water for 15 minutes. Remove contaminated clothing. If skin was contacted with a dry material, brush it off first, then flush with water. Seek medical attention if irritation develops.

Ingestion: Do not induce vomiting. Call the Poison Control Center. Tell them what was swallowed, if possible. Follow instructions. Arrange for transport of the victim to the hospital by calling for an ambulance.

Inhalation: Remove person from contaminated environment without risking your own safety. DO NOT ENTER A CONFINED SPACE UNLESS WEARING LEVEL B AND A STANDBY PERSON IS PRESENT. DO NOT ENTER EXCLUSION ZONE UNLESS WEARING ONE LEVEL HIGHER PROTECTION THAN VICTIM WAS WEARING. Administer CPR, if necessary. Bring victim to hospital or call ambulance.

Injuries: Do not move a victim who may have a back injury. Cover them with coats, blankets, or other appropriate items to keep them warm. Call an ambulance.

Apply pressure to bleeding wounds. If the victim is able, have the victim apply pressure to the wound. If they are not able, wear gloves to protect from exposure to blood. Put gauze bandages or other clean cloth over the wound. Do not remove blood-soaked bandages or cloth - instead put additional bandages or cloths over the blood-soaked bandages. Elevate the limb with the injury above the heart.

Administer CPR if victim does not have a pulse and if you are currently certified in CPR. Have someone call for an ambulance immediately if there is any possibility that the victim is having or had a heart attack.

Shock is likely to develop in any serious injury or illness. The following are signals of shock: restlessness or irritability; altered consciousness; pale, cool, moist skin; rapid breathing; and/or rapid pulse. In the event of shock, do the following: Immediately have someone call for an ambulance; have the victim lie down; elevate legs 12 inches unless you suspect head, neck, or back injuries; if victim is cool, cover the victim to prevent chilling; do not give the victim anything to drink, even if thirsty.

Collapses: If Site personnel have unexplainably collapsed, all personnel must evacuate work area. Rescue personnel must don a level of protection higher than the victim was in before evacuating victim from work area. Confined space rescue always requires Level B protection. No one will re-enter the work area until the cause has been determined and the SO has determined that the area is safe to re-enter.

7.4.13.3 Heat & Cold Stress

Heat Stress Symptoms and Remedies

Acclimatization and frequent rest periods must be established for conducting activities where heat stress may occur. Symptoms of heat stress and appropriate responses include:

- Heat Rash - redness of skin. Remedy - frequent rest and change of clothing.
- Heat Cramp - painful muscle spasms in hands feet, and/or abdomen. Remedy - administer lightly salted water (1/4 teaspoon per gallon) orally unless there are medical restrictions.
- Heat Exhaustion - clammy, moist, pale skin; dizziness, nausea rapid pulse, fainting. Remedy - remove to cooler area and administer fluids orally or have physician administer saline solution intravenously.
- Heat Stroke - hot dry skin; red, spotted or bluish; high body temperature of 104°F or greater, mental confusion, loss of consciousness, convulsions or coma. Remedy -immediately cool victim by immersion in cool water. Wrap in wet sheet while fanning, sponge with cool liquid. While fanning, treat for shock. Call for an ambulance. DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.

Heat Stress - Precautions

Precautions to take to reduce the possibility of heat stress include the following:

- Avoid caffeine and alcohol both during work hours and 24 hours before on-Site activity.
- Drink water before feeling thirsty.
- Watch for signs and symptoms of heat stress.
- Rest in cool/dry areas, such as air conditioned vehicle or building or in the shade.
- Use cooling devices such as water sprays or fans to cool off.

Cold Stress Symptoms

Cold Stress symptoms may include any or all of the following:

- Excessive fatigue
- Irritability
- Euphoria
- Drowsiness
- Uncontrollable shivering

- Frost nip

- Medical assistance is necessary if these symptoms persist.

Cold Stress Treatment
Cold stress and frostbite emergency care:

- Remove the patient to a warm, dry place.

- If clothing is wet, remove and replace with dry clothing.

- Keep patient warm. Re-warming of the patient should be gradual to avoid heat stroke symptoms.

- Dehydration or the loss of body fluids may result in cold injury due to a significant change in blood flow to the extremities. If patient is conscious and alert, warm sweet drinks should be provided.

- Extremities affected by frostbite should be gradually warmed up and returned to normal temperature. Moist compresses should be applied; begin with lukewarm compresses and slowly increase the temperature as changes in skin temperature are detected.

- Keep patient warm and calm, remove to a medical facility as soon as possible.

Cold Stress - Prevention
- Take breaks in heated shelters at frequent intervals when working in temperatures below 20°F, including wind chill.

- Remove outer layer of clothing when entering the shelter. Loosen other layers to allow sweat to evaporate.

- Drink warm, sweet liquids or soups to reduce possibility of cold injury. Avoid caffeine and alcohol.

7.4.14 Standard Operating Procedures

The following standard operating procedures shall be implemented during intrusive Site activities:

- All construction activities shall be performed in compliance with all OSHA Construction Industry Standards and Regulations. Following the procedures, requirements, and provisions of this plan, all personnel who may be potentially exposed to hazardous materials or wastes shall be in compliance with federal/state regulations, OSHA 29 CFR 1910.120.

- Horseplay will NOT be tolerated under any circumstances.

- All work conducted on-Site will be coordinated through the Project Manager and the SO.
- Minimize contact with hazardous substances.
- Use remote sampling, handling, and container-opening techniques whenever possible.
- Any drum or tank discovered on-Site shall not be sampled, opened, or handled until an appropriate task specific plan for unknown drum/tank sampling has been implemented.
- Samples from areas known, or suspected, to be contaminated with hazardous substances shall be handled with appropriate personal protective equipment.
- The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated shall result in evacuation of Site personnel and reevaluation of the hazards and the level of protection. Contact the Health and Safety Coordinator to determine the appropriate actions to take.
- Protect monitoring and sampling instruments by bagging.
- Wear disposable outer garments and use disposable equipment where appropriate.
- Use proper dressing procedures before entering the Exclusion Zone and use all fasteners (zippers, snaps, buttons, etc.).
- All personal protective equipment and skin surfaces should be checked for cuts and/or punctures.
- All equipment used in Site operations shall be properly cleaned and maintained in good working order. Equipment shall be inspected for signs of defect and/or contamination before and after use.
- Do not eat, smoke, chew gum, or drink on Site. Avoid any practice that may increase the probability of hand-to-mouth transfer and ingestion of material. Avoid any application of cosmetics. Personnel shall wash thoroughly before initiating any of the aforementioned activities.
- Avoid brushy areas to minimize allergic reactions to poison ivy, deer ticks, etc.
- Prescribed drugs should not be taken by personnel where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified person. Alcoholic beverages intake should be avoided.
- The “buddy system” must always be used and enforced. At a minimum, two persons who are in constant communication with each other shall be on Site at all times during any

activity conducted on-Site in which the potential exists for exposure to hazardous materials, or accident or injury.

- Personnel entering the Contamination Reduction Zone and/or the Exclusion Zone must check in and out at the Access Control Points.

- All subcontractors shall abide by the HASP or provide one that is equivalent, at a minimum, to the conditions specified in the HASP.

- No workers with beards or heavy side burns are allowed to wear respirators.

7.4.15 Task-Specific Requirements

In the event that a confined space entry is necessary for a particular intrusive activity, all confined space entry procedures, techniques, and equipment shall be consistent with OSHA regulations in 29 CFR 1910.146. Given the nature of the Site, all confined spaces shall be considered permit-required confined spaces.

Similarly, sections should be added to the HASP to discuss lockout/tagout procedures, hot work permits, ladder/scaffolding safety, safe excavations, etc. as appropriate for the intended intrusive activity.

7.4.16 Certification & Agreement

An agreement should be included in all HASPs and must be signed by all contractors, subcontractors, and visitors before entering the entering the exclusion or decontamination zones. The agreement should include a statement similar to the following:

"I have read this Health and Safety Plan and I understand the requirements of the Plan. I will conduct work at this Site in accordance with the requirements of the Health and Safety Plan."

FIGURES

CHA

111 Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269
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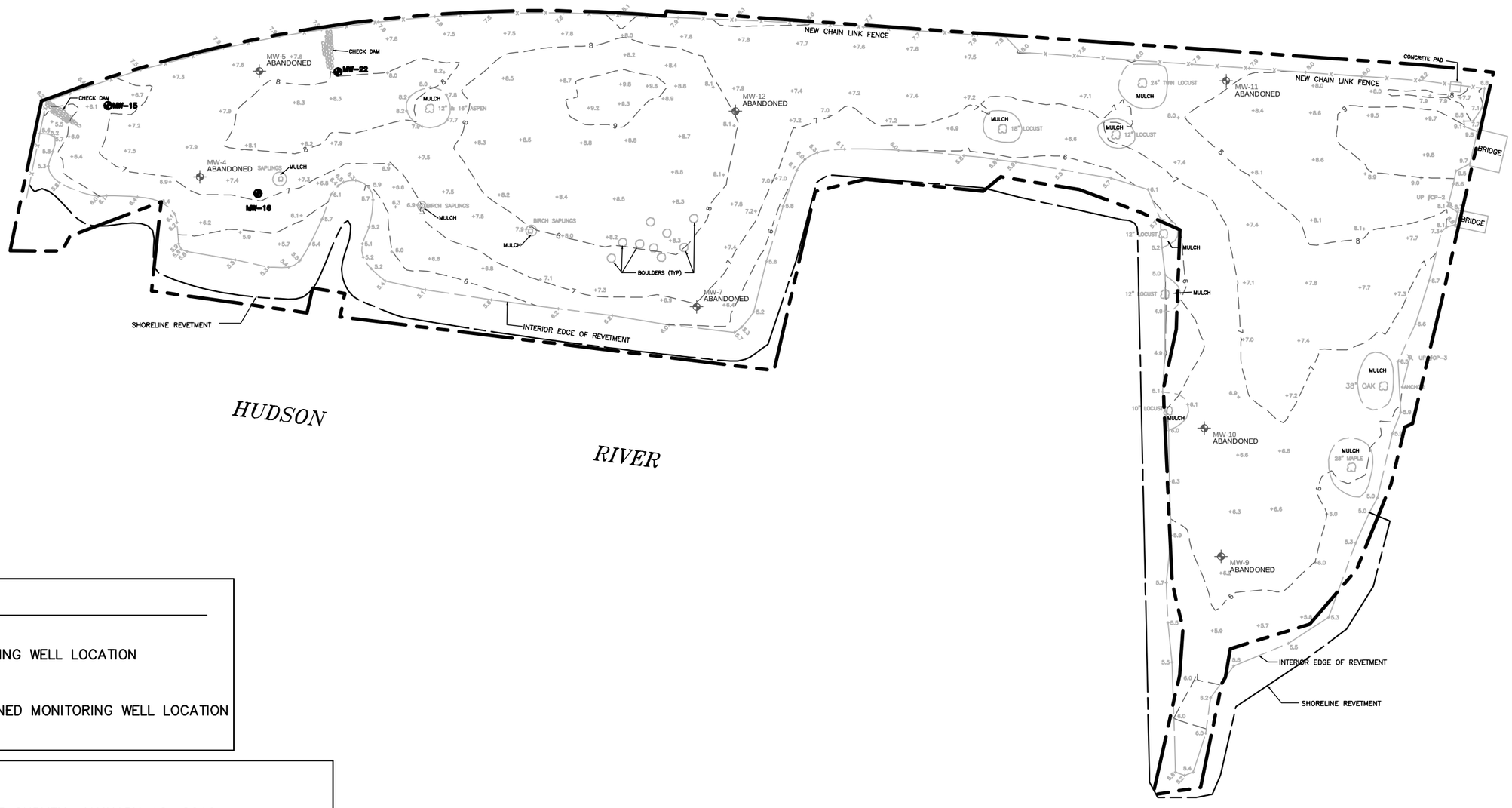
Site Location Map

Peekskill Landing Site

City of Peekskill, State of New York

LANDS OF PENN CENTRAL CORPORATION



LEGEND

MW-1	MONITORING WELL LOCATION
MW-4	ABANDONED MONITORING WELL LOCATION

NOTES:

- DATE OF INTERMEDIATE SURVEY: JANUARY 12, 2010
- PROPERTY LINE, HORIZONTAL AND VERTICAL DATUM FROM PREVIOUS SURVEY BY CLOUGH HARBOUR & ASSOCIATES, LLP
- CONTOUR INTERVAL: 1 FOOT
- DATE OF FINAL SURVEY: JULY 9, 2010
- MONITORING WELL I.D.'S APPROXIMATE FROM PREVIOUS SURVEYS

0 80 160
Scale in feet

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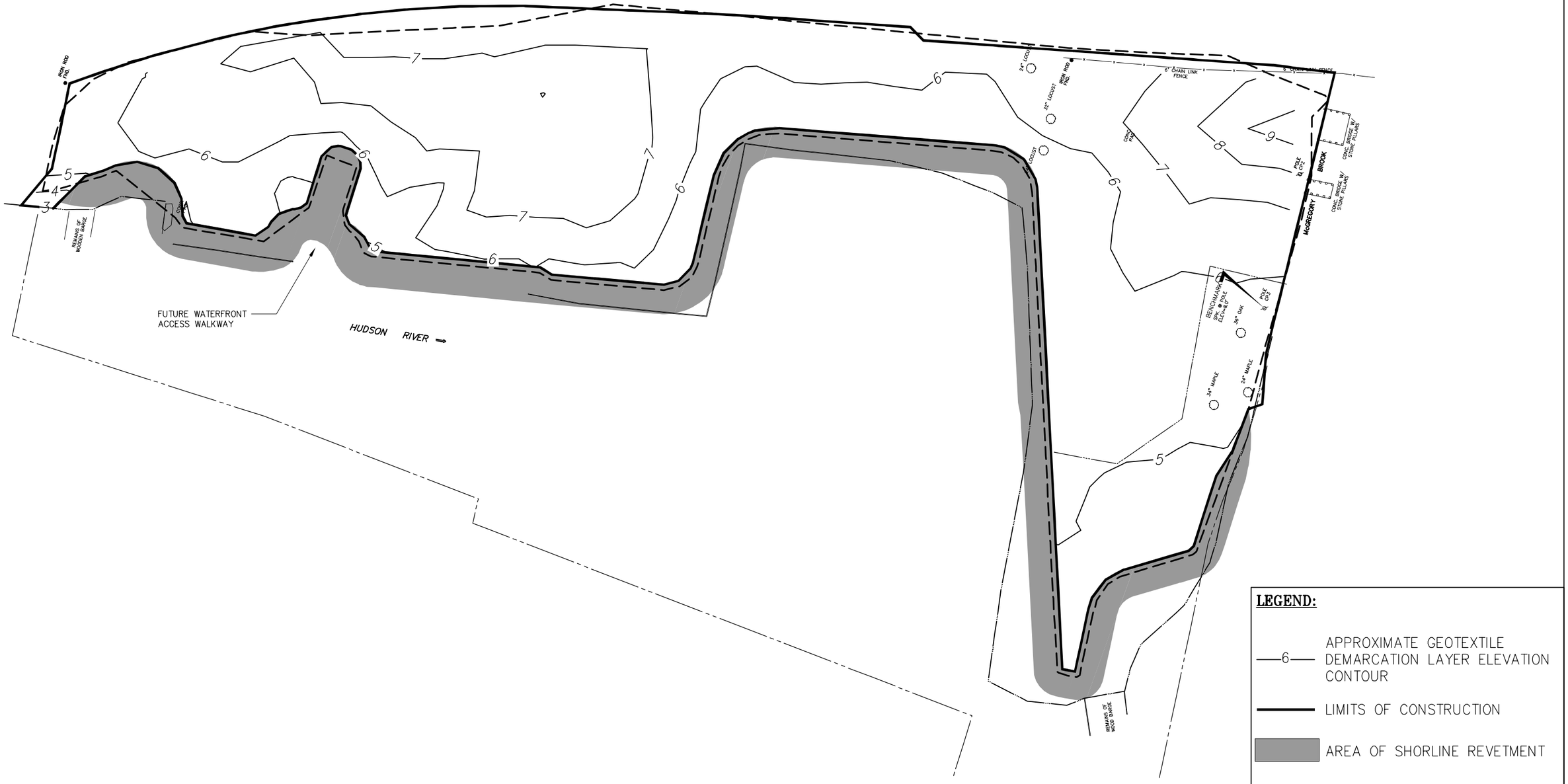
EXISTING MONITORING WELL LOCATIONS

PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 07/31/13

FIGURE 2



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Scale in feet

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APPROXIMATE GEOTEXTILE DEMARCATION LAYER ELEVATION CONTOURS

PEEKSKILL LANDING ENVIRONMENTAL RESTORATION PROGRAM PROJECT

PROJECT NO. 13043

DATE: 09/10/10

FIGURE 3

File: M:\13043\ACAD\SMP\13043-FIG1.DWG Saved: 6/26/2013 2:56:05 PM PLotted: 6/26/2013 2:58:38 PM User: Harden, Jason LastSavedBy: 1709

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Map to Hospital

Peekskill Landing Site

City of Peekskill, State of New York

N W E S

1 inch = 2,000 feet

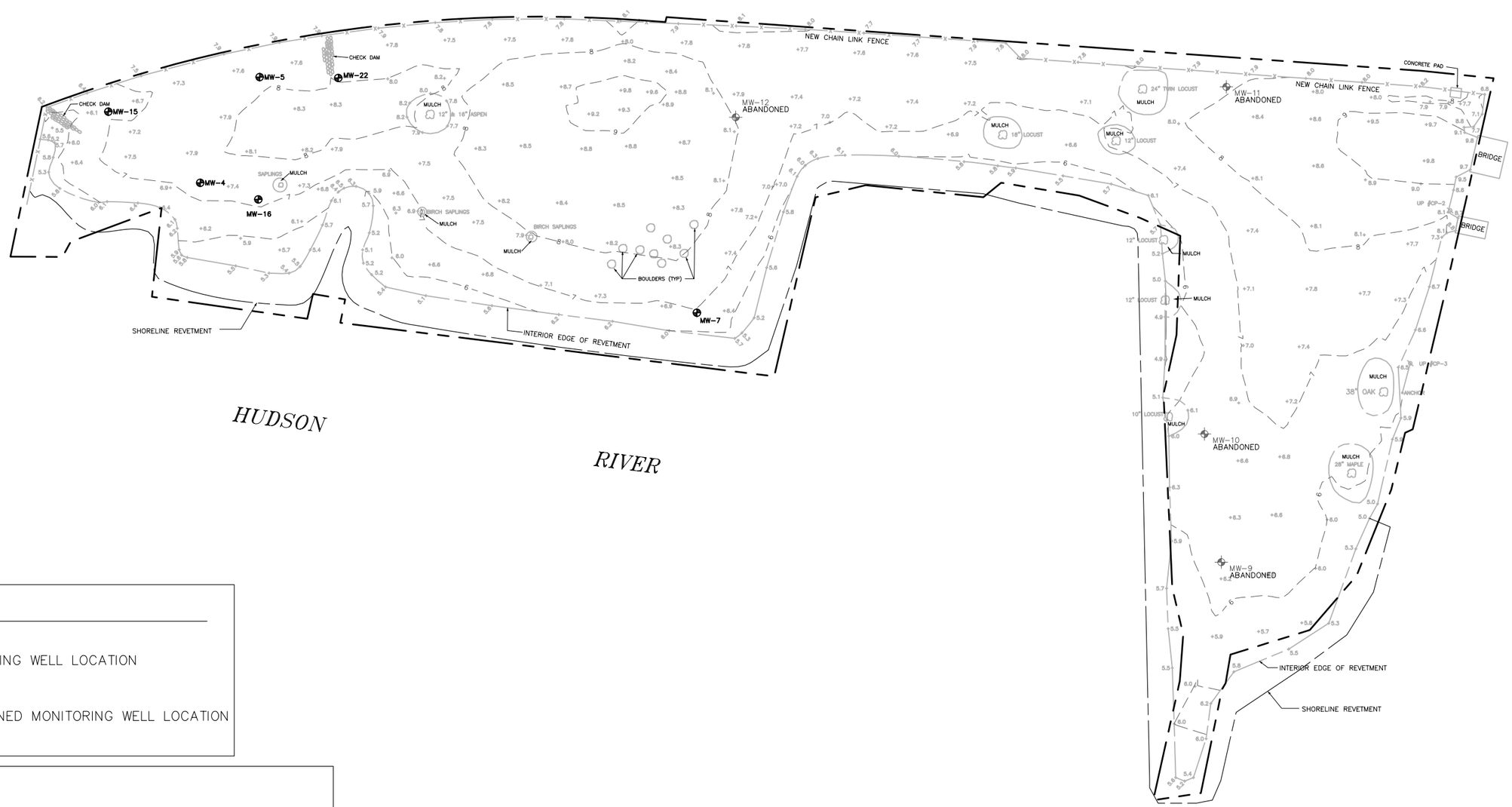
Project No. : 13043

Date : November 2011

Figure 4

APPENDIX A

Final Site Survey and Site Metes & Bounds Description



LEGEND

MW-1 — MONITORING WELL LOCATION

MW-4 — ABANDONED MONITORING WELL LOCATION

NOTES:

- DATE OF INTERMEDIATE SURVEY: JANUARY 12, 2010
- PROPERTY LINE, HORIZONTAL AND VERTICAL DATUM FROM PREVIOUS SURVEY BY CLOUGH HARBOUR & ASSOCIATES, LLP
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- MONITORING WELL I.D.'S APPROXIMATE FROM PREVIOUS SURVEYS

0 80 160

Scale in feet

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FINAL SITE SURVEY

PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 09/30/10

FIGURE 1

SUGGESTED DESCRIPTION
LANDS OWNED BY
CITY OF PEEKSKILL
SI/RAR PEEKSKILL LANDING
CITY OF PEEKSKILL COUNTY OD WESTCHESTER
STATE OF NEW YORK

All that certain piece or parcel of land situate and lying westerly of New York State Route 9 in the City of Peekskill, County of Westchester and State of New York being more particularly bounded and described as follows:

Beginning at a point on the westerly boundary of lands now or formerly of Penn Central Corporation at its intersection with the property division line between lands now or formerly of City of Peekskill on the south and lands now or formerly of The Scenic Hudson Land Trust, Inc and City of Peekskill as described in Liber 12105 of deeds at page 340 on the north; thence South 82°45'41" West, 157.27 feet to a point; thence South 83°18'41" West, 94.86 feet to a point; thence running through lands now or formerly of City of Peekskill the following thirty-two (32) courses and distances:
1) North 44°27'31" West, 5.87 feet to a point;
2) South 83°41'29" West, 41.00 feet to a point;
3) North 88°03'31" West, 64.80 feet to a point;
4) North 69°16'31" West, 50.30 feet to a point;
5) North 37°11'31" West, 58.10 feet to a point;
6) South 79°45'29" West, 20.30 feet to a point;
7) North 80°12'31" West, 5.20 feet to a point;
8) South 81°28'29" West, 73.90 feet to a point;
9) North 28°33'31" West, 33.80 feet to a point;
10) North 82°36'29" East, 85.60 feet to a point;
11) North 74°06'29" East, 32.60 feet to a point;
12) North 56°53'29" East, 33.70 feet to a point;
13) North 67°24'29" East, 135.20 feet to a point;
14) North 82°19'29" East, 42.58 feet to a point;
15) North 72°10'29" East, 69.60 feet to a point;
16) North 03°56'29" East, 30.86 feet to a point;
17) North 00°12'29" East, 45.29 feet to a point;
18) North 10°41'31" West, 55.40 feet to a point;
19) North 59°04'31" West, 16.10 feet to a point;
20) North 14°09'31" West, 82.80 feet to a point;
21) North 33°36'31" West, 36.10 feet to a point;
22) South 82°59'29" West, 128.60 feet to a point;

23) North 12°57’31” West, 306.10 feet to a point;
24) North 81°53’29” East, 16.70 feet to a point;
25) North 10°24’31” West, 22.90 feet to a point;
26) South 82°56’29” West, 17.80 feet to a point;
27) North 11°56’31” West, 109.80 feet to a point;
28) North 76°09’29” East, 62.60 feet to a point;
29) North 40°28’31” West, 67.90 feet to a point;
30) North 81°27’31” West, 12.10 feet to a point;
31) North 19°36’31” West, 36.37 feet to a point; and
32) North 81°50’04” East, 107.13 feet to a point on the said westerly boundary of lands now or formerly of Penn Central Corporation;
thence southerly along said lands now or formerly of Penn Central Corporation the following five (5) courses and distances:
1) along a curve to the right having a radius of 990.00 feet, an arc length of 425.77 feet and a chord of South 28°15’03” East, 422.50 feet to a point;
2) South 15°55’49” East, 18.47 feet to a point;
3) North 82°12’11” East, 3.54 feet to a point;
4) South 15°55’49” East, 530.45 feet to a point; and
5) South 14°04’55” East, 50.13 feet to the point or place of beginning. Containing 209,417 square feet or 4.81 acres of land, more or less.

Subject to all rights, easements, covenants or restrictions of record.

Subject to any state of facts that an up to date abstract of title would disclose.

APPENDIX B

Record of Decision

Department of Environmental Conservation

Division of Environmental Remediation

Environmental Restoration
Record of Decision
Peekskill Landing Site
City of Peekskill, Westchester, New York
Site Number B-00183

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT
ENVIRONMENTAL RESTORATION RECORD OF DECISION

Peekskill Landing Environmental Restoration Site
City of Peekskill, Westchester, New York
Site No. B-00-183

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Peekskill Landing site, an environmental restoration site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Peekskill Landing environmental restoration site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Site Investigation/Remedial Alternatives Report (SI/RAR) for the Peekskill Landing site and the criteria identified for evaluation of alternatives, the NYSDEC has selected Soil Cover and Erosion Control. The components of the remedy are as follows:

- A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Placement of a one foot soil cover over the area of contamination with a geotextile fabric between the soil cover and site soil to serve as a demarcation barrier.
- An institutional control in form of an environmental easement.
- A site management plan (SMP) will be developed and implemented.
- The property owner will provide a periodic Institutional/Engineering Control certification.

New York State Department of Health Acceptance

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

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective.

MAR 31 2006
Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

TABLE OF CONTENTS

Environmental Restoration
RECORD OF DECISION

Peekskill Landing Site
City of Peekskill, Westchester, New York
Site No. B-00183
March 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the Peekskill Landing Site. The presence of contamination has created threats to human health and/or the environment that are addressed by this remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Under the Environmental Restoration (Brownfields) Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated the property can then be reused.

As more fully described in Sections 3 and 5 of this document, coal storage, foundry operations, stove works/metal manufacturing, plating, fire brick works and boat maintenance/storage have resulted in the disposal of contaminants, including metals, semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs). These substances have contaminated the soil and groundwater at the site, and have resulted in:

- a threat to human health associated with current and potential exposure to contaminated soil and groundwater.
- an environmental threat associated with the impacts of contaminants to soil and groundwater.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy to allow for passive recreational use of the site:

- A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Placement of a one foot soil cover over the area of contamination with a geotextile fabric between the soil cover and site soil to serve as a demarcation barrier.
- An institutional control in form of an environmental easement.
- A site management plan (SMP) will be developed and implemented including a plan to monitor groundwater quality and the integrity of the cover system.

- The property owner will provide a periodic Institutional/Engineering Control certification.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially 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.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Peekskill Landing site is an irregularly-shaped property that consists of four tax parcels, totaling approximately 4.7-acres located on the eastern shore of the Hudson River in the City of Peekskill, Westchester County (Figure 1). The site is bordered to the north and east by the Metro-North Railroad and to the south by the Peekskill Riverfront Green Park. With the exception of a deteriorating waterfront bulkhead and former dock area, there are no structures that occupy the site. Remnants of several foundations are, however, located on the central and southern portions of the site (Figure 2).

The Peekskill Landing Site is currently owned by two entities. The southern portion of the site, which consists of approximately 1.74-acres is owned by the City of Peekskill. The remaining portion of the site is owned jointly by Scenic Hudson Land Trust, Inc. and the City of Peekskill. After the remediation and site improvements are completed, it is anticipated that the property will be transferred to the City, provided that the property be used in perpetuity only for park and recreational uses.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Historical research indicates that the subject site was used for industrial/commercial purposes from the mid-1800's into the early 1990s after which time the site was vacant. The site is reportedly comprised of lands reclaimed from the Hudson River, with the majority of the site being filled following construction of the adjacent railroad.

Based on a review of available documentation, historical operations that were conducted at the site included, but are not limited to the following:

- In the late 1800's and early 1900's, a stove works, lumber yard, coal yard, and grain elevator occupied the site;
- In the 1960's a lumber yard, a garage, and a boat repair dock occupied the site;
- In the mid 1970's to mid 1980's a foundry was present; and

- During the mid to late 1980's part of the site was used for office space while the lumber yard and boat repair/launch uses continued

As discussed above, the site is now vacant.

3.2: Remedial History

Prior to the RI/AAR, two previous environmental investigations were completed at this site (1989, 1998). The scope of the previous investigations were limited, the main objective being to identify if the site was impacted by past operations. These studies determined that the site was impacted by VOCs, SVOCs, and metals and identified potential areas of concern.

SECTION 4: ENFORCEMENT STATUS

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

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the State to recover state response costs should PRPs be identified. The City of Peekskill will assist the State in its efforts by providing all information to the state which identifies PRPs. The City will also not enter into any agreement regarding response costs without the approval of the NYSDEC.

SECTION 5: SITE CONTAMINATION

The City of Peekskill has recently completed a remedial investigation/alternative analysis report (RI/AAR) to determine the nature and extent of any contamination at this environmental restoration site.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The first phase of the RI was conducted between August 2004 and September 2004. A second phase was conducted from June 2005 through July 2005 to further delineate potential groundwater contamination. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the RI:

- Research of historical information;
- Collection of 5 background soil samples
- Collection of 9 surface soil samples;

- Excavation of 40 test pits to obtain information about the onsite fill material and the nature and extent of the site contamination. Soil samples were obtained from test pits where contamination was evident, 18 were collected in all;

- Installation of 9 soil borings and 9 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;

- Sampling of 9 new monitoring wells;

- 13 geoprobe groundwater samples.

- An assessment of public and private water supply wells in the area around the site;

- Collection of 5 aquatic sediment samples; and

To determine whether the soil, groundwater, and sediment contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

During the RI, the site soils were identified as mostly fill material from an unknown source(s). The depth of the fill ranges from 8 to 18 feet below ground surface (bgs) and was composed of a variety of materials including, asphalt, ash, coal ash, cinders, wood, railroad ties, brick, slag and various types of fill soils. The natural underlying soil was characterized as silt and clay with varying sands and gravel mixed in. Bedrock was not encountered at the site during the investigation but is regionally classified as being comprised of Upper Ordovician crystalline rock which consists primarily of feldspar and pyroxene. Regionally, it is expected that bedrock exists at depths ranging from 30 to 130 feet bgs.

Groundwater exists at the site ranging from approximately 3 to 6 feet bgs. Groundwater recharge is dependent upon on-site precipitation and infiltration. The water level is directly related to the tidal

influence of the adjacent Hudson River. Based on water elevation data collected during the investigation, groundwater flows generally to the west towards the Hudson River (Figure 5). Because of tidal influences, the groundwater flow is believed, at times, to be in a west-southwesterly direction.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are semivolatile organic compounds (SVOCs), and inorganics (metals).

The SVOCs of concern are benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and benzo(a)pyrene. These chemicals are part of a group of compounds called polynuclear aromatic hydrocarbons (PAHs), which are byproducts of the incomplete burning of organic materials.

The metals of concern include antimony, arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc, and mercury. Since the fill materials came from other sources, the presence of metals may be related to activity (e.g., industrial) at the source of the fill brought to the site.

VOCs, including benzene, toluene and xylenes were discovered in one onsite monitoring well and in three geoprobe samples at the north end of the site. It is believed that the presence of these compounds may be related to an adjacent former Manufactured Gas Plant (MGP) site, located to the east of the northern portion of the site.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil and sediment. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in the soil, groundwater and sediment and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil

Surface soil samples were obtained to delineate the nature and extent of surface contamination at the site. A total of nine surface soil samples were obtained from across the site, three from each area of concern (Figure 3). The samples were collected from 0 to 2 inches bgs after any vegetative cover, if present, was removed. Each sample was analyzed for SVOCs, PCBs, and metals. The analysis revealed that the surface soil contains contamination in the form of SVOCs and metals. The SVOCs

benzo(a)anthracene, benzo(b)fluoranthene, chrysene, and benzo(a)pyrene were detected at ranges from 0.25-1.7 ppm, 0.37-1.9 ppm, 0.29-1.9 ppm and 0.21-1.4 ppm, respectively. At least one compound exceeded the respective SCGs in each of the nine samples collected. No PCBs were detected.

Surface soil was also sampled at four background locations. Background samples are collected to observe soil quality at nearby, off-site locations which should not be impacted by past site operations. Sampling revealed that six metals had average background concentrations above TAGM 4046 values. These metals are: arsenic (9.8 ppm), chromium (12.8 ppm), copper (28.1 ppm), nickel (14.1 ppm), selenium (4.4 ppm), and zinc (78.3ppm). The TAGM permits the use of background concentrations as recommended cleanup objectives.

In the nine surface samples collected on-site, eight metals exceeded recommended cleanup objectives: arsenic, chromium, copper, lead, nickel, silver, zinc, and mercury.

Subsurface Soil

To characterize the fill material at the site, a total of 40 test pits were excavated. Excavation continued until natural soils were encountered or it was determined that deeper excavation would not be practical. The depths of the test pits ranged from 4.5 to 11 feet bgs and usually extended past groundwater which was encountered at depths ranging from 4.5 to 6.5 feet bgs. Each test pit was visually inspected and screened in the field for contaminants with a photoionization detector (PID). A representative soil sample was collected from test pits which were believed to be contaminated based on visual, olfactory and/or PID detection. (Figure 4).

The subsurface soil contamination is similar in nature to that of the surface soil. SVOCs were detected, primarily PAH compounds. These include benzo(a)anthracene ranging at 0.06-4.3 ppm, benzo(b)fluoranthene at 0.05-3.0 ppm, chrysene at 0.08-4.5 ppm, benzo(a)pyrene at 0.04-2.6 ppm, dibenz(a,h)anthracene 0.09-0.15 ppm and benzo(k)fluoranthene from 0.12-1.4 ppm which are all present at concentrations above recommended cleanup objectives. (Table 1 - Subsurface Soils). In all there are SVOC exceedances in ten of the seventeen soil samples collected during the test pit program.

Eight metals exceeded SCGs: arsenic, cadmium, copper, lead, nickel, silver, zinc, and mercury. Mercury was detected well above the TAGM value at one location (114 ppm vs. 0.1 ppm). Further assessment of this finding is recommended to confirm that this is an isolated, anomaly.

Groundwater

During the investigation, nine boreholes were advanced until native soil was encountered, with the depths of the borings ranging from 12 to 20 ft. bgs. The borings were then converted into 2 inch PVC monitoring wells for assessment of groundwater quality. The wells were screened with slotted screens set to straddle the water table. Samples were analyzed for VOCs, SVOCs, PCBs and priority metals.

Analysis revealed that the groundwater quality at the site has been minimally impacted. Only one well, MW-4, exhibited any exceedances of standards. Elevated levels of benzene, toluene, and xylenes were detected in the well. To further assess this finding groundwater samples were collected from 13 geoprobe points. See Figure 6 for locations of wells and geoprobes.

Only three geoprobe samples exceeded VOC groundwater standards. Benzene (standard is 1ppb) was detected at GP-20 (1.1 ppb), GP-21 (25 ppb), and GP-22 (4.1ppb). Benzene was the only VOC compound exceeding groundwater standards. GP-21 is an offsite location.

Standards for ten SVOCs were exceeded at a total of five locations (GP-16, GP-20, GP-21,GP-22, and GP-23).

Sediments

Due to the potential for contaminant exposure at nearby McGregory Brook, five sediment samples were obtained from the brook (Figure 7). Of the five samples, three were collected to assess upgradient conditions .

The results of the sampling showed PAHs and metals present in the sediments above SCGs. However, the contaminant concentrations in these sediments were generally consistent with those in the samples collected from the upgradient/background locations. Benzo(a)anthracene and chrysene were detected in both site samples ranging from 1.2 -2.3 ppm and 1.4 - 2.1 ppm, respectively. The sediment sample collected at the mouth of McGregory Brook contained concentrations higher than upgradient, but it is likely that this is due to the tidal influx of sediment from the Hudson River. Several inorganic compounds were also detected, however, concentrations were comparable to background concentrations. Since there was no evidence of migration into the Hudson River, no river sampling was conducted.

5.2: 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 completion of the RI/AAR.

No IRMs were performed at this site during the RI/AAR.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 9.0 of the Remedial Investigation and Alternatives Analysis Report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population. The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release

and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

An evaluation of on-site groundwater indicates that impacts to groundwater at the site are limited. There are no groundwater production wells on site. It is unlikely that casual visitors or trespassers to the site would be exposed to contaminated groundwater through direct contact or incidental ingestion. If enclosed building(s) were constructed on-site visitors to the facility could potentially be exposed through inhalation of contaminated vapors that could volatilize off of the groundwater and enter into enclosed buildings. Construction workers could be exposed to contaminated groundwater through direct contact, incidental ingestion or inhalation of vapors during future ground intrusive activities where groundwater is encountered.

Areas of on-site soil contamination have been identified. Although the site has some fencing around its perimeter, access to the areas of contamination is not completely restricted as evidenced by areas where trespassers gather to fish and recreate. Current and future exposure to contaminated site soils could occur through direct contact, incidental ingestion, or inhalation of contaminated dust particulates by individuals engaging in recreational activities at the site. During future construction activities, where soils are disturbed or removed, construction workers could be exposed to contaminated soils through incidental ingestion, inhalation or dermal contact.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The following environmental exposure pathways and ecological risks have been identified:

- Because the site is currently heavily vegetated, surface erosion of contaminated soils is not significant.
- Onsite subsurface soil contamination has resulted in localized, low-level groundwater contamination within the vicinity of GP-16.
- Groundwater contamination within the vicinity of MW-4 and the surrounding geoprobe locations appears to be due to an offsite source.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND THE PROPOSED USE OF THE SITE

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The proposed future use for the Peekskill Landing Site is passive recreational.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to PAHs and metals contamination present in the soils and groundwater;
- environmental exposures of flora or fauna to PAHs and metals contamination present in the soils;
- the release of contaminants from soil into groundwater that may create elevated soil vapor levels or exceedances of groundwater quality standards; and
- the release of contaminants from surface soil into surface water through surface runoff erosion

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

- ambient groundwater quality standards
- recommended soil cleanup objectives

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements. Potential remedial alternatives for the Peekskill Landing Site were identified, screened and evaluated in the RA report which is available at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth 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.

