From:	Dievendorf, Eric
To:	Spellman, John (DEC)
Cc:	Steve Beam; VanDewalker, Heather; Gravelding, Mark
Subject:	RE: [EXTERNAL] Hudson (Water St.) MGP Site, 411005, Final Engineering Report for OU1, Arcadis 2008
Date:	Friday, February 9, 2024 10:35:30 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png 2007-05-Rev 05-2008 FER Vol 1 of 17 - NG Hudson Water St OU-1.pdf

John,

As requested, attached is Volume 1 of the 2008 Hudson Water Street OU1 FER. This contains the FER text, tables, and figures. Please let me know if you would like copies of any/all of the appendices and we can determine the best delivery method.

Thank you,

Eric Dievendorf, P.E.
Principal Engineer
Arcadis of New York, Inc
One Lincoln Center, 110 W Fayette St | Syracuse, NY | 13202 | USA
T. +1 315 671 9595
M. +1 315 447 5126
www.arcadis.com

ARCADIS

Professional Engineer/PE-NM, 20622 | PE-NY, 088832

From: Steve Beam <Steve.Beam@nationalgrid.com>
Sent: Friday, February 9, 2024 10:20 AM
To: Dievendorf, Eric <Eric.Dievendorf@arcadis.com>
Subject: FW: [EXTERNAL] Hudson (Water St.) MGP Site, 411005, Final Engineering Report for OU1, Arcadis 2008

Eric,

Can you forward the FER to John per his request below, please?

Thanks

Steve

From: Spellman, John (DEC) <john.spellman@dec.ny.gov>
Sent: Friday, February 9, 2024 9:46 AM
To: Steve Beam <Steve.Beam@nationalgrid.com>
Subject: [EXTERNAL] Hudson (Water St.) MGP Site, 411005, Final Engineering Report for OU1, Arcadis 2008

Hi Steve,

Following from my message to you, would it be possible for National Grid to re-send the subject report?

NYSDEC is appreciative of your effort.

Thank you,

John

John Spellman, P.E.
Project Manager, Remedial Bureau C
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, Albany, NY 12233-7014
P: 518-402-9686| john.spellman@dec.ny.gov

Final Engineering Report

Remedial Action Implementation for Operable Unit 1
Hudson (Water Street) Site
Hudson, NY

Volume 1 of 17

(Volumes 2 through 17 provided on enclosed CDs)

National Grid
Syracuse, NY

May 2007
(Revised May 2008 – Volume 1 Only)

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Table of Contents

Tables

Figures

Appendices (on enclosed CDs)

K Load Tickets and Waste Manifests
L Post-Restoration and Post-Excavation Confirmation Sampling Analytical Results
M As-Built Surveys
N Warehouse Monitoring Data
O Compaction Test Results
P Soil Boring Logs

CDs #2 - #5
Q Site Photographs

Certification Statement

I certify that the removal and management of manufactured gas plant (MGP) residuals at Operable Unit 1 of the Hudson (Water Street) Site located in Hudson, New York were completed in substantial conformance with the Order on Consent Index Number A4-0473-0203 (November 7, 2003) and the New York State Department of Environmental Conservation-approved *Remedial Design Work Plan for Operable Unit 1* (ARCADIS BBL, 2001b), as identified in this *Final Engineering Report.*

Final Engineering Report

Remedial Action Implementation
for Operable Unit 1
Hudson (Water Street) Site
Hudson, New York

Frederick J. Kirschenheiter, P.E.
ARCADIS of New York, Inc.
New York State Professional Engineer
License No. 068859

May 9, 2007
Original Submittal Date

May 9th, 2008
Revision Date

ARCADIS of New York, Inc.
6723 Towpath Road
Syracuse, New York
315.446.9120

1. Introduction

This *Final Engineering Report* (Final Report) documents and summarizes the Remedial Action (RA) implemented at Operable Unit (OU) 1 of the Hudson (Water Street) Former Manufactured Gas Plant (MGP) Site located in Hudson, New York (the Site). OU 1 includes the former MGP area and Embayment #1, an embayment of the Hudson River. This Final Report has been prepared by ARCADIS of New York, Inc. (ARCADIS BBL, formerly known as Blasland, Bouck & Lee, Inc.) on behalf of National Grid in accordance with the Order on Consent for the Site (Index # A4-0473-0203; Site # 4-11-005). The Order on Consent was entered into by National Grid with the New York State Department of Environmental Conservation (NYSDEC) and executed on November 7, 2003. Prior to the Order on Consent, the NYSDEC had issued a Record of Decision (ROD) for the entire Site in March 2001, which stipulated selected source area soil excavation, including sediment removal for treatment and/or disposal.

As presented in the ROD (NYSDEC, 2001), the remedial goals for the Site are to:

- *eliminate, to the extent practicable, human exposures to the contaminants present at the Site;*
- *eliminate to the extent practicable, the migration of contaminants from on-site soils and source areas, to the site groundwater and the sediments in Embayment #1;*
- *eliminate, to the extent practicable, the exposure of fish and wildlife to contaminants within Embayment #1 and restore embayment sediments;*
- *eliminate contravention of surface water standards in the embayment and Hudson River resulting from the discharge of nonaqueous phase liquids (NAPLs) from the coal-tar-contaminated sediments in Embayment #1; and*
- *eliminate, to the extent practicable, off-site migration of contaminants of potential concern within the site groundwater.*

1.1 Project Setting

The Site is located on Water Street on the east bank of the Hudson River in the City of Hudson (City), Columbia County, New York, as shown on Figure 1. The Site consists of approximately 2 acres of land, including Lots 15 and 16.2, which are divided by Water Street, and an embayment of the Hudson River (Embayment #1) along the western edge of the Site. The Site is bounded on the north by a City recreational park (Lot 10) and vacant Lot 13 (both lots formerly comprised an oil storage facility [Best Oil Terminal]), on the east by CSX Transportation (CSXT) property (railroad tracks) (Lot 14), on the south by a former CSXT maintenance yard (Lot 16.1) (currently owned by the City), and on the west by the Hudson River.

OU 1 consists of the former MGP area (Lots 15 and 16.2) and Embayment #1 (Figure 2), while OU 2 includes the Hudson River and Embayment #2 sediments. OU 2 is being addressed separate from OU 1.

To facilitate the RA for OU 1, the following removal areas were established:

- Peninsula Soil Removal Area;
- Surface Soil Removal Areas (three areas);
- Embayment #1 and SD-54 Cell Sediment Removal Areas;
- East Bank Soil Removal Area; and
- Former Tar Separator and Former Gas Holder Soil Removal Areas.

1.2 Historical Operations

The former MGP was operated on the eastern portion of the Site (Lot 15) from approximately 1853 to 1949. The Site was operated by the Philadelphia Transformer Company from 1949 to 1954. SBD Warehouse/Dunn

Builders Supply used the parcel from 1989 to 2003 for construction materials storage. The property is now owned by the City. The western portion of the Site (Lot 16.2) is vacant. A commercial storage building served by a railroad spur was present on Lot 16.2 from the early 1900s to at least the 1920s. Railroad spurs also were present to the end of the peninsula of land between Embayment #1 and Embayment #2 from the 1870s.

Previous environmental-related activities undertaken at the Site are addressed in Section 2.

1.3 RA Summary

To achieve the remedial goals set forth in the ROD (NYSDEC, 2001) and listed above in Section 1.1, National Grid designed and implemented an RA program that comprised the following major tasks:

- mobilization and site preparation;
- utility clearance and/or relocation;
- sediment and erosion control;
- clearing and grubbing;
- protection of adjacent properties;
- construction of temporary access roads to provide access to certain work areas;
- stabilization of the north wall of the existing brick warehouse building;
- dust and air monitoring;
- water column and turbidity monitoring;
- sheetpiling and bracing installation;
- excavation area dewatering and dewatering of excavated materials;
- management of surface water and groundwater;

- construction, operation, maintenance, and monitoring of an on-site temporary water treatment system (TWTS) to treat liquids generated during on-site remedial construction activities;
- installation, operation, maintenance, and relocation(s) of a temporary excavation enclosure and associated air purification system to control odors emanating from the deep soil and sediment excavation areas;
- soil and sediment excavation;
- waste characterization, handling, and off-site transportation and treatment/disposal of materials;
- backfill of excavation areas and embayment restoration;
- construction of an engineered containment system in the SD-54 area of Embayment #1;
- site restoration and development of a recreational park for the City;
- equipment decontamination and demobilization; and
- post-RA institutional controls and monitoring.

RA program roles and responsibilities are listed in Section 3, while the entire RA program (including modifications from the approved design) is more fully discussed in Sections 4 through 10.

1.4 Report Organization

This Final Report is organized into 11 sections, as follows:

Section	Description
1	Presents the purpose of this Final Report, remedial goals for the Site, site description and history, summary of the RA activities, and report organization.
2	Addresses the previous environmental-related programs that have taken place at the Site, before implementation of this RA at OU 1.
3	Lists the roles and responsibilities of the primary and supporting parties for the RA program at OU 1.

Section	Description
4	Summarizes the site preparation and development activities.
5	Describes the RA activities conducted at OU 1.
6	Summarizes the citizen participation activities conducted in association with the RA program for OU 1.
7	Describes the environmental monitoring activities associated with the RA program for OU 1.
8	Summarizes the site restoration and park development activities.
9	Describes the post-RA monitoring and maintenance program.
10	Summarizes modifications to the NYSDEC-approved Final Remedial Design.
11	Summarizes the additional RA activities requested by the NYSDEC after completion of the original RA program.
12	Presents a list of the references cited throughout this Final Report.

2. Previous Site Activities

2.1 Previous Environmental-Related Programs

Prior to initiating the RA at OU 1 in early 2004, several investigation, evaluation, and remediation activities have occurred to address environmental concerns at the Site. Those activities are summarized in the Remedial Design documents (see Section 2.2 below), and are discussed in detail in the following documents:

- *Site Investigation Data Report* (ARCADIS BBL, 1996);
- *Phase II Site Investigation Data Report* (ARCADIS BBL, 1997a);
- *Site Investigation Report* (ARCADIS BBL, 1997b);
- *Site Investigation Report* (ARCADIS BBL, 1998);
- *Phase IV Site Investigation Data Report* (ARCADIS BBL, 1999a);
- *Sediment Pre-Design Investigation Data Report* (ARCADIS BBL, 1999b);
- *Draft Embayment #1 Removal Evaluation Report and Preliminary Removal Action Design Work Plan* (ARCADIS BBL, 2000a);
- *Site Investigation Summary Report* (ARCADIS BBL, 2000b); and
- *Engineering Evaluation/Cost Analysis* (ARCADIS BBL, 2001a).

2.2 Previously Submitted Remedial Design Documents

The following documents were prepared following the NYSDEC's issuance of the ROD for OU 1 in March 2001, and were submitted to the NYSDEC for approval:

- *Remedial Design Work Plan for Operable Unit 1* (RD Work Plan) (ARCADIS BBL, 2001b);

- *Preliminary (30%) Remedial Design – Basis of Design Report* (Preliminary BOD) (ARCADIS BBL, 2001c);
- *Final (100%) Remedial Design – Basis of Design Report* (Final BOD) (ARCADIS BBL, 2003a);
- *Final (100%) Remedial Design – Construction Quality Assurance Plan* (CQAP) (ARCADIS BBL, 2003b);
- *Final (100%) Remedial Design – Sampling and Analysis Plan* (SAP) (ARCADIS BBL, 2003c);
- *Final (100%) Remedial Design – Community Air Monitoring Plan* (CAMP) (ARCADIS BBL, 2003d);
- *Final (100%) Remedial Design – Waste Handling and Disposal Plan* (WHDP) (ARCADIS BBL, 2003e);
- *Final Remedial Design – Contract No. 1 – General* (Contract Documents) (ARCADIS BBL, 2003f); and
- *Citizen Participation Plan* (CPP) (ARCADIS BBL, 2003g).