7.1: Description of Remedial Alternatives

The following potential remedial alternatives were evaluated to address the contaminated soil, sediments, and groundwater present at the site.

Alternative 1: No Action

Present Worth: *$22,700*
Capital Cost: *$0*
Annual OM&M:
(Years 1-5): *$5,250*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Removal/Disposal of Historic Fill Contaminated Above SCGs

Present Worth: *$16,870,000*
Capital Cost: *$16,870,000*
Annual OM&M:(None): *$0*

Activities performed under this alternative would include the complete removal of historical fill contaminated above SCGs. At this site, it is estimated that nearly 101,254 yd^3 of soil would need to be excavated in order to achieve the remedial goal.

To accomplish this task, extensive dewatering activities would be necessary at the site, which would include the use of water extraction wells and sheet piling. Preliminary estimates conclude that approximately 10 water extraction wells and 17,000 ft^2 of sheet piling would be required to adequately dewater the site for the soil removal activities.

Upon completion of the excavation activities, clean soil would be backfilled into the excavations and all contaminated material would be transported offsite to a permitted disposal facility.

It is estimated that the activities would require 10 to 14 months to complete. Confirmatory sampling would be conducted to ensure that all contaminated media has been removed.

Alternative 3: Soil Cover and Erosion Control

Present Worth: *$1,735,000*
Capital Cost: *$1,690,000*
Annual OM&M:
(Years 1-5): *$6,750*
(Years 6-30): *$1,500*

Under this alternative, extensive excavation activities would not be needed and the bulk of the fill would be left in place. The site would be appropriately graded and a one-foot clean soil cover would be installed over a geotextile demarcation barrier. Various piles of fill and debris would be characterized and properly disposed of offsite to allow for the grading and placement of a soil cover system.

Since the existing rip rap bulkhead is in need of repair, appropriate measures would be taken to either repair or replace this barrier, as needed to insure the bulkhead adequately protects the newly installed cover system. This would prevent soil erosion from the soil cover into the adjacent Hudson River. During the design, the cover thickness and bulkhead would be further evaluated to insure that the cover system can withstand tidal and seasonal (e.g., ice) fluctuations.

The identified low level VOC contamination in groundwater would be addressed via natural attenuation. Mercury was detected significantly above the remedial objective for soil at one location (TP-19). This area would be further assessed during the remedial program to determine if a removal action is warranted in this area. Institutional controls would be implemented to protect potential human health receptors from the low-level contaminants. An environmental easement would be emplaced to limit future use of the site to passive recreational use. Passive recreational use typically includes such uses as bike or walking paths, green space or other public uses with limited potential for soil contact. The future use might also include a food concession stand or other park-related commercial use. Some of these scenarios might entail building construction. Such restricted-commercial use(s) would be permitted. Should any portion of the site be contemplated for active recreational use (e.g., picnic area), appropriate controls (e.g., two foot soil cover) would be emplaced over that area(s).

A site management plan (SMP) would be implemented. This plan would include a groundwater monitoring program. It is anticipated that the existing groundwater wells could be utilized for this purpose, but the need for additional wells would be evaluated during the design. Also included in the SMP would be provision for a soil management plan to address future excavation (e.g., utility installation/repair); provision for evaluation of potential vapor intrusion for any enclosed structures proposed in areas containing low-level VOC contamination; and to address any area(s) contemplated for active (vs. passive) recreational use.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of environmental restoration projects in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the RA 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.

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 NYSDEC has determined to be applicable on a case-specific basis.

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.

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.

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.

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.

7. Cost-Effectiveness. Capital costs and 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 for each alternative are presented in Table 2.

This final criterion 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.

8. Community Acceptance - Concerns of the community regarding the RI/AAR reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. No significant public comments were received.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record, Appendix B, and the discussion presented below, the NYSDEC has selected Remedial Alternative 3, as the remedy for this site. The elements of this remedy are

described at the end of this section.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the AAR. Alternative 3 was selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. Alternative 3 will achieve the remediation goals for the site by eliminating human exposures to contaminants through the installation of a soil cover. The cover system will require either a minimum one-foot clean soil cover or asphalt pavement, sidewalks or building associated with park development be placed over the entire site. The low-level VOCs will degrade through natural attenuation, thus, with time, groundwater quality will improve in the limited area of impact. Alternative 3 will include soil erosion control measures to prevent the spread of soil contamination to adjacent surface water bodies. As discussed below, Alternative 2 would also comply with the threshold selection criteria but would require extensive, costly construction techniques.

With respect to the first threshold criteria, Alternatives 2 and 3 would both be protective of human health and the environment. Alternative 2 would be most protective because it would remove all contaminated media from the site and backfilling with clean soil, thus eliminating exposure hazards. Alternative 3 will leave low-level contamination at the site, however, Alternative 3 adequately satisfies this criteria through the placement of soil cover over the entire site and implementation of a SMP as described in Section 7.1.

With the exception of Alternative 1, both of the remaining proposed remedies would comply with New York State SCGs by meeting the cleanup objectives for the site and providing an acceptable level of protection for human health and the environment.

Because Alternatives 2 and 3 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

In terms of short-term effectiveness, Alternative 2 would obtain remediation goals. However, Alternative 2 also has the greatest short-term exposure risks due to the extensive excavation activities associated with the remedy (e.g., excavation, hauling and disposal of contaminated media). Alternative 3 will present considerably fewer short-term exposure risks.

Alternatives 2 and 3 would be expected to provide long-term protection. Alternative 2 would be the most reliable remedy in meeting long-term goals because the bulk of the contaminants would be removed from the site, whereas Alternative 3 will leave low-level contaminated media in place. However, the risks associated with the contamination are considered low and highly manageable with the implementation of straightforward engineering/institutional controls. Thus Alternative 3 will be a reliable option.

Alternative 2 would best satisfy reducing the mobility and volume of the contamination at the site. By excavating and disposing of the bulk of the contaminated media, each of these factors would be immediately reduced. Alternative 3 will reduce the mobility of the contaminants as the contamination which remains would be contained.

Alternatives 2 and 3 are implementable, albeit with varying degrees of difficulty. Alternative 3 is the

most easily implemented remedy, requiring straightforward construction techniques. Because the site is adjacent to the Hudson River, Alternative 2 would require detailed planning and more complex construction.

Alternative 3 will be the most cost-effective remedy because it will require no further site characterization and will require standard construction techniques. Alternative 2 would not be a cost-effective remedy because extensive dewatering and sheeting would be necessary to allow removal of the contaminated fill which exists to the edge of the Hudson River.

With regard to the ability to be protective of human health and the environment, both Alternatives 2 and 3 would provide comprehensive remedies. Alternative 2 however, would involve a more complicated design and construction process. The proximity of the Hudson River and associated high water table and tidal influences would create certain obstacles (e.g., extensive dewatering) during remediation.

The estimated present worth cost to implement the remedy is $ 1,735,000. The cost to construct the remedy is estimated to be $ 1,690,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $ 6,750.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. A soil cover will be constructed over all vegetated areas to prevent exposure to contaminated soils. The one-foot thick cover will consist of clean soil underlain by an indicator such as a geotextile fabric to demarcate the cover soil from the subsurface soil. The one-foot soil cover will be of sufficient quality to support vegetation. Clean soil will constitute soil with no analytes in exceedance of NYSDEC TAGM 4046 soil cleanup objectives. Buildings, roadways, parking lots, etc. associated with the park development can be used in lieu of soil cover. Also, the existing rip rap bulkhead will be repaired or replaced, as needed, to insure the bulkhead adequately protects the newly installed cover system.

3. Mercury was detected significantly above the remedial objective for soil at one location (TP-19). This area will be further assessed during the remedial program to determine if a removal action is warranted in this area.

4. Since the remedy results in contamination above unrestricted levels remaining at the site an institutional control in form of an environmental easement will be required for the remedy. The environmental easement will:

   (a) Restrict the use of the site to passive recreational use. This typically includes such uses as bike or walking paths, green space or other public uses with limited potential for soil contact. Other potential future uses can include park-related commercial use (e.g., food

concession). Such restricted-commercial use(s) will be permitted.

(b) Restrict the use of groundwater on the site;

(c) Require management of the site in accordance with the provisions of the site management plan;

5. A site management plan (SMP) will be developed and implemented. The SMP for this remedy will include:

(a) An IC/EC control plan to establish the controls and procedures necessary to; (i) manage any remaining contaminated soils that may be excavated from the site during future activities, including procedures for soil characterization, handling, health and safety of workers and the community as well as, disposal/reuse in accordance with applicable NYSDEC regulations and procedures, (ii) evaluate the potential for vapor intrusion for any buildings developed on the site, including mitigation of any impacts identified, (iii) maintain use restrictions relative to site development and insure appropriate controls in any area(s) contemplated for active recreational use, which requires a two foot soil cover vs. passive recreational use, which requires a one foot soil cover; (iv) maintain use restrictions regarding site development or groundwater use identified in the environmental easement; and (v) require the property owner to provide an Institutional Control/ Engineering Control (IC/EC) certification, as required by regulations, on a periodic basis.

(b) A monitoring plan to assess groundwater quality and the integrity of the cover system (e.g., erosion due to seasonal innundation of ice, debris, etc.).

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the Peekskill Landing environmental restoration process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

1. Repositories for documents pertaining to the site were established.

2. A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

3. In September 2004 a Fact Sheet was issued to the site contact list announcing the start of the Remedial Investigation.

4. In February 2006 a Fact Sheet was issued to the site contact list announcing the availability of the PRAP, the public comment period and the planned public meeting.

5. A public meeting was held on March 7, 2006 to present and receive comment on the PRAP.

6. A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	0.25 - 1.7	0.224	9/9
	Benzo(b)fluorenthene	0.37 - 1.9	1.1	5/9
	Chrysene	0.29 - 1.9	0.4	8/9
	Benzo(a)pyrene	0.21 - 1.4	0.061	9/9
Inorganic	Arsenic	2.88 - 27.3	SB[e](9.8)	6/9
	Chromium	7.7 - 54.4	12.8	5/9
	Copper	20.3 - 1810	SB[e](28.1)	8/9
	Lead	33.6 - 863	500	1/9
	Nickel	44.1 - 29.1	SB[e](14.1)	7/9
	Silver	0.34 - 0.77	SB[e](0 .26)	9/9
	Zinc	78.2 - 626	SB[e](78.3)	8/9
	Mercury	0.10 - 9.5	0.1	8/9

TABLE 1
Nature and Extent of Contamination (Continued)

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 4.3	0.224	9/17
	Benzo(b)fluoranthene	ND - 3.0	1.1	4/17
	Chrysene	ND - 4.5	0.4	7/17
	Benzo(a)pyrene	ND - 2.6	0.061	10/17
	Dibenz(a,h)anthracene	ND- 0.15	0.014	2/17
	Benzo(k)fluoranthene	ND- 1.4	1.1	1/17
Compounds	Arsenic	0.76 - 70.4	SB[e](9.8)	6/17
	Cadmium	ND - 22.8	10	1/17
	Copper	17.1 - 2120	SB[e](28.1)	14/17
	Lead	67.1 - 1830	500	3/17
	Nickel	9.49 - 1260	SB[e](14.1)	9/17
	Silver	ND - 0.338	SB[e](0.26)	3/17
	Zinc	39.5 - 2100	SB[e](78.3)	11/17
	Mercury	0.05 - 114	0.1	10/17

TABLE 1
Nature and Extent of Contamination (Continued)

SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG	Average Background Conc. (ppm)
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	1.2 - 2.3	0.224	2/2	1.14
	Chrysene	1.4 - 2.1	0.4	2/2	1.22
	Benzo(b)flouranthene	1.7 - 2.6	1.1	2/2	1.47
	Benzo(a)pyrene	1.2 - 1.9	0.061	2/2	1.08
Inorganic Compounds	Cadmium	0.60 - 0.79	LEL[c] - 0.6	1/2	1.04
			SEL[c] - 9.0	0/2	
	Chromium	26.8 - 29.8	LEL - 26.0	2/2	17.69
			SEL - 110.0	0/2	
	Copper	64.2 - 75.6	LEL - 16.0	2/2	30.23
			SEL - 110.0	0/2	
	Lead	119 - 131	LEL - 31.0	2/2	91.2
			SEL - 110.0	2/2	
	Nickel	18.5 - 23.9	LEL - 16.0	2/2	9.78
			SEL - 50.0	0/2	
	Zinc	172 - 278	LEL - 120.0	2/2	109.47
			SEL - 270.0	1/2	

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND - 25	1	4/22
	Toluene	ND - 16	5	1/22
	m/p-Xylenes	ND - 23	5	1/22
	o-Xylene	ND - 12	5	1/22
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND - 530	10	2/22
	2-Methylnaphthalene	ND -120	50	1/22
	Acenaphthene	ND - 46	20	4/22
	Benzo(a)anthracene	ND - 8.5	0.002[d]	3/22
	Benzo(b)fluoranthene	ND - 5.6	0.002[d]	3/22
	Benzo(k)fluoranthene	ND - 2.8	0.002[d]	2/22
	Benzo(a)pyrene	ND - 6.9	1.2	1/22
	Ideno(1,2,3-cd)pyrene	ND - 1.8	0.002[d]	1/22
	Chrysene	ND - 9.5	0.002[d]	3/22
	Dibenzofuran	ND - 37	5	1/22

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

[b] SCG = standards, criteria, and guidance values;

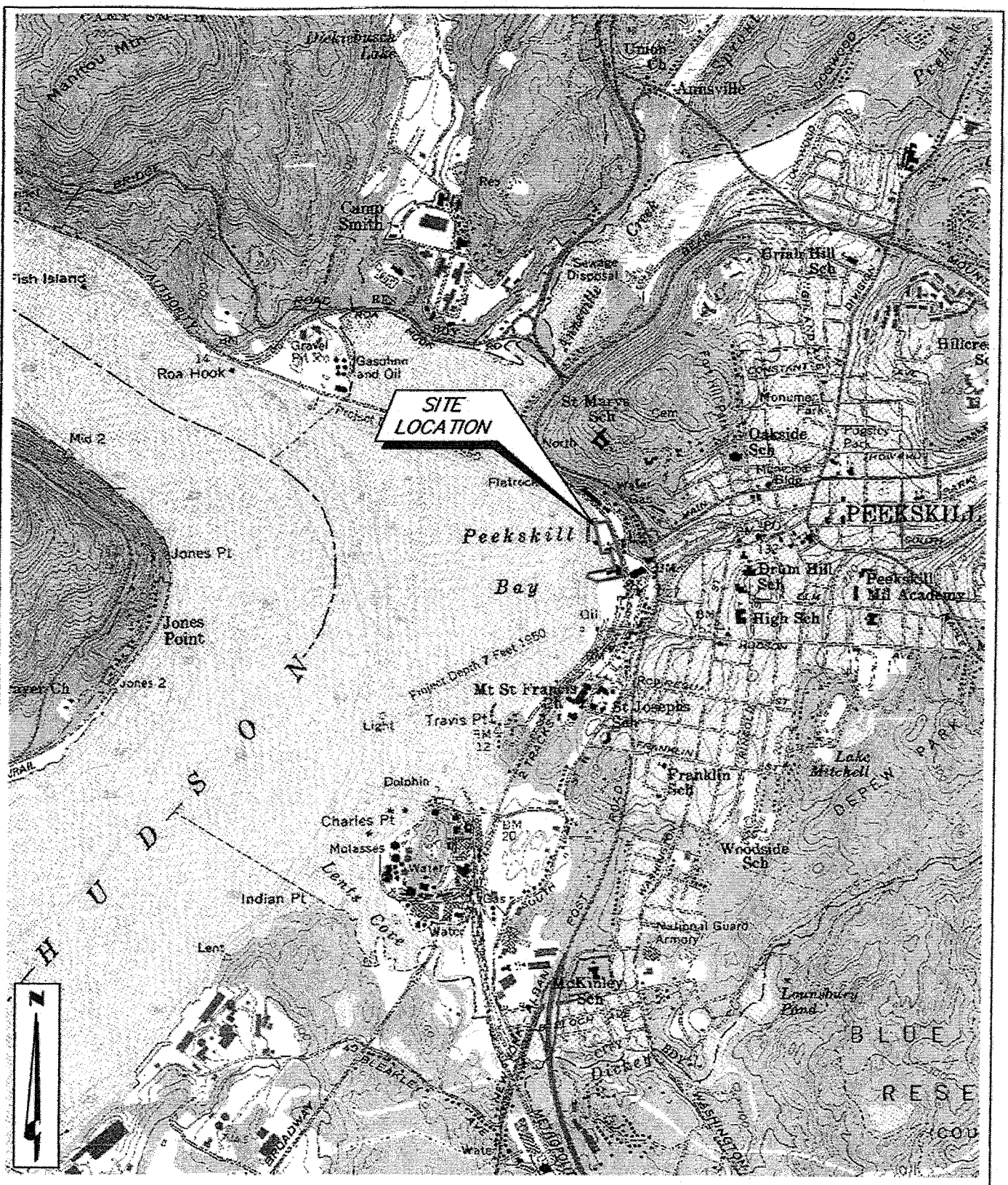
[c] LEL = Lowest Effects Level for fish and wildlife and SEL = Severe Effects Level for fish and wildlife.

[d] Indicates a guidance value, not a standard.

[e] SB = Average soil background values are listed in parentheses.

TABLE 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action	$0	$5,250	$22,700
Removal/Disposal of All Media Above SCGS	$16,870,000	$0	$16,870,000
Soil Cover, Erosion Control and Natural Attenuation	$1,690,000	$6,750 (1-5 years) $1,500 (6-30 years)	$1,735,000



SOURCE: U.S.G.S. 7.5' Topographic
QUADRANGLE: PEEKSKILL, NY

SCALE: 1"=2000'

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SITE LOCATION MAP

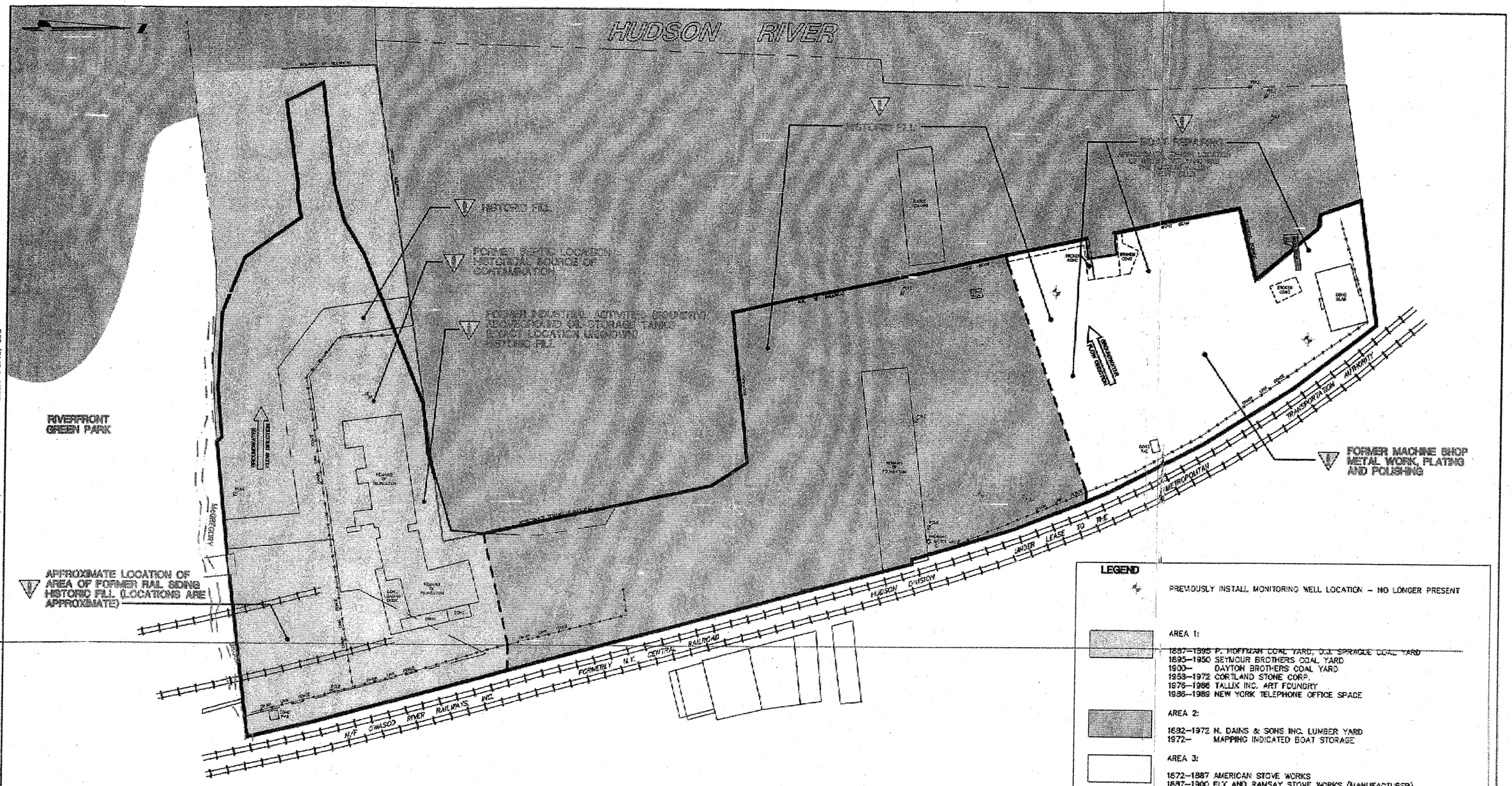
PEEKSKILL LANDING SITE

CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 08/16/05

FIGURE 1



NOTE:

BASE MAPPING ELECTRONICALLY DIGITIZED FROM A MAP BY:
BADEY & WATSON, SURVEYING & ENGINEERING, P.C.
3063 ROUTE 9, COLD SPRING, NEW YORK, 10516
FILE NO. 86–269, AND DATED: AUGUST 6, 2001.

SCALE: 1" = 80'

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SITE PLAN

PEEKSKILL LANDING SITE

CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 08/16/05

FIGURE 2

HUDSON RIVER

RIVERFRONT GREEN PARK

HISTORIC FILL

FORMER SEPTIC LOCATION
HISTORICAL SOURCE OF CONTAMINATION

FORMER INDUSTRIAL ACTIVITIES (FOUNDRY)
ABOVEGROUND OIL-STORAGE TANKS
(EXACT LOCATION UNKNOWN)
HISTORIC FILL

HISTORIC FILL

BOAT REPAIRING
APPROXIMATE FORMER LOCATION OF GEE'S BOAT YARD AND THE HUDSON VALLEY YACHT CLUB

FORMER MACHINE SHOP
METAL WORK, PLATING
AND POLISHING

APPROXIMATE LOCATION OF
AREA OF FORMER RAIL SIDING
HISTORIC FILL

SED-5 SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9

SED-4 SED-3 SED-2 SED-1

FORMERLY N.Y. CENTRAL RAILROAD

N.Y. OWASCO RIVER RAILWAYS, INC.

HUDSON DIVISION

METROPOLITAN TRANSPORTATION AUTHORITY

UNDER LEASE TO THE

LOCATION

SED-3 McGREGORY BROOK IN VICINITY OF WATER STREET (AT LOCATION OF FORMER COLEMAN DISTRIBUTORS)

SED-2 McGREGORY BROOK IN VICINITY OF CENTRAL AVENUE

SED-1 McGREGORY BROOK IN VICINITY OF PARK ST. (250 ft. SOUTH OF STRETLY CERAMIC TILE WAREHOUSE)

* REFER TO FIGURE 4.2 FOR UPGRADIENT SEDIMENT SAMPLE LOCATIONS.

LEGEND

SED-1 SEDIMENT SAMPLE LOCATION

SB-1 SURFICIAL SOIL SAMPLE LOCATION

AREA 1:

1887–1895 P. HOFFMAN COAL YARD, D.J. SPRAGUE COAL YARD
1895–1950 SEYMOUR BROTHERS COAL YARD
1900– DAYTON BROTHERS COAL YARD
1958–1972 CORTLAND STONE CORP.
1976–1986 TALLIX INC. ART FOUNDRY
1986–1988 NEW YORK TELEPHONE OFFICE SPACE

AREA 2:

1882–1972 N. DAINS & SONS INC. LUMBER YARD
1972– MAPPING INDICATED BOAT STORAGE

AREA 3:

1872–1887 AMERICAN STOVE WORKS
1887–1900 ELY AND RAMSAY STONE WORKS (MANUFACTURER)
1900– ROSSMORE COMPANY STOVE WORKS (FOUNDRY)
1905– W.M.V. CRAINE COMPANY GAS STOVE WORKS
1911– PROPERTY LISTED AS VACANT (OWNED BY NYC AND HR RAILROAD)
1964– BOAT REPAIRING/STORAGE (NW CORNER OF PROPERTY)

SCALE: 1" = 80'

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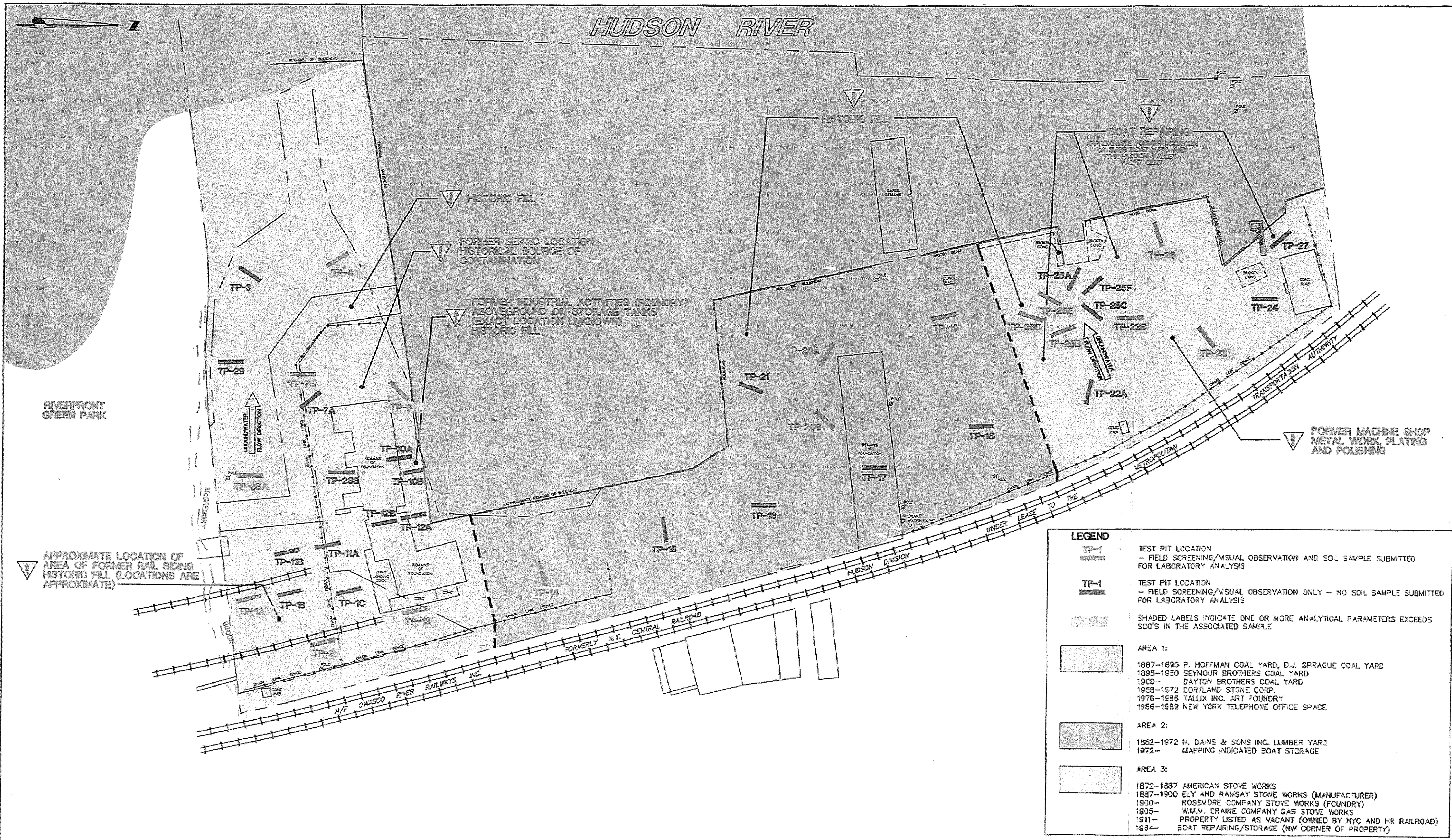
SURFICIAL SOIL AND DOWNGRADIENT SEDIMENT SAMPLE LOCATION PLAN

PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043
DATE: 08/16/05
FIGURE 3


HUDSON RIVER
N
HISTORIC FILL
BOAT REPAIRING
APPROXIMATE FORMER LOCATION OF SEEB'S BOAT YARD AND THE HUDSON VALLEY YACHT CLUB
HISTORIC FILL
FORMER SEPTIC LOCATION
HISTORICAL SOURCE OF CONTAMINATION
FORMER INDUSTRIAL ACTIVITIES (FOUNDRY)
ABOVEGROUND OIL-STORAGE TANKS (EXACT LOCATION UNKNOWN)
HISTORIC FILL
RIVERFRONT GREEN PARK
GROUNDWATER FLOW DIRECTION
FORMER MACHINE SHOP
METAL WORK, PLATING AND POLISHING
APPROXIMATE LOCATION OF AREA OF FORMER RAIL SIDING
HISTORIC FILL (LOCATIONS ARE APPROXIMATE)
TP-3
TP-4
TP-29
TP-7B
TP-7A
TP-8
TP-10A
TP-10B
TP-28A
TP-28B
TP-12B
TP-12A
TP-11B
TP-11A
TP-1A
TP-1B
TP-1C
TP-13
TP-2
TP-14
TP-15
TP-16
TP-17
TP-18
TP-19
TP-20A
TP-20B
TP-21
TP-22A
TP-22B
TP-23
TP-24
TP-25A
TP-25B
TP-25C
TP-25D
TP-25E
TP-25F
TP-26
TP-27
FORMERLY N.Y. CENTRAL RAILROAD
HUDSON DIVISION
UNDER LEASE TO THE METROPOLITAN TRANSPORTATION AUTHORITY
N/F OWASCO RIVER RAILWAYS INC.
LEGEND
TP-1
TEST PIT LOCATION
– FIELD SCREENING/VISUAL OBSERVATION AND SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
TP-1
TEST PIT LOCATION
– FIELD SCREENING/VISUAL OBSERVATION ONLY – NO SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
SHADED LABELS INDICATE ONE OR MORE ANALYTICAL PARAMETERS EXCEEDS SCG'S IN THE ASSOCIATED SAMPLE
AREA 1:
1887–1895 P. HOFFMAN COAL YARD, D.J. SPRAGUE COAL YARD
1895–1950 SEYMOUR BROTHERS COAL YARD
1900– DAYTON BROTHERS COAL YARD
1958–1972 CORTLAND STONE CORP.
1976–1986 TALUX INC. ART FOUNDRY
1986–1989 NEW YORK TELEPHONE OFFICE SPACE
AREA 2:
1862–1972 N. DAINS & SONS INC. LUMBER YARD
1972– MAPPING INDICATED BOAT STORAGE
AREA 3:
1872–1887 AMERICAN STOVE WORKS
1887–1900 ELY AND RAMSAY STONE WORKS (MANUFACTURER)
1900– ROSSMORE COMPANY STOVE WORKS (FOUNDRY)
1905– W.M.V. CRAINE COMPANY GAS STOVE WORKS
1911– PROPERTY LISTED AS VACANT (OWNED BY NYC AND HR RAILROAD)
1954– BOAT REPAIRING/STORAGE (NW CORNER OF PROPERTY)

SCALE: 1" = 80'

CHA
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TEST PIT LOCATION PLAN

PEEKSKILL LANDING SITE

CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 08/16/05

FIGURE 4

File: M:\13043\ACAD\PRAP FIGURES\FIGURE-4.DWG Saved: 1/10/2006 3:18:05 PM Plotted: 1/10/2006 3:24:59 PM User: Cowan, Keith

HUDSON RIVER

HISTORIC FILL

BOAT REPAIRING
APPROXIMATE FORMER LOCATION OF BOY BOAT YARD AND THE HUDSON VALLEY YACHT CLUB

HISTORIC FILL

FORMER SEPTIC LOCATION
HISTORICAL SOURCE OF CONTAMINATION

FORMER INDUSTRIAL ACTIVITIES (FOUNDRY)
ABOVEGROUND OIL STORAGE TANKS
(EXACT LOCATION UNKNOWN)
HISTORIC FILL

MW-9
91.21

MW-10
91.25

MW-7
90.62

MW-8
91.81

MW-4
91.26

MW-5
91.30

MW-12
91.28

MW-3
91.23

90.8

91.0

91.2

91.6

91.8

92.16

GROUNDWATER FLOW DIRECTION

RIVERFRONT
GREEN PARK

APPROXIMATE LOCATION OF AREA OF FORMER RAIL SIDING
HISTORIC FILL (LOCATIONS ARE APPROXIMATE)

FORMER MACHINE SHOP
METAL WORK, PLATING
AND POLISHING

FORMERLY N.Y. CENTRAL RAILROAD

HUDSON JUNCTION

METROPOLITAN TRANSPORTATION AUTHORITY

UNDER LEASE TO THE

N/F OWASCO RIVER RAILWAYS INC.

LEGEND

CONTOURS BASED ON WATER LEVEL MEASUREMENTS COLLECTED ON 8/26/05 DURING FALLING TIDE CONDITIONS.

92.00 — GROUNDWATER CONTOUR AND ELEVATION (CONTOUR INTERVAL = 0.20 ft.)

FORMERLY INSTALL MONITORING WELL LOCATION – NO LONGER PRESENT

MW-4 MONITORING WELL LOCATION

AREA 1:

1887–1895 P. HOFFMAN COAL YARD, D.J. SPRAGUE COAL YARD
1895–1950 SEYMOUR BROTHERS COAL YARD
1900– DAYTON BROTHERS COAL YARD
1958–1972 CORTLAND STONE CORP.
1976–1986 TALLIX INC. ART FOUNDRY
1986–1989 NEW YORK TELEPHONE OFFICE SPACE

AREA 2:

1882–1972 N. DAINS & SONS INC. LUMBER YARD
1972– MAPPING INDICATED BOAT STORAGE

AREA 3:

1872–1887 AMERICAN STOVE WORKS
1887–1900 ELY AND RAMSAY STONE WORKS (MANUFACTURER)
1900– ROSSMORE COMPANY STOVE WORKS (FOUNDRY)
1905– W.M.N. CRAINE COMPANY GAS STOVE WORKS
1911– PROPERTY LISTED AS VACANT (OWNED BY NYC AND HR RAILROAD)
1964– BOAT REPAIRING/STORAGE (NW CORNER OF PROPERTY)

SCALE: 1" = 80'

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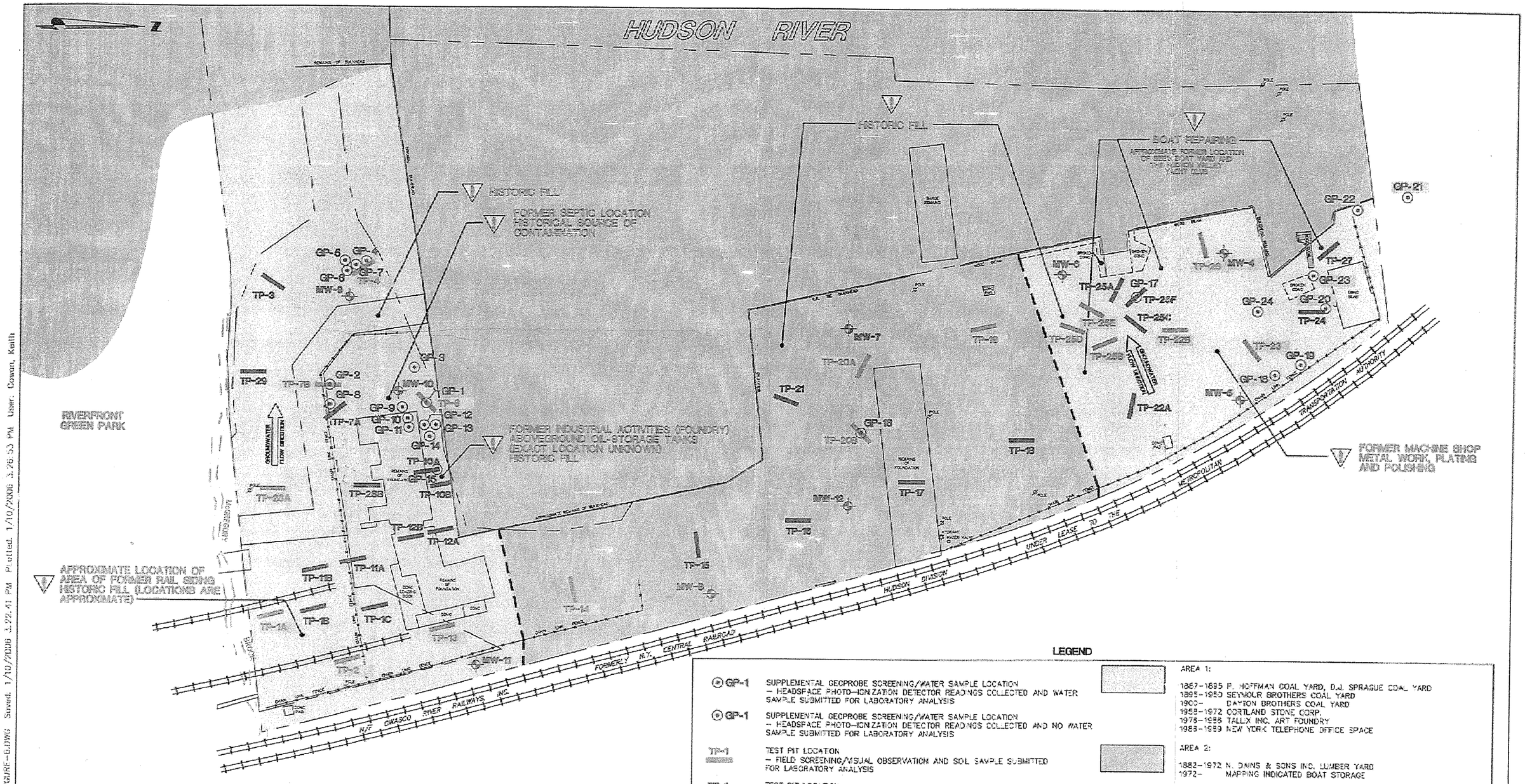
SHALLOW GROUNDWATER CONTOURS
AUGUST 26, 2004
PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043