Following the NYSDEC's approval of the RD Work Plan, the Preliminary BOD (ARCADIS BBL, 2001c) was submitted to the NYSDEC in October 2001. The NYSDEC provided comments on the Preliminary BOD in letters to National Grid dated November 19, 2001; and January 7, March 22, and June 6, 2002. National Grid responded to these comments and, following the NYSDEC's acceptance of National Grid's responses, submitted the Final BOD and accompanying supporting plans (CQAP, SAP, CAMP, and WHDP) in June 2002. The NYSDEC provided comments on these documents in letters to National Grid dated August 26, 2002 and November 19, 2002. National Grid responded to these comments and the NYSDEC indicated its acceptance of National Grid's responses regarding the Final BOD and accompanying plans in a letter to National Grid dated December 16, 2002. In this letter, the NYSDEC requested construction phasing plans prior to issuing its full approval of the design documents. National Grid provided construction phasing plans as requested and the NYSDEC approved the design documents in a February 11, 2003 letter to National Grid. The Final BOD and accompanying plans were then revised to incorporate the NYSDEC's comments and were resubmitted as final in March 2003.

The Technical Specifications and Drawings from the Final BOD were incorporated into the Contract Documents which, along with a Supplemental Information Package (SIP), were distributed to prospective bidding contractors in July 2003. NYSDEC was also provided a copy of the Contract Documents, and provided its approval (including three minor stipulations) in an October 6, 2003 letter to National Grid (see Appendix A). Following issuance of Addenda Nos. 1 through 4, dated August 27, 2003; September 9, 2003; October 9, 2003; and December 12, 2003, respectively, bids were received on December 23, 2003. Following a comprehensive bid evaluation process, the remedial contractor was selected in early 2003. The NYSDEC's October 6, 2003 stipulations were incorporated into Addendum No. 4 of the Contract Documents, dated December 12, 2003. National Grid eventually selected Earth Tech Inc. (Earth Tech), as the remediation contractor for the OU 1 activities.

The NYSDEC and the New York State Department of Health (NYSDOH) (collectively referred to as the Departments) approved the Final (100%) Remedial Design documents (i.e., Final BOD, CQAP, SAP, CAMP, and WHDP) and the Contract Documents in letters to National Grid dated February 11, 2003 and October 6, 2003, respectively (Appendix A). As such, the remedial activities summarized herein were performed consistent with the requirements of the above-referenced documents approved by the Departments.

3. RA Program Management

Implementation of the RA at the Site involved several parties, each of which had a specific role in completing the RA. Each party's role and responsibilities are briefly described below.

3.1 Primary Parties

Several parties played primary roles in planning and implementing the RA at OU 1. These parties include:

- **National Grid** – National Grid was responsible for implementing and completing the RA described herein. National Grid provided overall direction and coordination during implementation.

- **NYSDEC** – The NYSDEC served as the lead regulatory department for this project. The NYSDEC provided a project coordinator to administer NYSDEC's responsibilities and to receive, review, and approve written notices, reports, plans, and other documentation required by the Consent Order. The NYSDEC also provided project oversight.

- **NYSDOH** – The NYSDOH served as a secondary regulatory department, and was involved in reviewing and approving aspects of the RA directly related to the protection of human health and the environment.

- **U.S. Army Corps of Engineers** (USACE) – The USACE served as the Federal regulatory agency involved in reviewing and approving aspects of the RA involving work within or near navigable waterways of the United States.

- **City of Hudson** – Because the City of Hudson was the setting for the on-site remedial activities, representatives of the City of Hudson were involved, as necessary, throughout the RA.

- **ARCADIS BBL** – ARCADIS BBL was retained by National Grid to serve as the design engineer for implementation of the RA described herein, and to assist National Grid in overall project coordination. ARCADIS BBL also provided construction quality assurance and project oversight services during implementation of the RA.

- **Earth Tech** – Earth Tech was the prime remedial contractor retained by National Grid to perform remedial activities related to the RA.

3.2 Supporting Parties

Supporting parties for the RA at OU 1 are presented below in alphabetical order.

- **Aquifer Drilling & Testing, Inc.** (ADT) – ADT decommissioned and/or installed monitoring wells and a dense nonaqueous phase liquid (DNAPL) collection well within the excavation areas.

- **Albany County Landfill** – Certain non-hazardous material generated during on-site remedial construction activities were transported to the Albany County Landfill for disposal.

- **ATC Associates, Inc**. (ATC) – ATC provided project monitoring services during the removal of asbestos-containing materials (ACMs) and loose paint from the existing brick warehouse building.

- **Cloverleaf Nurseries** – Cloverleaf Nurseries provided landscaping services.

- **Colarusso & Son, Inc**. (Colarusso) – Colarusso assisted Earth Tech with the performance of on-site construction activities.

- **Con-Test Environmental Laboratory** (Con-Test) – Con-Test was retained by ARCADIS BBL to provide analytical services associated with the time-integrated air sampling program.

- **CSXT** – CSXT owned property adjacent to the Site, which was used for the staging of construction support facilities, and was involved in activities that posed a potential impact (e.g., sheetpile installation in the Former Gas Holder Area) to its active rail line located along the eastern edge of the Site.

- **C.T. Male Associates, P.C.** (C.T. Male) – C.T. Male provided surveying services for Earth Tech during the RA.

- **Custom Fence, Inc**. (CFI) – CFI supplied and installed construction fencing at the Site.

- **Duryea, LLC** (Duryea) – Duryea transported certain debris off-site.

- **Envirotrol, Inc.** (Envirotrol) – Envirotrol supplied activated carbon products and services for on-site purification systems.

- **Environmental Clean-up Solutions, Inc.** (ECSI) – ECSI installed portions of the pressure-relief system within Embayment #1.

- **Environmental Soil Management, Inc.** (ESMI) – Certain MGP impacted material generated during on-site remedial construction activities was transported to ESMI for treatment.

- **Environmental Products & Services, Inc.** (EP&S) – EP&S transported certain waste materials off-site.

- **Fiacco Trucking** (Fiacco) – Fiacco transported certain waste materials off-site.

- **Geisel Trucking** (Geisel) – Geisel transported certain waste materials off-site.

- **Goulet Trucking** (Goulet) – Goulet transported certain waste materials off-site.

- **Hazleton, Inc.** (Hazleton) – Hazleton performed activities related to the construction and startup of the TWTS (e.g., connection of carbon units).