DATE: 08/16/05

FIGURE 5



LEGEND

- GP-1 — SUPPLEMENTAL GEOPROBE SCREENING/WATER SAMPLE LOCATION – HEADSPACE PHOTO-IONIZATION DETECTOR READINGS COLLECTED AND WATER SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
- GP-1 — SUPPLEMENTAL GEOPROBE SCREENING/WATER SAMPLE LOCATION – HEADSPACE PHOTO-IONIZATION DETECTOR READINGS COLLECTED AND NO WATER SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
- TP-1 — TEST PIT LOCATION – FIELD SCREENING/VISUAL OBSERVATION AND SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
- TP-1 — TEST PIT LOCATION – FIELD SCREENING/VISUAL OBSERVATION ONLY – NO SOIL SAMPLE SUBMITTED FOR LABORATORY ANALYSIS
- MW-4 — MONITORING WELL LOCATION
- SHADED LABELS INDICATE ONE OR MORE ANALYTICAL PARAMETERS EXCEEDS SCG'S IN THE ASSOCIATED SAMPLE

AREA 1:

1867–1885 P. HOFFMAN COAL YARD, D.J. SPRAGUE COAL YARD
1885–1950 SEYMOUR BROTHERS COAL YARD
1902– DAYTON BROTHERS COAL YARD
1958–1972 CORTLAND STONE CORP.
1978–1988 TALLIX INC. ART FOUNDRY
1988–1989 NEW YORK TELEPHONE OFFICE SPACE

AREA 2:

1882–1972 N. DAINS & SONS INC. LUMBER YARD
1972– MAPPING INDICATED BOAT STORAGE

AREA 3:

1872–1887 AMERICAN STOVE WORKS
1887–1900 ELY AND RAMSAY STONE WORKS (MANUFACTURER)
1902– ROSSMORE COMPANY STOVE WORKS (FOUNDRY)
1905– W.M. M. GRAINE COMPANY GAS STOVE WORKS
1911– PROPERTY LISTED AS VACANT (OWNED BY NYC AND HR RAILROAD)
1984– BOAT REPAIRING/STORAGE (NW CORNER OF PROPERTY)

SCALE: 1" = 80'

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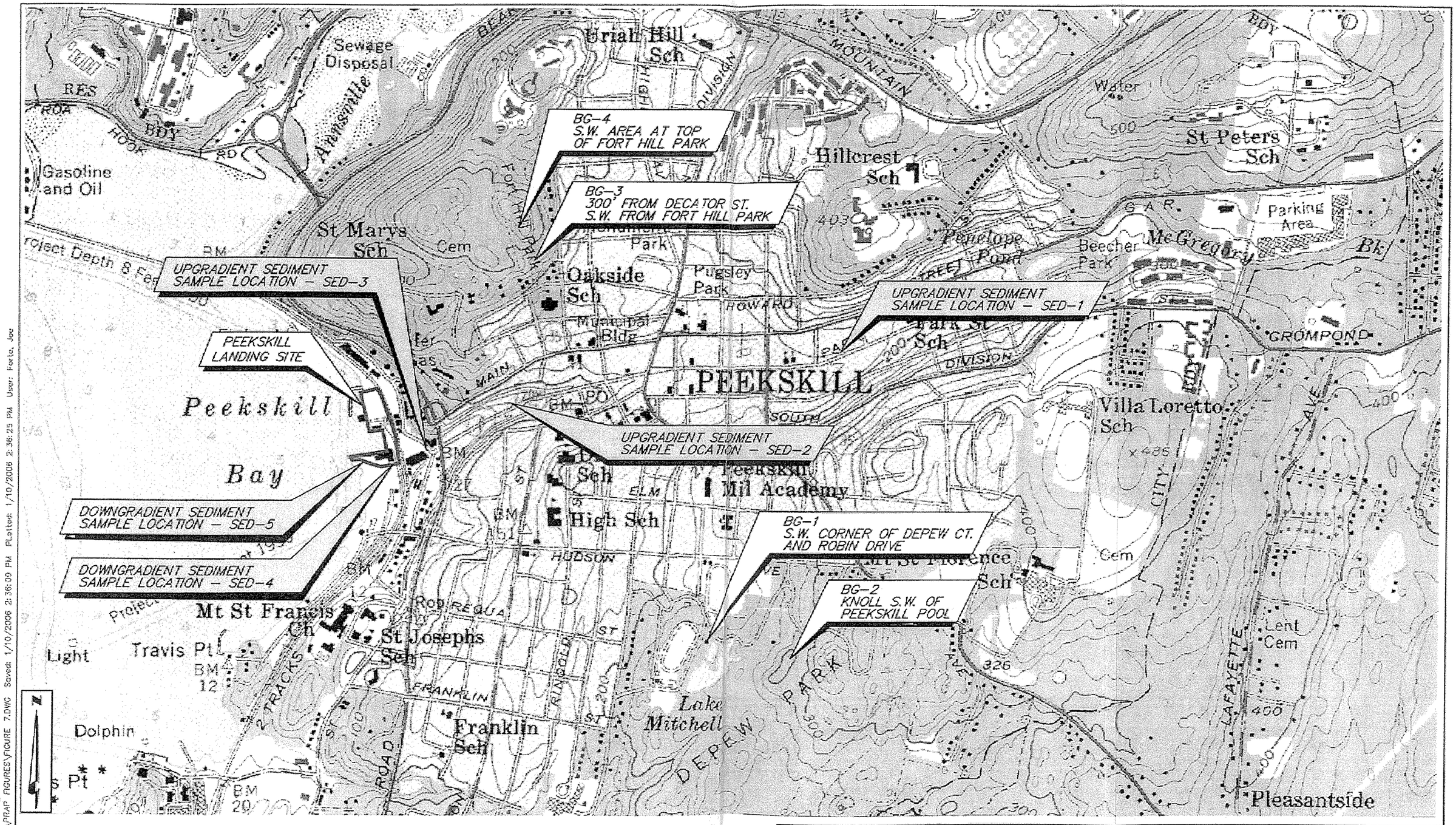
SUPPLEMENTAL GEOPROBE/GROUNDWATER SAMPLE LOCATION PLAN
PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043
DATE: 08/16/05
FIGURE 6

File: M:\13043\ACAD\PRAP_FIGURES\FIGURE-6.DWG Saved: 1/10/2006 3:22:41 PM User: Gowan, Keith
Plotted: 1/10/2006 3:26:53 PM



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BACKGROUND SOIL SAMPLE AND UPGRADIENT SEDIMENT SAMPLE LOCATIONS

PEEKSKILL LANDING SITE
CITY OF PEEKSKILL
STATE OF NEW YORK

PROJECT NO. 13043
DATE: 08/16/05
FIGURE 7

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Peekskill Landing Environmental Restoration Site
City of Peekskill, Westchester, New York
Site No. B-00183

The Proposed Remedial Action Plan (PRAP) for the Peekskill Landing site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 2, 2006. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Peekskill Landing site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 7, 2006, which included a presentation of the Site Investigation (SI) and the Remedial Alternatives Report (RAR) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 20, 2006.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

COMMENT 1: What is the burned/charred material discovered in the test pit (this question is in reference to a photo presented during the public meeting presentation)? Where did it come from?

RESPONSE 1: There is no way to determine where the burned/charred material came from, but the material looked like it could have been demolition debris from a building destroyed by fire.

COMMENT 2: There is another site nearby, a former manufactured gas plant. Is the homeless shelter impacted by the former manufactured gas plant?

RESPONSE 2: The former manufactured gas plant (MGP) referenced is the Pemart Avenue MGP Site (Site No. V00566-3). This site is located just north of the Peekskill Landing site, and across the railroad tracks. The Pemart Avenue site is currently being investigated to assess the nature and extent of contamination associated with past operations on and near that property by the Consolidated Edison Company, under a Voluntary Cleanup Program agreement with the New York State Department of Environmental Conservation (NYSDEC). A work plan has been approved and the field program (monitoring well installation, soil boring installation, etc.) is currently underway. Data is not yet available to determine if contamination has impacted the homeless shelter, which sits within the footprint of the MGP site. The remediation of the MGP site will be addressed by a

separate decision document.

COMMENT 3: What constitutes passive vs. active recreational use? What will be required for the site to go from passive to active recreational use?

RESPONSE 3: Passive recreational activity is generally viewed as activities where contact with a soil cover is limited. Such uses include bike paths, walking paths, and green space. Active recreational activity includes such uses as playgrounds, picnic areas, and playing fields, where there is a higher potential for contact with the soil cover. To address this potential pathway, active recreational uses generally require additional soil cover, or a more durable cover surface (e.g., asphalt). Accordingly, the selected remedy includes provision to enhance the cover thickness to two feet in those areas where the final intended use involves active recreation.

COMMENT 4: What is the lifespan of the geotextile barrier material?

RESPONSE 4: Typically, remedies are designed and the costs estimated for a lifespan of no less than 30 years. As a general rule, as long as the geotextile material is protected from ultraviolet rays from the sun prior to installation and soil cover, it is very durable. The geotextile material is intended to be used only as a visual indicator. The remedial design will identify the appropriate specifications for maximum durability as a permeable visual indicator.

COMMENT 5: How will the remedy be effected by the future redevelopment of the property?

RESPONSE 5: The City's contemplated use as a waterfront park has been taken into consideration in the remedy, therefore that use is specifically permitted. As portrayed by the City's conceptual plans, the intended future use is viewed as passive recreational, with the exception of a small area where a picnic area is contemplated. As discussed in Response 3, in an area(s) where active recreational use is contemplated, the remedy for that area will be enhanced to a two foot clean soil cover. The passive vs. active use and the respective soil covers will be set forth in the Environmental Easement, maintained by the Site Management Plan and reported on by the periodic Institutional Control/Engineering Control (IC/EC) certification. This certification will provide assurance that the integrity of the remedy has been maintained.

COMMENT 6: What is a vapor mitigation system and what does it do?

RESPONSE 6: A vapor mitigation system is installed to address identified or potential impacts to indoor air quality which are the result of vapor intrusion. This system, also known as a sub-slab depressurization system, is much like a radon mitigation system. The systems is designed to reduce exposures by minimizing the movement of vapors that are beneath a slab into a building. A low amount of suction is applied below the foundation of the building and the vapors are vented to the outside. The system uses minimal electricity and should not noticeably affect heating and cooling efficiency.

COMMENT 7: How will the soil cover remedy impact the adjacent properties, in particular the railroad property to the east?

RESPONSE 7: The design will assure that the remedy does not negatively impact neighboring properties. As an example, the remedy will address proper surface water drainage and storm water management.

COMMENT 8: What are the contaminants of concern and how would people be affected by exposure to them?

RESPONSE 8: The primary contaminants of concern in the soils are semi-volatile organic compounds (SVOCs) and metals. These are present at low levels and dispersed throughout the site. The one exception is mercury which was detected at elevated concentrations in two samples, one subsurface (114 ppm) and one surface (9.5 ppm). The design will evaluate whether or not these elevated values represent an identifiable "hot spot" which warrants excavation and off-site disposal at a permitted facility. The primary contaminants of concern in the groundwater are volatile organic compounds (VOCs) and SVOCs. These are also present at low levels at or below groundwater standards and are localized.

Ms. Ruth A. Wells submitted a letter (dated March 20, 2006) which included the following comments:

COMMENT 9: I'd like to thank you and your team for your very informative presentation on the PRAP for the Peekskill Landing Site. I'm sorry that there were not more people in attendance, since a lively dialogue often brings more questions to mind. Unfortunately, the postponement, along with the postponements of all the other events affected by the previous week's snow, created schedule conflicts for quite a few people who might otherwise have attended.

Having reviewed the information, I am satisfied that Alternative 1 is inadequate considering the findings and that Alternative 2 is unnecessarily costly and in the short term the most hazardous. However, since the definition of "active use" includes such activities as picnicking, I believe that it is foolhardy to plan for passive use of the site. If food concessions are to be allowed, what is to prevent people from sitting on the grass to eat? What's more, while there is no plan for a playground, children cannot very well be banned from the Landing, and children usually wind up playing on the ground no matter what plans adults have for them. Whether or not there is a dog run, dogs will be walked there and will roll and lie on the ground, and then be handled by children and adults. Dogs and other animals will dig holes. The park is unlikely to be patrolled in such a way as to prevent games of catch or Frisbee. While rules can be posted, unless we have park monitors who constantly admonish against inappropriate activities, they are likely to occur. On the other hand if rules must be posted with dire warnings about health hazards, people are unlikely to want to use the park at all. Further, we may find that what we plan for the site now needs modification five years from now. Peekskill is very short of facilities for active recreation.

At the planning meetings, the vulnerability of the site to flooding was discussed, along with the need to build up the bulkhead or rip-rap in any event in order to prevent same. A 2' cover, with the bulkhead increased commensurately, would also give greater insurance against surface flooding and the moving of contaminants through the soil cover and around the surface by water. If the sediment at the mouth of the brook is thought to contain a higher level of contaminants due to tidal influx from the river, it would stand to reason that silt left behind by flooding would have a contaminating effect. At the session on March 7, no one was able to answer with any certainty Mary Foster's or my questions about the additional cost of a 2' soil cover, but if, as was suggested, it would cost 25% to 50% more than a 1' cover, I would recommend that the additional investment be made to remediate the entire site for active use.

RESPONSE 9: As discussed in Response 2, passive recreational use does not preclude all recreational activity. This designation represents future use/activities where there is little or no potential for the soil cover to be breached. As long as the soil cover is intact, typically via grass cover, the activities you mention (e.g., frisbee, dog walking, picnic blanket) are permitted. An area(s) designated for use as a playground (swing set, play gym), however, could potentially compromise this cover. To accommodate this possibility, the remedy requires a two foot soil cover in those areas where active recreational use is contemplated. These areas will be identified, once the City has completed its redevelopment plan. The site management plan will require regular inspection of the soil cover to identify areas in need of repair. Repair to the soil cover is anticipated to involve a shovel or two of clean soil and seeding.

With regard to flooding, the remedial design will include an assessment of the potential for flooding which might cause scouring or erosion of the soil cover. Placement of more than one foot of soil on portions of the site is a possibility. Similar considerations will be addressed when designing and restoring the rip-rap bulkhead to protect the soil cover from seasonal flooding and erosion. These measures are expected to protect the integrity of the soil cover and limit the deposition of river sediments, debris, etc. onto the site. The site management plan will also require routine inspection of the bulkhead to insure the long-term integrity of the remedy.

APPENDIX B

Administrative Record

Administrative Record

Peekskill Landing
Site No. B-00-183

1. Proposed Remedial Action Plan for the Peekskill Landing site, dated March 2006, prepared by the NYSDEC.

2. Site Investigation and Remedial Alternatives Report Work Plan, dated May 26, 2004, prepared by Clough, Harbour, & Associates. The work plan includes the Citizen's Participation Plan.

3. Remedial Investigation and Alternatives Analysis Report, dated December 19, 2005, prepared by Clough, Harbour, & Associates.

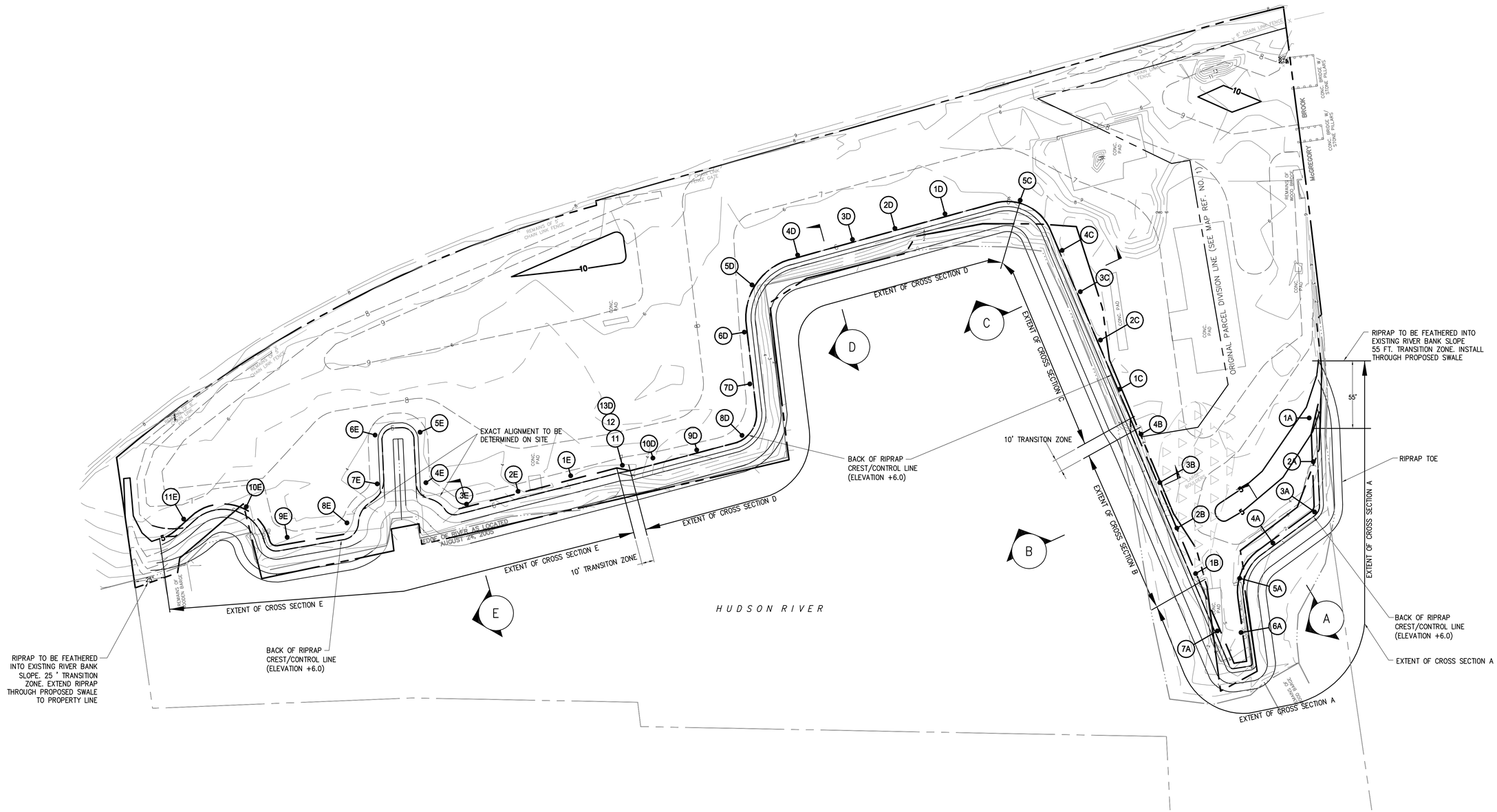
4. September 2004 Fact Sheet announcing the start of the Remedial Investigation.

5. February 2006 Fact Sheet announcing the availability of the PRAP, the public comment period, and the public meeting.

6. Letter dated March 20, 2006 from Ruth A. Wells.

APPENDIX C

Riprap Cross-Section As-Built Diagrams



NOTES:

1. WHERE RIPRAP CHANGES DIRECTION, SHARP CORNERS ARE NOT ACCEPTABLE, CONTRACTOR TO CONSTRUCT RIPRAP ARCS TO THE SATISFACTION OF THE ENGINEER. SEE SPECIFICATION FOR MORE DETAILS.
2. ELEVATIONS FOR SHORELINE PROTECTION PLAN ARE BASED ON MEAN LOWER LOW WATER DATUM
3. AT STRUCTURE TERMINATION POINTS RIPRAP IS TO BE FEATHERED INTO THE EXISITNG GROUND IN ORDER THAT A STABLE PROFILE IS CREATED.
4. TRANSITION ZONES HAVE BEEN SET IN ORDER THAT CHANGES TO THE CROSS-SECTIONS CAN BE ACCOMMODATED.
5. A TEMPORARY TERMINATION OF THE RIPRAP HAS BEEN PROVIDED AT THE NORTHERN END OF THE SITE IN ORDER TO LIMIT OUTFLANKING.
6. SOILS/SEDIMENT EXCAVATED FROM BELOW THE WATERLINE CAN MAY BE USED AS FILL BENEATH THE DEMARCATION LAYER. THIS MATERIAL WILL BE PLACED IN 6" LIFTS AND SHALL BE DEWATERED BEFORE PLACEMENT.

1"=40' 0 40 80 FT.

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SITE PLAN

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C500

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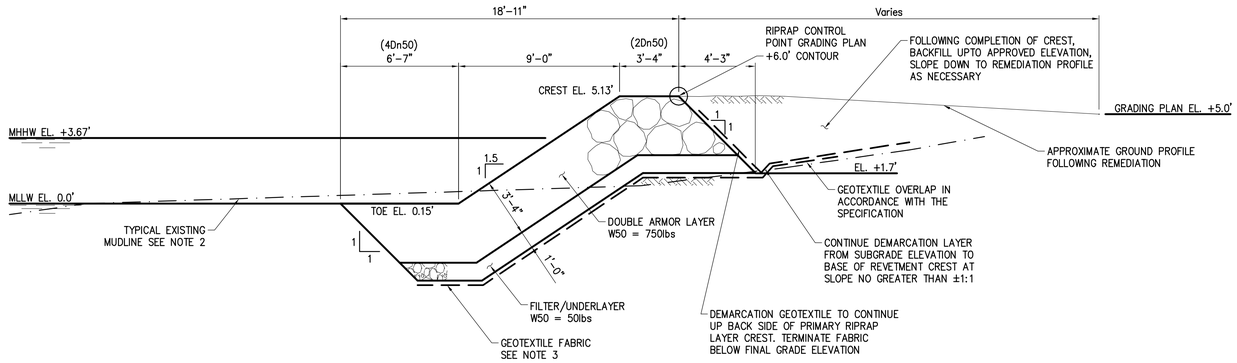

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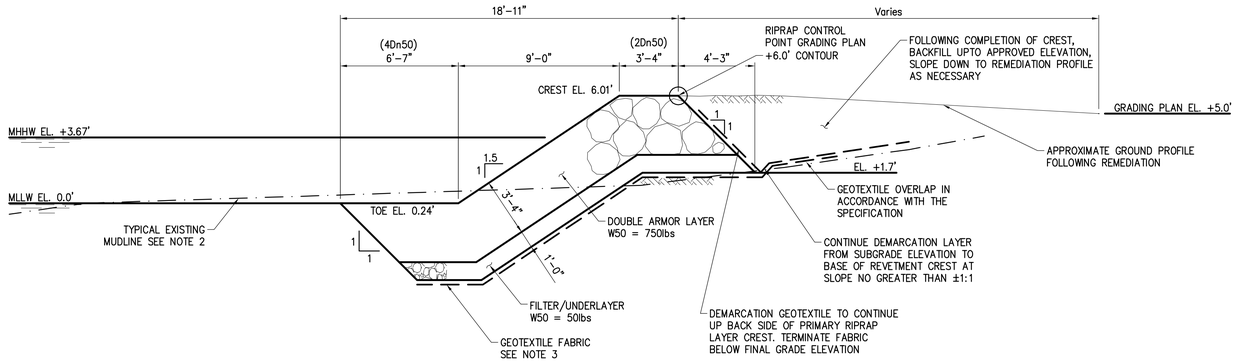

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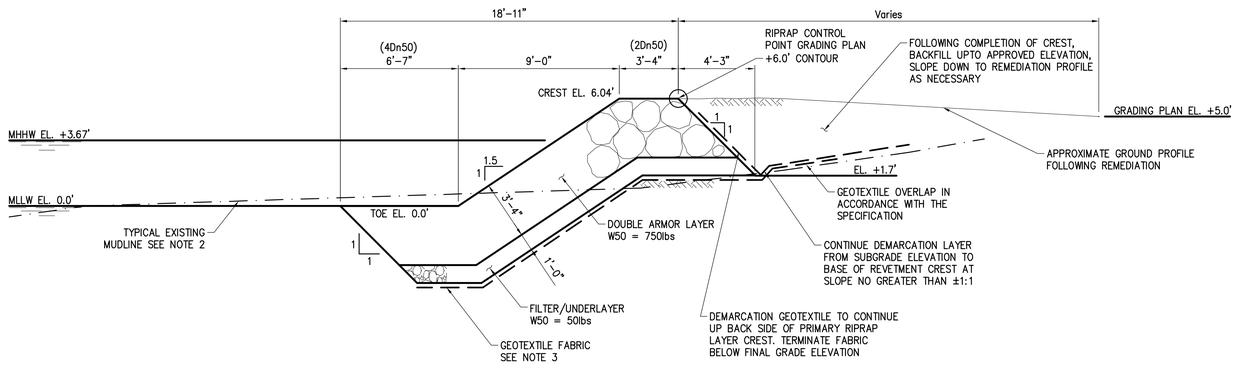

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SCALE 1/4"=1'-0"

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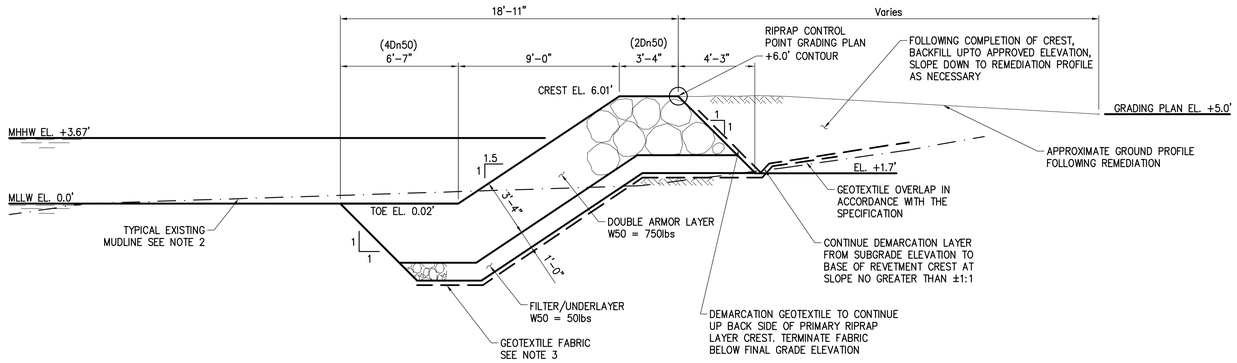
C501



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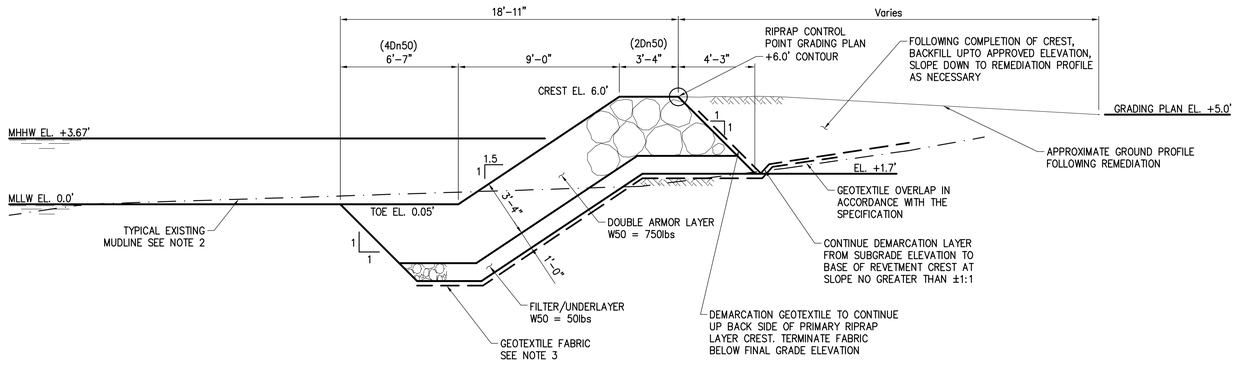

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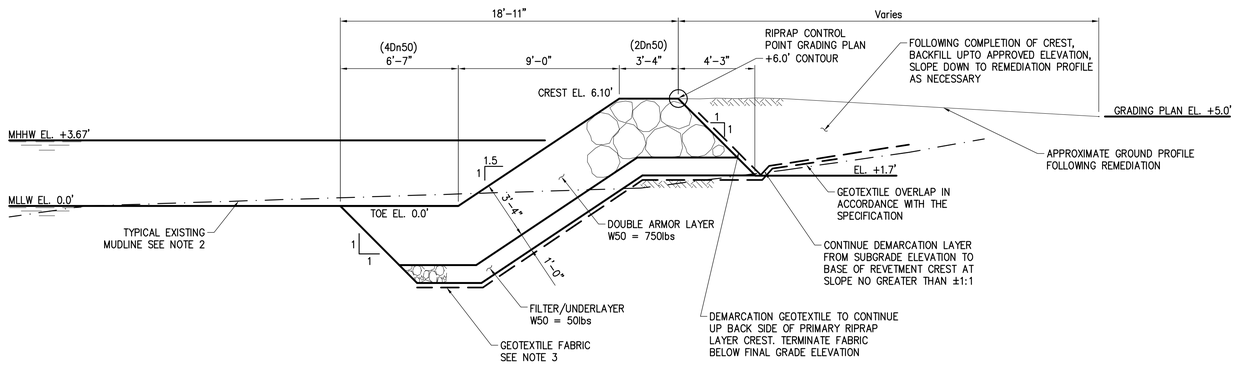

6A C-5 CROSS SECTION NEW RIPRAP REVETMENT
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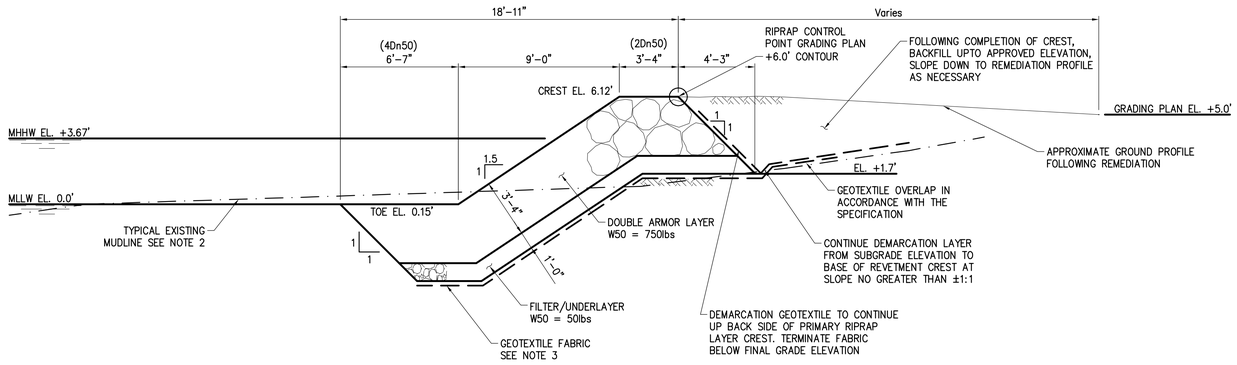

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SCALE 1/4"=1'-0"

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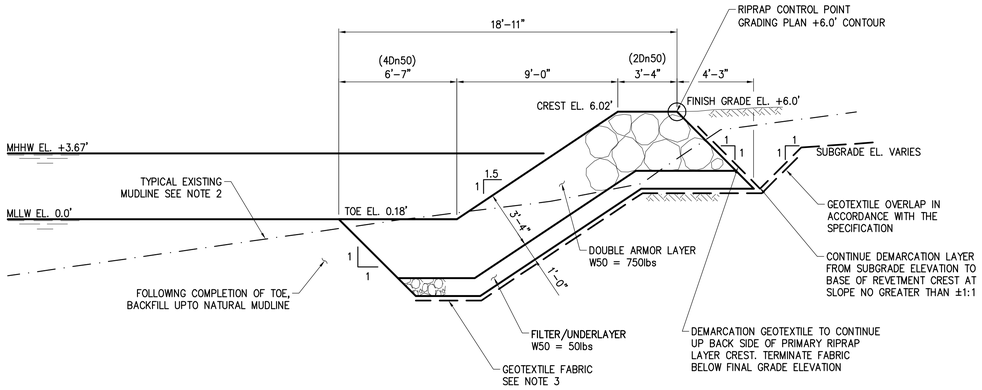

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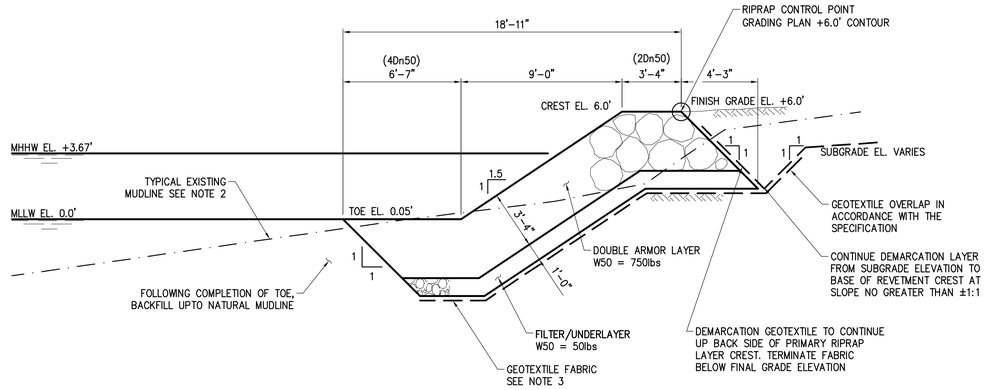

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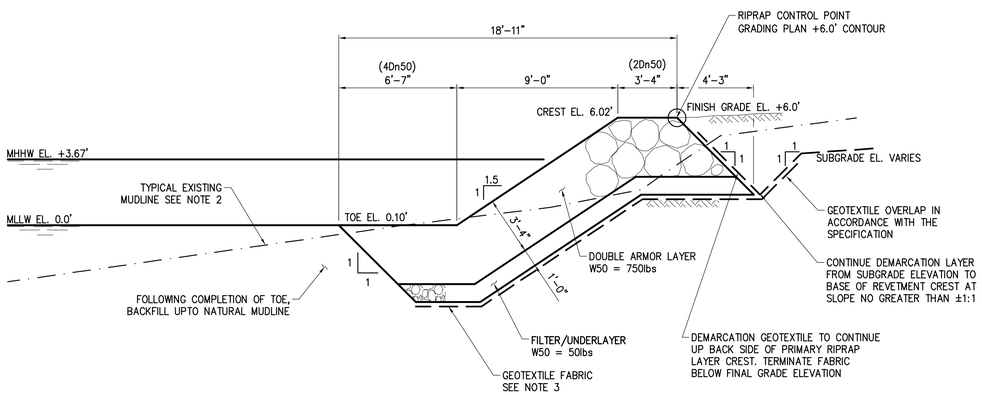

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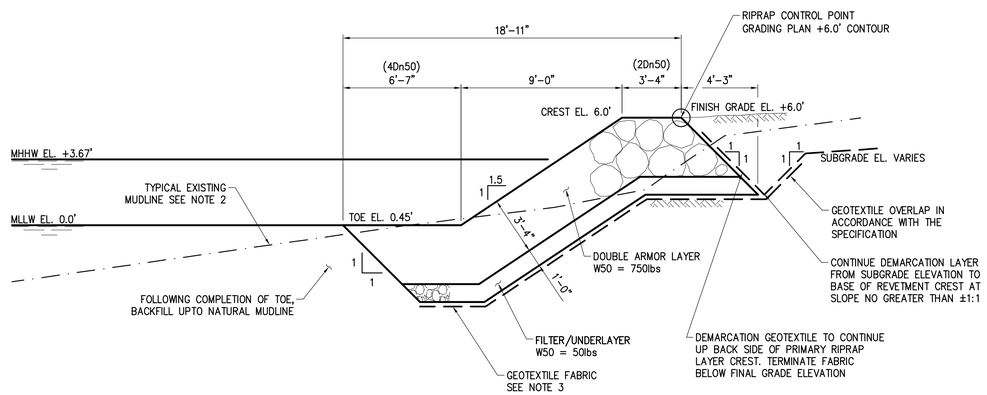

4B / C-5 CROSS SECTION NEW RIPRAP REVETMENT
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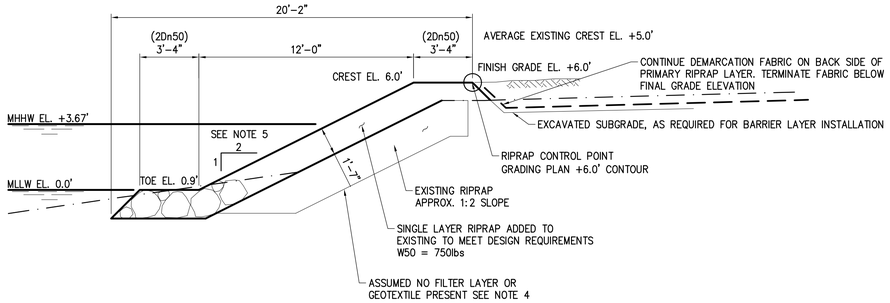

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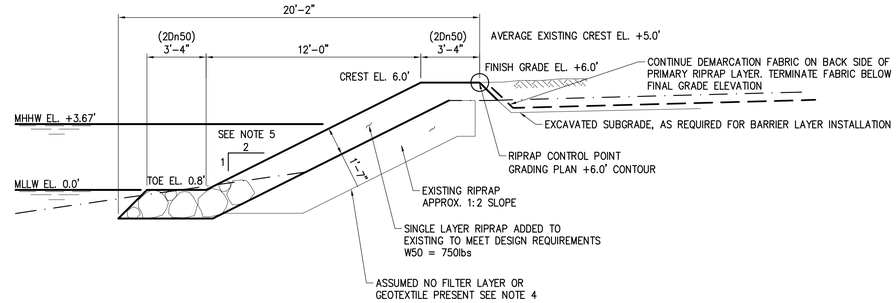