- **Hudson Cruises, Inc.** (HCI) – HCI used the riverboat dock located in the City's recreational park located north of the Site and cooperated with National Grid and Earth Tech throughout the duration of on-site remedial construction activities.

- **L&L Electrical, Inc.** (L&L) – L&L performed activities (e.g., electrical consulting and utility line construction) related to establishing and maintaining temporary electrical power during on-site remedial construction activities.

- **LZA Technology** (LZA) – LZA provided observation and monitoring services during the warehouse stabilization and monitoring activities.

- **The Louis Berger Group, Inc.** (Louis Berger) – Louis Berger conducted a Phase 1A Archaeological Assessment of the Site.

- **M.A. Bongiavanni** (MAB) – MAB performed activities related to the design and installation of the sheetpiling and bracing systems for the subsurface removal areas.

- **Maxymillian Technologies, Inc.** (MT) – MT's RE·SOIL facility provided off-site low temperature thermal desorption of MGP-impacted soils and sediments removed as part of the RA.

- **New York State Department of State** (NYSDOS) – The NYSDOS was responsible for administering a Federal Consistency Certification, as applied for by National Grid via the submittal of a Federal Consistency Assessment Form and supporting information.

- **New York State Office of Parks, Recreation, and Historic Preservation** (NYSOPRHP) – NYSOPRHP was responsible for reviewing the Phase 1A Archaeological Assessment to confirm that the proposed project activities would not affect properties in or eligible for inclusion in the State and National Registers of Historic Places.

- **Parratt Wolff, Inc.** (PWI) – PWI provided drilling services during certain investigation activities.

- **Precision Welding** (Precision Welding) – Precision Welding provided welding services during on-site remedial construction activities.

- **Seaway Diving & Salvage Company, Inc.** (SDSC) – SDSC performed diving activities related to the restoration of Embayment #1.

- **Silvernail Welding** (Silvernail Welding) – Silvernail Welding provided welding services during on-site remedial construction activities.

- **Soil & Material Testing, Inc.** (SMT) – SMT performed activities related to construction material evaluation (i.e., soil density testing).

- **SGS Environmental Services, Inc.** (SGS) – SGS provided laboratory analytical services for aqueous samples collected from the on-site TWTS during initial startup activities and subsequent operation.

- **St. Lawrence Cement Company, LLC** (SLC) – SLC property was used for the exiting of fully laden transport vehicles from the Site.

- **Town of Colonie Landfill** – Certain non-hazardous material generated during on-site remedial construction activities was transported to the Town of Colonie Landfill for disposal.

- **United Oil Recovery, Inc.** (United Oil Recovery) – Certain materials generated during on-site remedial construction activities were transported to the United Oil Recovery treatment facility for disposal.

- **Universal Fabric Structures, Inc.** (UFS) – UFS performed activities related to the design and construction of the temporary excavation enclosure for certain subsurface removal areas.

- **Vibra Tech, Inc.** (Vibra Tech) – Vibra Tech performed activities related to the monitoring of the warehouse.

4. Site Preparation and Development

Prior to initiation of the RA at OU 1, a number of site preparation activities were conducted including, but not limited to, the following:

- performing pre-construction activities, such as permitting, submittal review, site visits, and meetings;
- establishing site controls;
- providing for utility clearance;
- installing temporary facilities;
- clearing and grubbing;
- establishing temporary erosion and sedimentation controls;
- establishing staging and decontamination areas;
- addressing air emissions and installing odor controls;
- installing the on-site TWTS; and
- decommissioning wells.

The above-referenced activities are described below.

4.1 Pre-Construction Activities

4.1.1 Permitting

As provided for by CERCLA, in lieu of submitting a permit application and obtaining a permit, the substantive permit requirements of applicable permit-authorizing regulations or laws were satisfied by providing necessary information to the NYSDEC in a form other than a formal permit application. This approach was described in

the NYSDEC-approved Final BOD. The Final BOD and accompanying plans (i.e., CQAP, CAMP, SAP, and WHDP), Contract Documents, and other information previously submitted to the NYSDEC presented information in support of meeting the substantive requirements of necessary permits (including, but not limited to, 6 NYCRR-Part 608, Coastal Erosion Control Permit pursuant to NYCRR-Section 600, and a State Pollutant Discharge Elimination System [SPDES] General Permit for Stormwater pursuant to 6 NYCRR-Parts 750 through 757).

In addition to meeting substantive permit requirements of the permits discussed above, National Grid also obtained permits or authorizations on an individual basis as described below.

- USACE Nationwide General Permit Numbers 33 and 38 (Appendix B). ARCADIS BBL, on behalf of National Grid, initially submitted a Pre-Construction Notification (PCN) for this permit on August 1, 2002. Following receipt of comments from USACE regarding the PCN on August 30, 2002 ARCADIS BBL provided responses and additional requested information on December 23, 2002. Subsequently, at the request of the USACE, ARCADIS BBL provided information to the National Marine Fisheries Service (NMFS) for its review and approval on January 20, 2003. The USACE ultimately issued its approval of the proposed activities in a November 26, 2003 letter to National Grid (Appendix B). It should also be noted that National Grid proposed a minor modification to one of the special conditions identified in the USACE's November 26, 2003 approval letter (i.e., use of a silt curtain across the mouth of Embayment #1 in lieu of a sheetpile wall to prevent shortnose sturgeon from entering the embayment) in a February 9, 2004 letter (Appendix A). The USACE approved the proposed modification in a March 24, 2004 letter to National Grid (Appendix A).

- NYSDOS Federal Consistency Certification with the Coastal Management Program (Appendix B).

- NYSOPRHP's concurrence that the project will have no adverse impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places, as determined following its review of the Phase 1A Archaeological Assessment performed by National Grid (Appendix B).

- SPDES Permit authorization for discharging treated water to the Hudson River (Appendix B),

- NYSDEC Protection of Waters Permit and Water Quality Certification for the Embayment #2 shoreline restoration activities (Appendix B).