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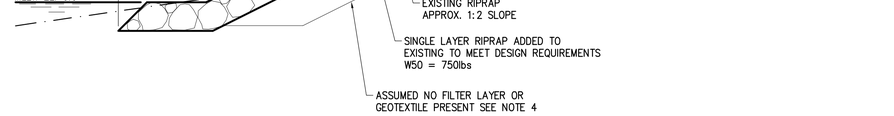

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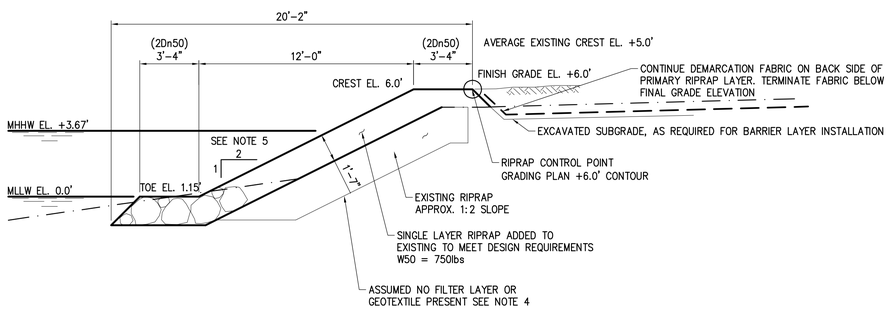

5C C-5 CROSS SECTION TOP UP EXISTING RIPRAP REVETMENT
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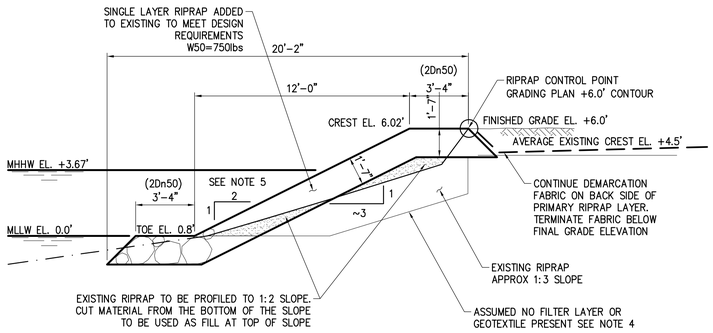

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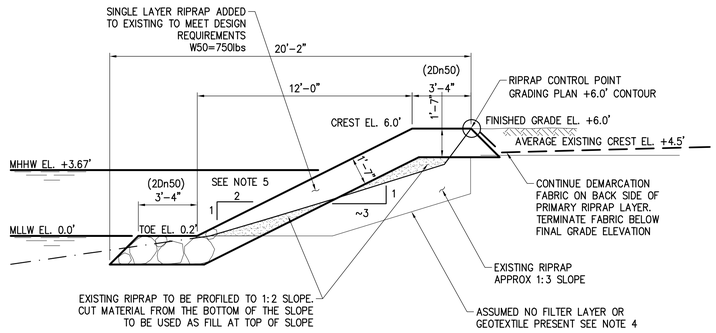

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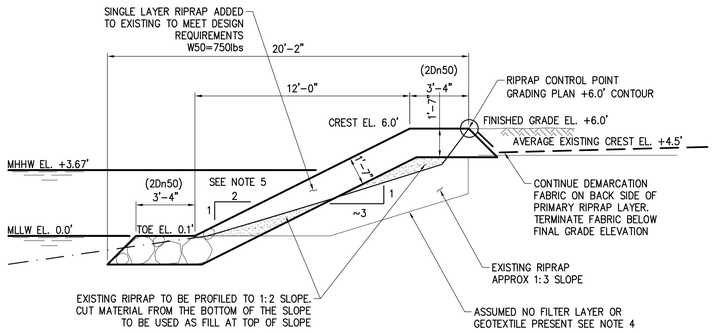

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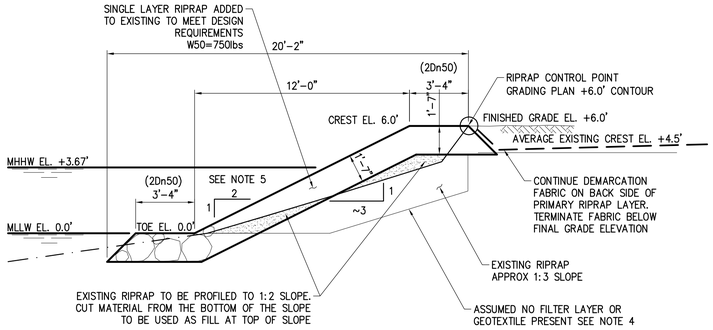

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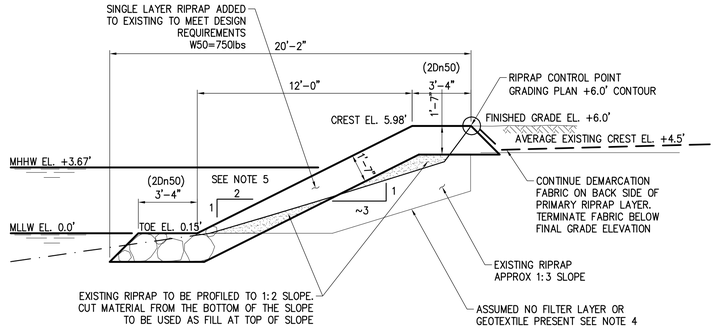

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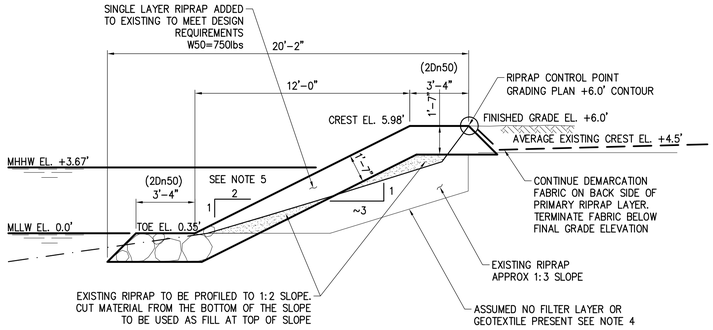

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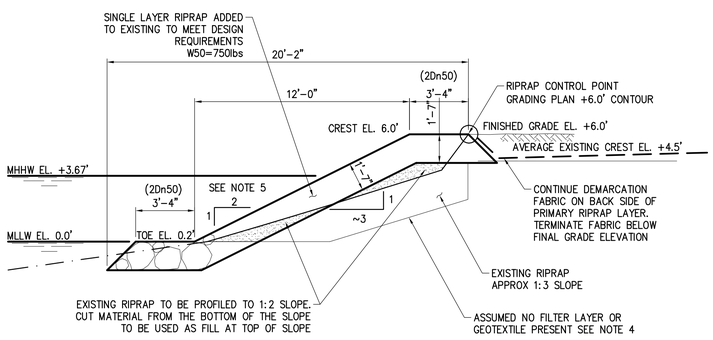

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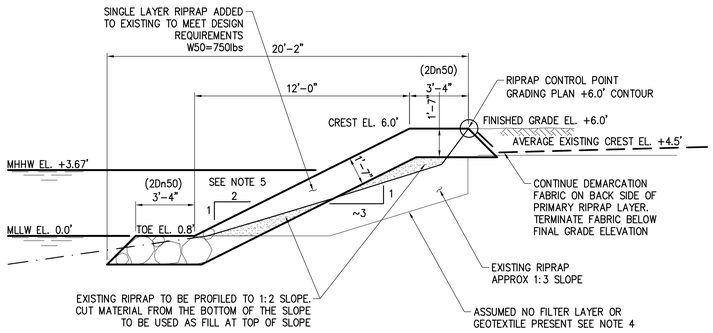

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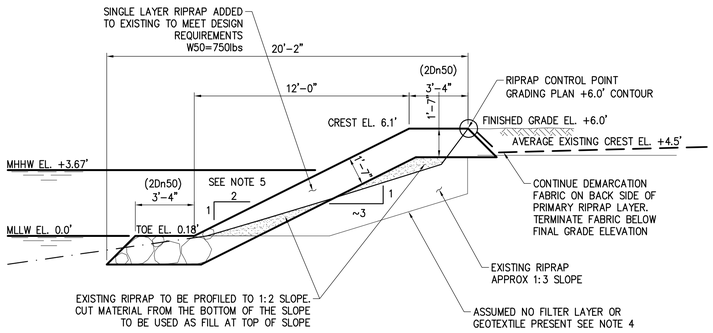

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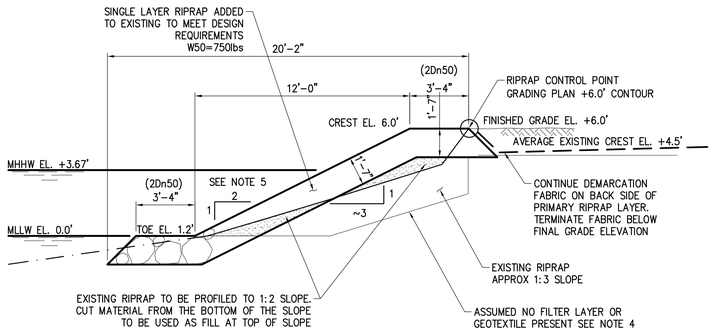

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SCALE 1/4"=1'-0"

12D C-5 CROSS SECTION TOP UP EXISTING RIPRAP REVETMENT
SCALE 1/4"=1'-0"

13D C-5 CROSS SECTION TOP UP EXISTING RIPRAP REVETMENT
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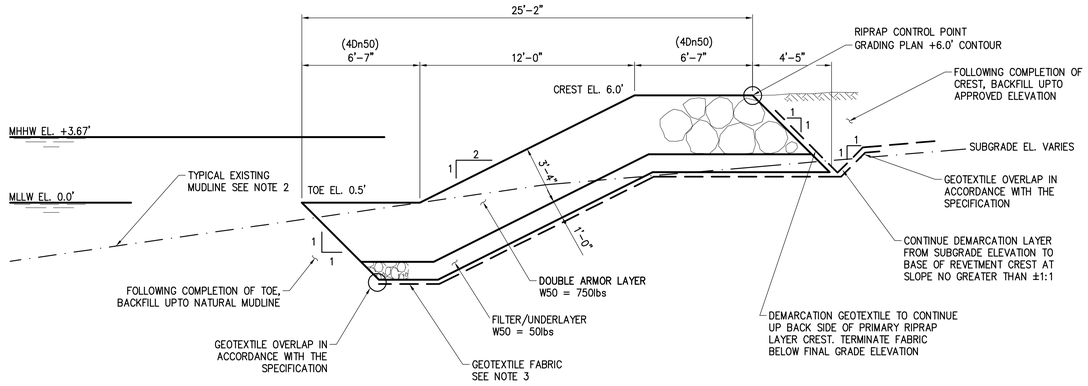

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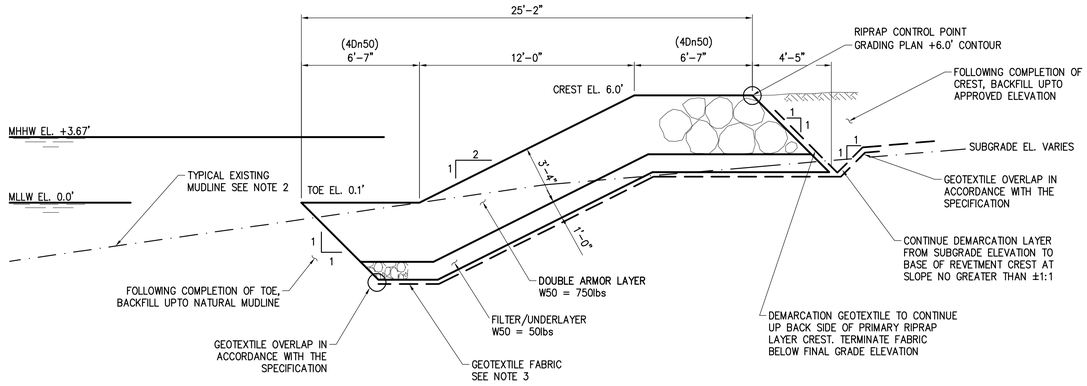

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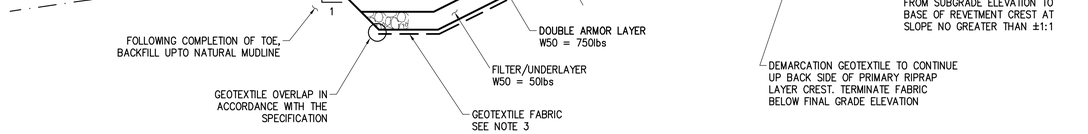

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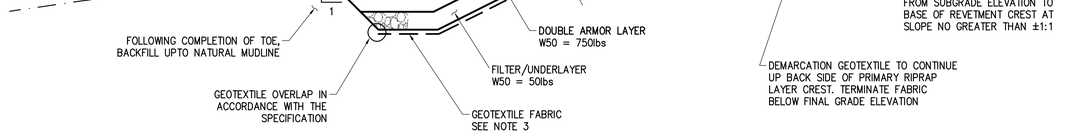

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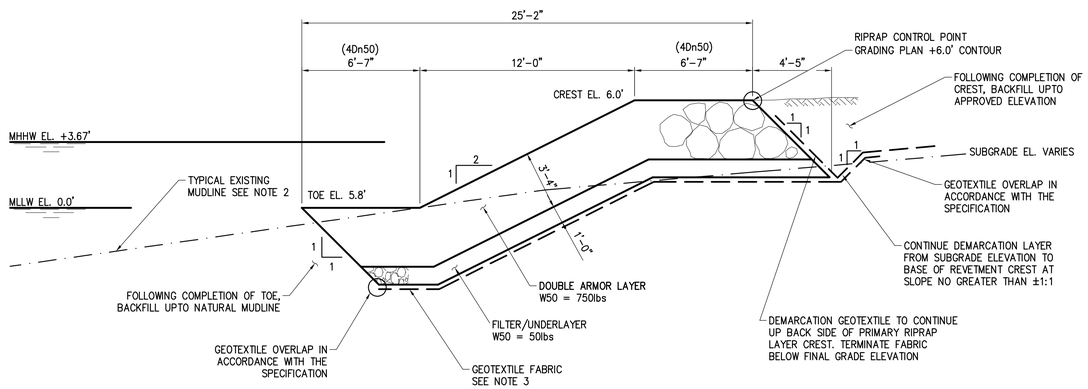

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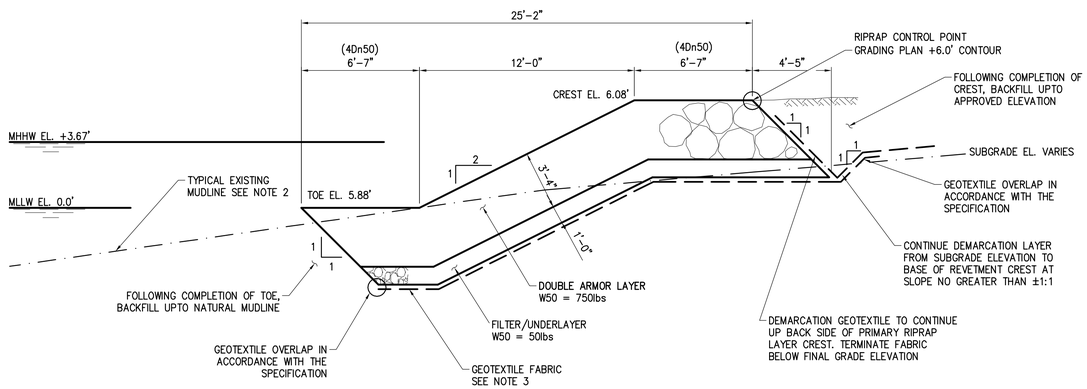

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SCALE 1/4"=1'-0"

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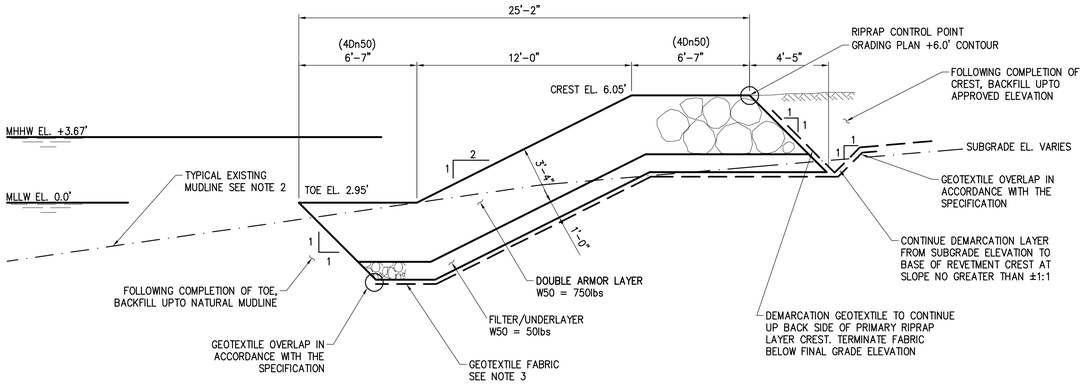

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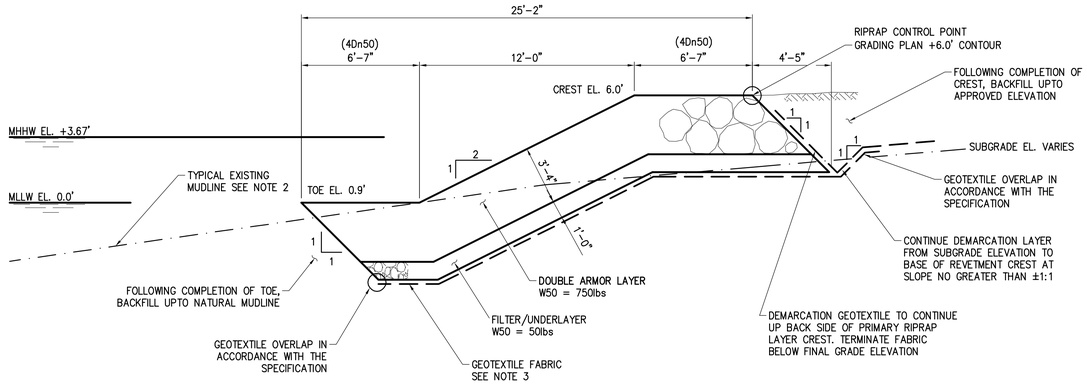