4.1.2 Contractor Submittal Review

As required by the Contract Documents, Earth Tech was responsible for providing National Grid and ARCADIS BBL with a number of technical submittals prior to implementing certain activities at the Site, which generally included shop drawings, material samples, technical information, and various work plans. ARCADIS BBL, as the design engineer, reviewed Earth Tech's submittals for general conformance with the Contract Documents. ARCADIS BBL's review of technical submittals was not intended to permit any departure from the Contract Documents or relieve Earth Tech of any responsibility to comply with applicable laws, rules, and/or regulations. ARCADIS BBL reviewed and stamped technical submittals as follows:

- "Reviewed" if no objections were observed or comments made;

- "Reviewed and Noted" if minor objections, comments, or additions were made but resubmittal was not considered necessary;

- "Resubmit" if the objections, comments, or additions were extensive and warranted revision of the submittal; and

- "Rejected" if the submittal was not, even with reasonable revision, acceptable, or the data submitted was not sufficiently complete to determine compliance with the Contract Documents.

Technical submittals that were stamped as "Resubmit" or "Rejected" required resubmittal by Earth Tech. Following acceptable review by ARCADIS BBL, certain technical submittals were forwarded to the NYSDEC for review at its request. Reviewed technical submittals are included in Appendix C.

4.1.3 Pre-Construction Walkover

In accordance with the CQAP, ARCADIS BBL and Earth Tech conducted a pre-construction walkover at the Site on March 16, 2004 to observe and document pre-use conditions of the Site and adjacent properties. Specifically, observations were made to visually identify, among other items, the following:

- presence, size, and location of areas possibly exhibiting stained soil, gravel, concrete, and/or other materials;
- condition of the brick warehouse building; and
- road surface conditions in the vicinity of the Site.

Observations made during the walkover were documented in an April 14, 2004 memorandum, which was provided to the City of Hudson (Appendix A). Please note that the SAP identified sampling protocols associated with the collection of pre-use surface soil samples from off-site properties that were anticipated to be used for the storage or staging of excavated material. However, because Earth Tech's work plan proposed that excavated material would be handled and staged only within the excavation areas, the collection and analysis of pre-use surface soil samples from off-site properties was not applicable.

4.1.4 Pre-Construction Meeting

In accordance with the CQAP, prior to the start of on-site remedial construction activities, a preconstruction meeting was held at the Site on March 11, 2004. Representatives from National Grid, NYSDEC, ARCADIS BBL, Earth Tech, and MAB were in attendance. Topics discussed at the pre-construction meeting included, but were not limited to, the following:

- procedures for invoicing and implementing contract changes;
- appropriate lines of communication;
- procedures associated with provision and review of technical submittals;
- environmental site controls and site security;
- citizen participation activities;
- action items; and
- various other site-specific topics.

A summary of these discussions was distributed to attending parties on March 18, 2004 in the form of meeting minutes (Appendix D).

4.2 Site Controls

Earth Tech was responsible for instituting a number of site controls throughout on-site remedial construction activities as a measure for protecting public health, safety, welfare, and the environment. A more detailed discussion regarding site controls instituted by Earth Tech is provided below.

4.2.1 Site Access and Security

Although the majority of the Site was enclosed by fencing, CFI (a subcontractor to Earth Tech) installed additional chain-link fencing along the perimeter of the work area to further limit access to the Site. Specifically, existing chain-link fencing was removed and replaced with temporary construction fencing (consisting of chain-link fencing covered with green mesh fabric) along the area between Lots 10 (owned by the City of Hudson) and 16.2 to delineate the work zone from the adjacent City park recreational area. Due to the work area partially encroaching onto Lot 10, the City requested that a temporary asphalt walkway be installed directly north of the construction fencing to allow access to the gazebo and riverboat dock located in the park area. The approximate locations of the temporary construction fencing and temporary asphalt walkway were observed and approved by the City on April 27, 2004, and documented in an April 30, 2004 letter from National Grid to the City (Appendix A). The temporary asphalt walkway was installed between April 30, 2004 and May 5, 2004.

In addition, on April 20, 2004, with the approval of HCI and the City, HCI's ticket booth was relocated to the east side of Water Street within the gravel parking area on Lot 13. Upon completion of site restoration activities on the west side of Water Street, the walkway was removed. At the City's request, the ticket booth was not relocated to its original location and remained in place following the completion of RA activities. Impacted areas were restored to their pre-construction conditions.

Warning signs were posted along the perimeter fencing and in the vicinity of the entrance gates notifying the public that unauthorized entrance to the work area was prohibited, and a sign-in/sign-out sheet was maintained at the Site for the duration of the on-site remedial construction activities. In addition, the City installed two remediation notification project signs along Water Street.

As required, both Water and Broad Streets adjacent to the Site were closed (with the approval of the City) during certain periods of the construction activities. Emergency vehicles were allowed access at all times. Earth Tech placed several plastic barrels equipped with lights and signs to notify observers of the road closure.

Temporary access roads and gravel equipment pads were constructed, as required, to provide equipment access to the Site. Access roads and gravel pads were constructed by performing grading activities, as necessary, and overlaying the graded area with a layer of geotextile and stone. Upon completion of the RA, the access roads and gravel pads were removed and the areas were restored.

4.2.2 Adjacent Properties

Due to the nature and location of the remedial construction activities, National Grid and its contractors were required to cooperate with adjacent property owners to support the RA program, as discussed below.

The Site itself is located on Lots 15 and 16.2; however, access to certain adjacent properties was required for staging support areas and facilities. Specifically, Lot 13 (located north of the Former Gas Holder Soil Removal Area), owned by the City, was used at certain times during remedial construction activities for pedestrian vehicle parking. CSXT owned Lot 16.1 (consisting of the parcel of land located south of the warehouse building as well as the parcel of land located south of Embayment #2 and Broad Street, as shown on Figure 2) during the site preparation activities, which was used for staging of temporary field office trailers and the TWTS. National Grid and its contractors worked cooperatively with the City and CSXT to gain access to these adjacent properties.

In addition, due to concerns of the City regarding construction vehicle traffic through the City's main streets, an alternate off-site transportation route was developed. This alternate route consisted of directing construction

vehicles through lands owned by SLC. This route was used throughout the duration of on-site remedial construction activities primarily for large equipment ingress/egress as well as transporting excavated materials to appropriate off-site disposal facilities.

Lastly, the excavation limits identified in the ROD required that subsurface excavation be conducted within a parcel owned by CSXT located near the eastern side of the Former Gas Holder Soil Removal Area (Lot 14). Due to the location of the excavation area in proximity to an active CSXT rail line, certain actions were required to satisfy provisions stipulated by CSXT. Specifically, Earth Tech was required to obtain Railroad Protective Liability Insurance in the amount specified by CSXT. In addition, ARCADIS BBL provided its conceptual design of the soil excavation and replacement activities to CSXT on September 19, 2001. CSXT conditionally approved the design contingent on reviewing the selected contractor's final excavation support design prior to initiating sheetpile installation activities near the rail line. As such, following ARCADIS BBL's final review of Earth Tech's excavation support design, ARCADIS BBL forwarded Earth Tech's design documentation to CSXT in a December 27, 2004 letter (Appendix A). The letter also provided a discussion regarding certain ancillary protective measures including, but not limited to, pre-trenching, pre-drilling, non-vibratory sheetpile installation methods, and piezometers for monitoring local groundwater levels. CSXT's approval of the design was documented in a January 4, 2005 letter from CSXT to ARCADIS BBL, which included the signature of an authorized CSXT representative acknowledging its approval (Appendix A).

Appropriate access agreements were procured with all necessary parties prior to the use of off-site properties.

4.3 Utility Clearance

In accordance with the Contract Documents, Earth Tech was required to identify, protect, relocate, and/or install both aboveground and underground utilities, as necessary, to facilitate on-site remedial construction activities. Utility clearance and installation activities included, but were not limited to, the following:

- On April 26, 2004, Earth Tech's electrical subcontractor, L&L, disconnected power to a lamp post in the work zone of the park area, and temporarily relocated the lamp to allow access to the area north of Embayment #1.

- Earth Tech arranged for a representative of AT&T Fiber Optics to be on-site on May 7, 2004 to stake the location of an underground fiber-optic cable located along the eastern edge of Lot 14.

- On July 2, 2004, L&L installed a three-phase electrical panel box and an electrical conduit on CSXT property to provide temporary power to the TWTS.

- On July 14, 2004, L&L installed a three-phase electrical panel box and an electrical conduit on CSXT property to provide temporary power to the field office trailers.

- From July 26 to 29, 2004, Earth Tech arranged for National Grid to install a utility pole (to a depth of 8 feet below ground surface [bgs]) and associated transformers near the southeast corner of Lot 16.2 to provide temporary power to the Site.

- Earth Tech arranged for National Grid to temporarily relocate certain aboveground utilities located along Water Street to facilitate the relocation of the temporary excavation enclosure from the west side of Water Street to the Former Gas Holder Soil Removal Area located on the east side of Water Street.

In addition to the activities described above, Earth Tech contacted the appropriate utility locating companies (e.g., DIGSAFE) to identify the potential presence of underground utilities prior to initiating ground intrusive activities.

4.4 Temporary Facilities

On July 20 and August 8, 2004, Earth Tech mobilized and staged two field office trailers on the CSXT property located south of the warehouse building (Lot 16.1). Earth Tech personnel used one office trailer, while the other office trailer was shared by both ARCADIS BBL and NYSDEC personnel. Earth Tech provided certain office amenities, including telephone/facsimile service, which was installed by Verizon Wireless on July 28, 2004.

4.5 Clearing and Grubbing

Prior to the commencement of construction activities, brush, trees, and other debris (including a small wooden shed formerly located in the East Bank Soil Removal Area) were removed, as required, to provide access to the work areas. Certain materials removed during initial site clearing and grubbing activities (e.g., above-grade vegetation) were transported off-site by Duryea, a subcontractor of Earth Tech, for potential reuse as mulch. Other materials (e.g., soil and debris) were temporarily staged on-site and covered with polyethylene sheeting prior to off-site transportation and proper disposal.

In addition, Duryea performed clearing and grubbing activities along the banks of Embayment #2 as part of the Embayment #2 restoration activities (as described in Section 10).

4.6 Temporary Erosion and Sedimentation Controls

Temporary erosion and sedimentation control measures were installed as part of the on-site remedial construction activities. Specifically, silt fencing was installed prior to initiating on-site remedial construction activities to minimize the potential for rainfall- or flood-induced migration of soils into or out of the work area. The silt fence consisted of a geotextile fabric supported by wooden posts trenched into the ground a minimum of 6 inches. The silt fencing was typically installed along the perimeter of the work area, and remained in place until the completion of on-site remedial construction activities.

Earth Tech also deployed a silt curtain and absorbent boom at the mouth of Embayment #1 prior to initiating ground intrusive activities near the embayment. It should be noted that the design of the silt curtain was modified slightly prior to its installation. The original design included in the Final BOD and Contract Documents specified that the bottom of the silt curtain be anchored approximately 12 inches above the existing sediment surface. However, as indicated in a February 9, 2004 letter from National Grid to the USACE, the silt curtain was installed in a manner that would prevent shortnose sturgeon from entering Embayment #1 before sheeting could be installed across the mouth of the embayment. As such, the silt curtain was installed with its bottom resting on the existing sediment surface.

During sheetpile installation activities near the embayment, sheens were observed in the Hudson River slightly beyond the absorbent boom. Pursuant to Section 14.2 of the CQAP, the NYSDEC was made aware of the observation and a second 300-foot-long absorbent boom was placed approximately 5 feet outside of the existing silt curtain to contain the sheen.

4.7 Temporary Staging and Decontamination Areas

Temporary lined staging areas for stockpiling of excavated soils were utilized during on-site remedial construction activities, as necessary. Materials that were stockpiled were mostly vadose zone soils generated from pre-trenching and excavation activities. These materials were typically stockpiled on, and covered with, polyethylene sheeting on either Lot 16.2 or Lot 15 of the Site (i.e., off-site properties were not used to stockpile excavated materials). Soils and sediments excavated from deeper within the removal areas (e.g., below the groundwater table) were handled and staged within the excavation areas themselves. Earth Tech also constructed a staging area for an on-site diesel fuel tank to be available during on-site remedial construction activities. The staging area consisted of a perimeter berm lined with a layer of 40-mil linear low-density polyethylene (LLDPE) sheeting.

In addition, Earth Tech constructed a decontamination pad near the East Bank Soil Removal Area for use during excavation activities on the west side of Water Street.