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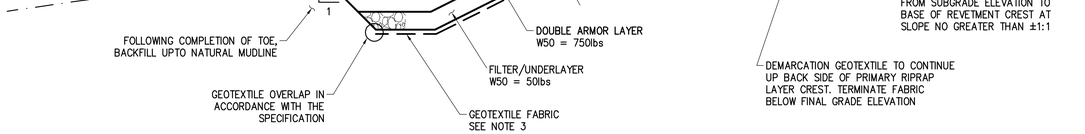
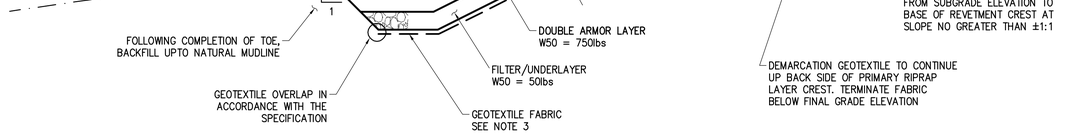
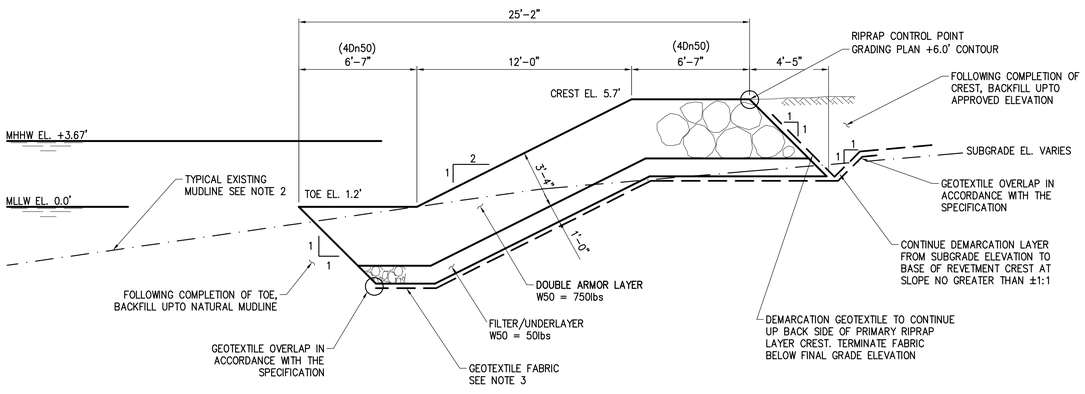


9E C-5 CROSS SECTION NEW RIPRAP REVETMENT
SCALE 1/4"=1'-0"



10E C-5 CROSS SECTION NEW RIPRAP REVETMENT
SCALE 1/4"=1'-0"



11E C-5 CROSS SECTION NEW RIPRAP REVETMENT
SCALE 1/4"=1'-0"

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No.	Submittal / Revision	Apprd	By	Date

CITY OF PEEKSKILL
WESTCHESTER COUNTY
NEW YORK

CHA
111 Winners Circle, PO Box 5269 Albany, NY 12205-0269
Main: (518) 453-4500 www.chacompanies.com

Designed: Drawn: Checked:

CITY OF PEEKSKILL
PEEKSKILL LANDING REMEDIATION
ENVIRONMENTAL RESTORATION PROJECT

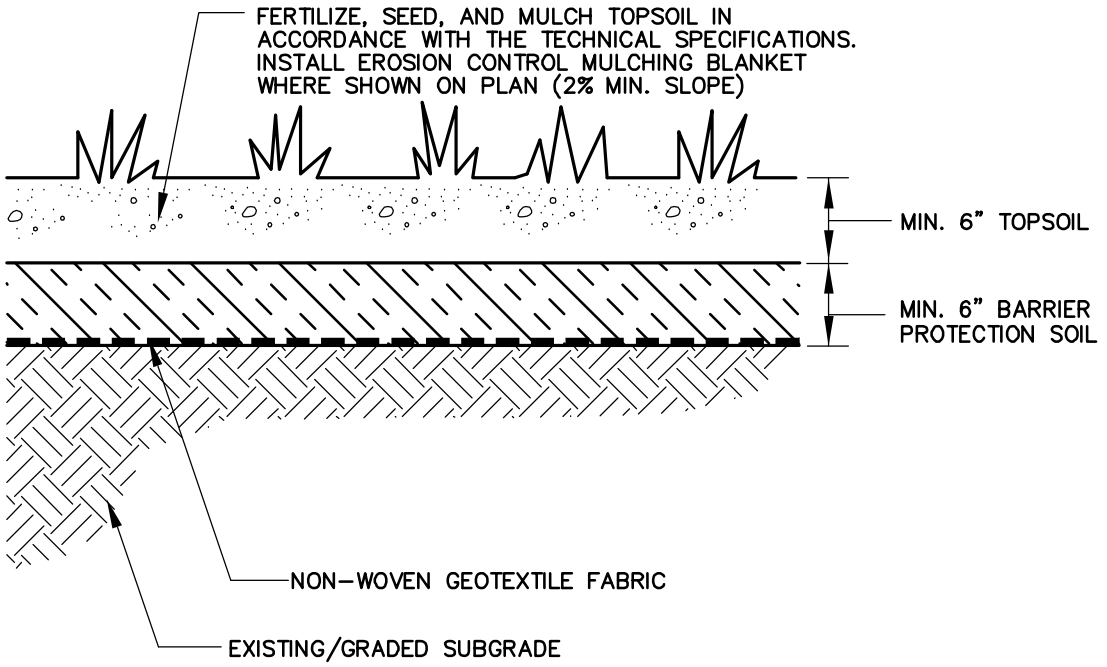
CROSS SECTIONS E

Issue Date: 12/07 Project No.: 13043 Scale: AS SHOWN

C509

APPENDIX D

Soil Cover System Detail



1 / C-3 **SOIL COVER SYSTEM DETAIL**

NO SCALE

CLOUGH HARBOUR & ASSOCIATES LLP
III Winners Circle, PO Box 5269 · Albany, NY 12205-0269
Main: (518) 453-4500 · www.cloughharbour.com

BARRIER LAYER CROSS SECTION

PEEKSKILL LANDING
PEEKSKILL, NEW YORK

PROJECT NO. 13043

DATE: 09/08

FIGURE 6

APPENDIX E

Monitoring Well Construction Logs

ENSR	Client:	Consolidated Edison Co. of New York	BORING ID: SB-32/MW-15
	Site:	Former Pemart Ave MGP - Peekskill, NY	
Start Date: 3/31/2006	Project:	Remedial Investigation Report	Page: 1 of 2
	Project #:	01869-116	Geologist: B.P. McCarthy
End Date: 3/31/2006	Coordinates:	X-648297.34 Y-895576	Depth of Boring: 23.00 feet
	Elevation:	3.70 NAVD 88	Depth to Water: --- feet
Drill Subcontractor: ADT		Drill Rig Model: CME-55	
Drill Method: Vac Ex/HSA		Sample Method: Hand Auger/Split Spoon	

Depth	PID	Graphic Log	Lithologic Description	Lithologic Sample ID	Analytical Sample ID	Well Diagram
0–4			Dark brown, F-M SAND, some silt, trace gravel, trace root material; No Odor			
5	NA		Dark gray, F-C SAND, trace silt; Damp; No Odor	SB32A	SB-32 (4.5-5)	
	11.3			SB32B		
7	31.7		Dark gray and light gray, F-C SAND, some silt, trace M gravel; Wet; Oil-like Odor	SB32C		
9	20.4		Dark gray, F-C SAND, trace silt, trace M gravel; Wet; Sl.-Mod. Oil-like Odor	SB32D	SB-32 (9-13)	
11	20.9			SB32E		
13	15.3		Light gray, SILT and F SAND, some M gravel; Wet to Saturated; No Odor	SB32F		
15	300		Light gray, SILT and F SAND, some M gravel, NAPL, sheen observed	SB32G		
17	389		NAPL and NAPL SATURATED F-M SAND, some silt, sheen; Wet; Strong MGP-like Odor	SB32H	SB-32 (17-19)	
19	266			SB32I		
20						

NOTES: Depth measured in feet; PID readings measured in parts per million (ppm); and Elevation measured in NAVD 88.
Depth to Groundwater measured in feet from the Top of Casing (TOC) for wells and Ground Surface (GS) for soil borings.
MGP-like Odor = Manufactured Gas Plant Like Odor; Naphth-like Odor = Naphthalene Like Odor;
Petro-like Odor = Petroleum Like Odor; and NAPL = Non-Aqueous Phase Liquid.

ENSR	Client:	Consolidated Edison Co. of New York	BORING ID: SB-32/MW-15
	Site:	Former Pemart Ave MGP - Peekskill, NY	
Start Date: 3/31/2006	Project:	Remedial Investigation Report	Page: 2 of 2
	Project #:	01869-116	Geologist: B.P. McCarthy
End Date: 3/31/2006	Coordinates:	X-648297.34 Y-895576	Depth of Boring: 23.00 feet
	Elevation:	3.70 NAVD 88	Depth to Water: --- feet
Drill Subcontractor: ADT		Drill Rig Model: CME-55	
Drill Method: Vac Ex/HSA		Sample Method: Hand Auger/Split Spoon	

Depth	PID	Graphic Log	Lithologic Description	Lithologic Sample ID	Analytical Sample ID	Well Diagram
21 22 23	174		Dark gray/green, SILT, some clay, trace root fragments; Damp to Wet; Mod. MGP-like Odor	SB32J	SB-32 (20-23)	
			End of Boring at 23 ft bgs			

NOTES: Depth measured in feet; PID readings measured in parts per million (ppm); and Elevation measured in NAVD 88.
Depth to Groundwater measured in feet from the Top of Casing (TOC) for wells and Ground Surface (GS) for soil borings.
MGP-like Odor = Manufactured Gas Plant Like Odor; Naphth-like Odor = Naphthalene Like Odor;
Petro-like Odor = Petroleum Like Odor; and NAPL = Non-Aqueous Phase Liquid.

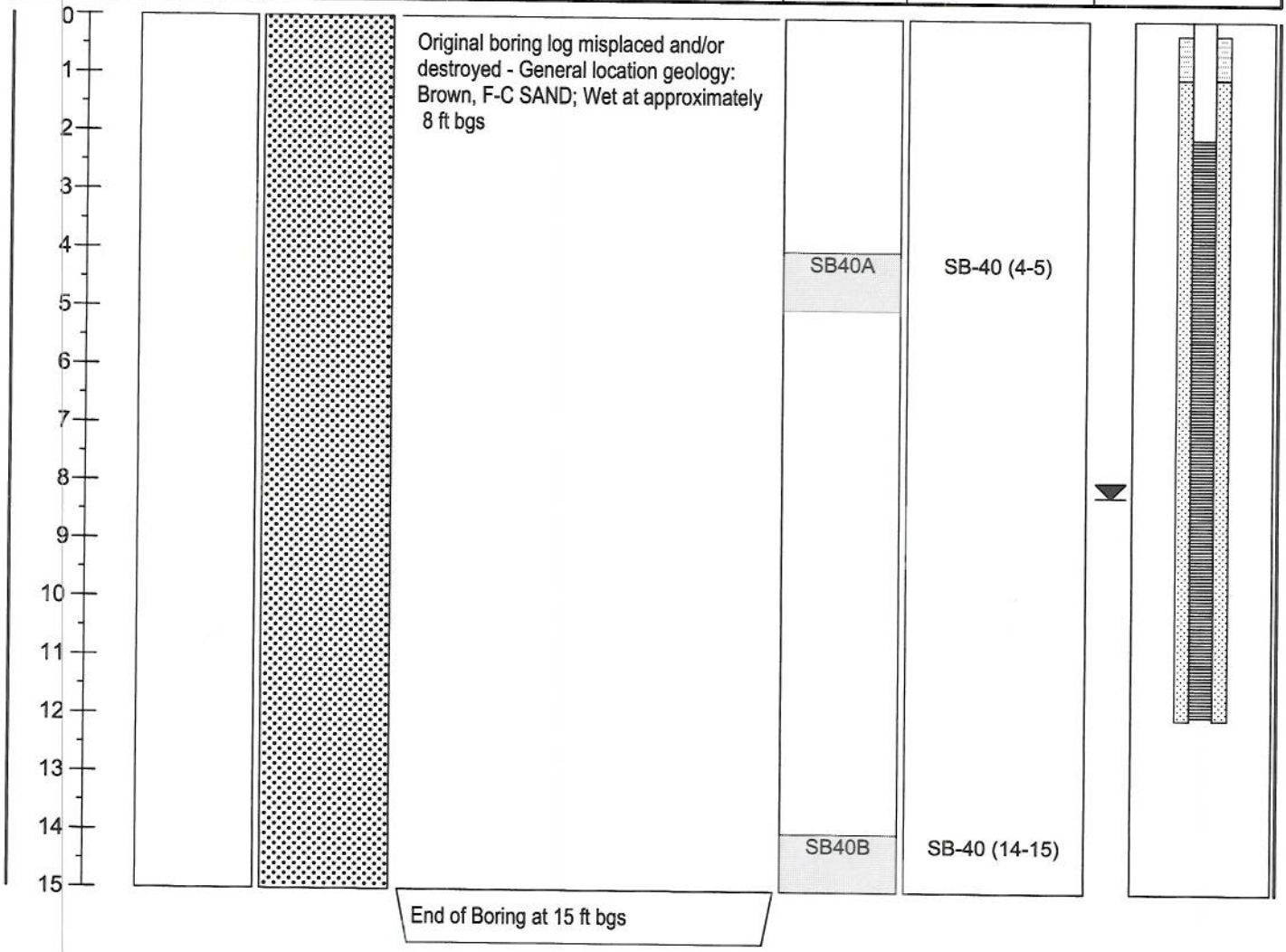
ENSR	Client:	Consolidated Edison Co. of New York	BORING ID: SB-33/MW-16
	Site:	Former Pemart Ave MGP - Peekskill, NY	
Start Date: 3/31/2006	Project:	Remedial Investigation Report	Page: 1 of 1
	Project #:	01869-116	Geologist: B.P. McCarthy
End Date: 3/31/2006	Coordinates:	X-648343.45 Y-895408	Depth of Boring: 15.00 feet
	Elevation:	3.32 NAVD 88	Depth to Water: 3.28 feet
Drill Subcontractor: ADT		Drill Rig Model: CME-55	
Drill Method: Vac Ex/HSA		Sample Method: Hand Auger/Split Spoon	

Depth	PID	Graphic Log	Lithologic Description	Lithologic Sample ID	Analytical Sample ID	Well Diagram
0–3			Dark brown, F-M SAND, some silt, trace gravel, root material; Dry; No Odor			
3–5			Dark brown/gray, F-C SAND, some F-M gravel; Damp to Wet; Sl. Oil-like Odor			
5–6	NA		no recovery	SB33A	SB-33 (3-3.5)	
7–8	NA		Gray, F-C SAND, some F-M gravel, trace silt; Wet; Sl. Oil-like Odor	SB33B	SB-33 (5-9)	
9–10	NA		Black, F-C SAND and M-F GRAVEL, trace silt; Wet; Sl. MGP-like Odor	SB33C		
11–12	NA			SB33D		
13–14	NA		Dark gray/green, SILT, some clay; Damp to Wet; Sl-Mod.MGP-like Odor	SB33E	SB-33 (13-15)	
15			End of Boring at 15 ft bgs			

NOTES: Depth measured in feet; PID readings measured in parts per million (ppm); and Elevation measured in NAVD 88.
Depth to Groundwater measured in feet from the Top of Casing (TOC) for wells and Ground Surface (GS) for soil borings.
MGP-like Odor = Manufactured Gas Plant Like Odor; Naphth-like Odor = Naphthalene Like Odor;
Petro-like Odor = Petroleum Like Odor; and NAPL = Non-Aqueous Phase Liquid.

ENSR	Client:	Consolidated Edison Co. of New York	BORING ID: SB-40/MW-22
	Site:	Former Pemart Ave MGP - Peekskill, NY	
Start Date: 5/1/2006	Project:	Remedial Investigation Report	Page: 1 of 1
	Project #:	01869-116	Geologist: B.P. McCarthy
End Date: 5/1/2006	Coordinates:	X-648445.86 Y-895342	Depth of Boring: 15.00 feet
	Elevation:	5.50 NAVD 88	Depth to Water: 8.19 feet
Drill Subcontractor: ADT		Drill Rig Model: CME-55 & 6610DT	
Drill Method: Hand Auger/Geoprobe		Sample Method: Hand Auger/Macrocore	

Depth	PID	Graphic Log	Lithologic Description	Lithologic Sample ID	Analytical Sample ID	Well Diagram
0–15			Original boring log misplaced and/or destroyed - General location geology: Brown, F-C SAND; Wet at approximately 8 ft bgs	SB40A SB40B	SB-40 (4-5) SB-40 (14-15)	



NOTES: Depth measured in feet; PID readings measured in parts per million (ppm); and Elevation measured in NAVD 88.
Depth to Groundwater measured in feet from the Top of Casing (TOC) for wells and Ground Surface (GS) for soil borings.
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Petro-like Odor = Petroleum Like Odor; and NAPL = Non-Aqueous Phase Liquid.

APPENDIX F

Site-Wide Inspection Form

SITE-WIDE INSPECTION CHECKLIST

Report No.	
Date:	Time:

Inspector(s):	Project No.
	Weather:
	Temp.: Hi Low
Type of Inspection: ☐ Routine ☐ Post Severe Condition	Time Low Tide:

SOIL COVER SYSTEM INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
There is no evidence of erosion of cover soils/materials from Site surface.	☐	☐	☐	
There is no evidence of depressions in cover materials.	☐	☐	☐	
There is no evidence of significant cracks in cover materials.	☐	☐	☐	
There is no evidence of exposed or damaged demarcation barrier.	☐	☐	☐	
There is no evidence of vapors or odors emanating from the Site.	☐	☐	☐	

VEGETATIVE INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
Vegetation is well established over greenspace areas.	☐	☐	☐	
There is no evidence of stressed vegetation.	☐	☐	☐	
There is no evidence of bare or thin vegetative cover.	☐	☐	☐	
There is no evidence of overgrowth or areas that need to be mowed.	☐	☐	☐	
There is no evidence of recent areas of excavation or disturbed areas.	☐	☐	☐	

VECTOR INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
No vectors or vector activity (e.g. tracks, droppings, dens, etc.) were observed.	☐	☐	☐	
There was no evidence of damage to the soil cover system due to vector activity.	☐	☐	☐	

REVETMENT INSPECTION

ITEM/CONDITION	YES	NO	N/A	COMMENTS
There are no large voids or evidence of significant stone loss in revetment areas.	☐	☐	☐	
There is no evidence of significant settlement of the revetment sections.	☐	☐	☐	
The concrete headwalls are in-place and in good condition.	☐	☐	☐	
There is no evidence of flow restriction at the outfalls	☐	☐	☐	
There is no evidence of sheen emanating from the outfalls	☐	☐	☐	

SITE-WIDE INSPECTION CHECKLIST

Report No.	
Date:	Time:

MONITORING WELL INSPECTION				
ITEM/CONDITION	**YES**	**NO**	**N/A**	**COMMENTS**
The monitoring wells are in generally good condition.	☐	☐	☐	
Well caps are installed on the wells.	☐	☐	☐	
Locks present and secured.	☐	☐	☐	
SITE ACCESSIBILITY INSPECTION				
ITEM/CONDITION	**YES**	**NO**	**N/A**	**COMMENTS**
Site accessible and passable.	☐	☐	☐	
INSTITUTIONAL CONTROL INSPECTION				
ITEM/CONDITION	**YES**	**NO**	**N/A**	**COMMENTS**
The Site continues to be utilized for passive recreational uses only.	☐	☐	☐	
There is no evidence of groundwater extraction and/or use on Site.	☐	☐	☐	

ADDITIONAL NOTES & OBSERVATIONS

Signature:	Total Inspection Time:

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