4.8 Air Emissions/Odor Controls

In accordance with the Final BOD, air emissions/odor controls were implemented during ground intrusive activities at the Site to mitigate the potential off-site migration of airborne constituents of concern. Air emissions/odor controls primarily consisted of using a temporary enclosure and associated air treatment system over large subsurface excavation areas, as well as the use of emission suppressants (i.e., Rusmar Foam© and BioSolve®).

Earth Tech used one temporary excavation enclosure throughout on-site remedial construction activities. The temporary excavation enclosure was model TFS/R 36 m, manufactured by Georges Veldeman N.V., and

installed by UFS. The enclosure was constructed in two equal halves, spanned an area approximately 120 feet wide by 121 feet long, and consisted of extruded aluminum arches connected to an all-weather polyvinyl chloride- (PVC-) coated outer membrane.

The temporary excavation enclosure was used on the west side of Water Street to mitigate air emissions/odors during soil and sediment excavation activities in the East Bank Soil Removal Area and Embayment #1, respectively. The enclosure components were mobilized to the Site following sheetpile installation activities west of Water Street and construction of the enclosure was initiated on September 12, 2004. The archways of the temporary excavation enclosure rested on steel base plates anchored to the surrounding soil using approximately 5-foot-long stakes and concrete blocks. Pull tests were conducted on-site to determine the number of stakes required at each base plate. The end wall of the structure that spanned across the open excavation rested on steel base plates anchored to the internal bracing system used to support the steel sheetpiling surrounding the excavation area. Additional building support was provided via a series of tie-down cables connected from the aluminum archways to the existing steel sheetpiling.

An air treatment system was used to filter air within the enclosure prior to its release to the atmosphere. A negative-pressure air treatment system was employed using a series of two centrifugal blowers/negative air machines. Emissions were treated with a carbon adsorption system combined with particulate filters and potassium permanganate-impregnated units to reduce sulfur compounds through chemical oxidation.

Given the size of the enclosure, the western portion of Embayment #1 was not covered by the temporary excavation enclosure. Earth Tech initially installed a canvas tarp over the western portion of Embayment #1 to minimize the potential off-site migration of airborne constituents of concern. However, Earth Tech was unable to consistently secure the canvas tarp due to weather conditions at the Site; as such, the tarp was not used. As an alternative, consistent with the *Excavation Work Plan Outside of Structure - National Grid Water Street Site*

Operable Unit 1 – Hudson, New York (Earth Tech, 2004) (see Appendix C), emission suppressants (i.e., Rusmar Foam© and BioSolve®) were used while excavating the western portion of Embayment #1 as approved by NYSDEC. BioSolve® was sprayed over the impacted material during excavation activities. During overnight periods Rusmar Foam© was applied to control vapors and odors. The Rusmar Foam© was applied to impacted material using a Pneumatic Foam Unit (PFU) 400 and a hose.

Contractor submittals related to the temporary excavation enclosure are included in Appendix C.

Following completion of soil and sediment excavation and backfilling activities in the East Bank Soil Removal Area and Embayment #1, respectively, UFS disassembled (between May 9 and June 3, 2005) and stockpiled the temporary excavation enclosure along the east side of Lot 16.2 in preparation for off-site demobilization.

A temporary excavation enclosure was not used as an air emissions/odor control during excavation activities within the Former Tar Separator and Former Gas Holder Soil Removal Areas due to the difficulties associated with relocating the temporary excavation enclosure. Instead, alternative approaches were used for these areas as approved by NYSDEC. Within the Former Tar Separator Soil Removal Area, air emissions/odors control was achieved by using an air handling unit positioned at the edge of the excavation area and the application of emission suppressants (i.e., Rusmar Foam© and BioSolve®). For the Former Gas Holder Soil Removal Area, emission suppressants (i.e., Rusmar Foam© and BioSolve®) were used during excavation activities consistent with the *Former Gas Holder Area Odor Control and Contingency Plan National Grid Water Street Site Operable Unit 1 – Hudson, New York* (Earth Tech, 2005) (see Appendix C). Emission suppressants were sprayed over the impacted material during excavation activities. During overnight periods, excavated material (along the excavation face or stockpiled material) was covered with polyethylene sheeting or Rusmar Foam© to control vapors and odors. The Rusmar Foam© was applied to impacted material using a PFU 400 and a hose.

4.9 On-site TWTS

An on-site TWTS was used to treat liquid waste streams generated by the remedial activities (e.g., excavation dewatering). The TWTS was utilized to reduce the concentration of certain parameters in the liquid waste streams generated by the remedial activities to within the limits allowed for discharging the treated water to either the Hudson River or the City's publicly owned treatment works (POTW) via the City's sanitary sewer system.

While the configuration of the TWTS varied slightly during remedial activities based on the desired treatment parameters, it generally consisted of the following components:

- two approximately 21,000-gallon influent storage tanks;
- two approximately 18,000-gallon oil-water separator baffle tanks;
- two air strippers;
- one approximately 21,000-gallon surge tank;
- one bag filter;
- four approximately 3,000-pound GAC vessels; and
- one approximately 1,500-gallon effluent tank.

Contractor submittals related to the TWTS are included in Appendix C.

4.9.1 Installation and Startup Activities

On May 19 and May 20, 2004, Earth Tech started mobilizing the TWTS components. Earth Tech personnel temporarily staged the TWTS components on the east side of Lot 15, where they initiated small-scale assembly activities (e.g., pipes, fittings, hoses) in the warehouse on Lot 15.

Following finalization of an access agreement between CSXT and National Grid, Earth Tech was granted access to the CSXT property (i.e., Lot 16.1) on May 27, 2004. Upon approval to access the property, Earth Tech initiated various site preparation activities including, but not limited to:

- clearing and grading within Lot 16.1;
- mobilizing roll-off containers for disposal of material generated from clearing of steel and debris; and
- staging crushed stone in the western half of Lot 16.1 to be used for the TWTS staging pad.

On June 3, 2004, Earth Tech initiated the construction of the TWTS staging pad within the western half of Lot 16.1. The TWTS staging pad was initially constructed by placing an approximate 6-inch layer of crushed stone over an approximate 9,000-square-foot area. A layer of non-woven geotextile fabric was placed over the crushed stone layer, followed by a 60-mil LLDPE liner and a secondary layer of non-woven geotextile fabric. A layer of stone was then placed over the geotextile fabric to form the final layer. The perimeter of the staging pad was built to form a berm approximately 36 inches tall.

From June 9 to 14, 2004, Hazleton completed the installation of the TWTS. Upon completion of the installation, Earth Tech initiated dewatering of Embayment #1. Approximately 40,000 gallons of water from within the embayment was pumped to the TWTS influent storage tanks, at which point Earth Tech and ARCADIS BBL initiated system startup and testing activities.

On June 14, 2004, in accordance with the Final BOD, National Grid collected a total of seven samples from initial dewatering activities for Embayment #1 at batch intervals of 10,000, 20,000, and 40,000 gallons; a total of 21 startup water samples were collected during this sampling event. A sample was collected from the influent, five locations along the water treatment process, and the effluent of each batch. The samples were sent to SGS for analysis of the list of constituents prescribed in the Final BOD (i.e., BTEX [benzene, toluene, ethylbenzene, and xylene], naphthalene, biological oxygen demand, chemical oxygen demand [COD], pH, ammonia nitrogen, total alkalinity, total Kjeldahl nitrogen, total dissolved solids, total organic carbon [TOC], total suspended solids [TSS], turbidity, oil and grease, and total metals [aluminum, calcium, iron, lead, magnesium, manganese, and sodium]). A copy of the analytical results is included in Appendix E and summarized in Table 1.

To meet the discharge requirements established in a June 15, 2004 letter from the NYSDEC to National Grid regarding SPDES discharge permit equivalency for embayment drainage and groundwater dewatering, National Grid collected one additional effluent sample on June 16, 2004; the sample was sent to SGS for analysis of PAHs and SVOCs (results are included in Appendix E and summarized in Table 1).

Upon receipt of the initial TWTS water analytical results (included in Appendix E), the results were compared to the requirements set forth in the Final BOD, and in a June 15, 2004 letter (included in Appendix B) from the NYSDEC to National Grid regarding SPDES discharge permit equivalency for embayment drainage and groundwater dewatering. The data assessment indicated no exceedances of the applicable criteria, and Earth Tech initiated discharge of the treated effluent to the Hudson River.

4.9.2 Routine Operation, Maintenance, and Monitoring Activities

During the RA, Earth Tech performed several routine operations, maintenance, and monitoring activities, including, but not necessarily limited to, the activities discussed below.

On June 8, 2004, Earth Tech constructed a rip-rapped gabion out of No. 3 stone on the north side of Embayment #3, adjacent to the southwest corner of the TWTS pad, to create a dispersion gallery for the TWTS effluent discharge.

On June 17, 2004, Earth Tech initiated the installation of a 2-inch-diameter PVC pipe (at approximately 4 feet bgs) from the manhole at the intersection of Broad and Water Street to the TWTS pad located on the CSXT property. This was done in preparation to tie the TWTS into the City's POTW for effluent discharge after the initial dewatering of Embayment #1 and discharge to the Hudson River had been completed.

On June 21, 2004, Earth Tech initiated dewatering of Embayment #1 with a 6-inch-diameter pump, and began discharging the treated water from Embayment #1 through the dispersion gallery into the river at a rate of 400 gallons per minute. On June 22, 2004, Earth Tech switched to a 3-inch-diameter pump and discharged on an intermittent basis to complete dewatering activities.

Upon observation of some turbid water being discharged into the Hudson River, on June 23, 2005, Earth Tech initiated engineering measures to reduce the turbidity (i.e., the addition of Allum into the baffle tanks to cause flocculation, and changed the bag filter size from 25 microns to 10 microns to reduce the amount of solids entering the carbon units). Based on continued observation of high turbidity, ARCADIS BBL advised Earth Tech to discontinue discharging treated water to the Hudson River; Earth Tech closed the valves of the storage tanks and prepared to switch to the POTW (e.g., changing and rerouting hoses, pumps). Earth Tech switched

from the river discharge to the 2-inch-diameter PVC pipe tied-in to the POTW, and initiated discharge of the treated effluent to the POTW. On June 24, 2004, Earth Tech reconfigured the TWTS to implement the desired conditions for the permanent conversion to the POTW.

On June 25, 2004, Earth Tech reconfigured the TWTS pumps and storage tanks in an effort to store water overnight and discontinue overnight monitoring of the TWTS and POTW discharge. In addition, the bag size was changed from 10 to 1 micron to reduce turbidity.

On November 10, 2004, Earth Tech initiated the reconfiguration of the TWTS (i.e., removal of the baffle tanks and air stripping system) for winterization purposes. Following reconfiguration of the TWTS, ARCADIS BBL collected water samples from the TWTS (as described in Section 4.9.3 of this Final Report) to evaluate the effectiveness of the reconfigured TWTS to meet the discharge requirements, prior to discharging the treated effluent to the POTW.

Following a heavy storm event that caused Embayment #1 to flood, Earth Tech reconfigured the TWTS back to the initial configuration (i.e. reconnecting the air strippers) on November 30, 2004 in preparation for discharging treated water generated during the flooding of Embayment #1. Prior to the discharge of treated effluent to the Hudson River, ARCADIS BBL collected water samples from the TWTS as described in Section 4.9.3.

Earth Tech installed a 55-gallon drum of Allum flocculent upstream of the baffle tanks of the TWTS, and began injecting Allum into the water running through the TWTS baffle tanks to minimize the turbidity of the water prior to discharging treated effluent to the Hudson River. Earth Tech resumed discharging treated effluent to the Hudson River on December 3, 2004 via the Embayment #3 discharge point.

On December 10, 2004, Earth Tech resumed treated effluent discharge to the POTW using the reconfigured TWTS (i.e., without the baffle tanks and air stripping system).

On December 13, 2004, Earth Tech and L&L initiated the installation of heat-tape and foam installation around the double wall pipe used for dewatering Embayment #1 to the TWTS for winterization purposes. EP&S removed wastewater and sludge from the baffle tanks of the TWTS using a vacuum truck on December 30, 2004. The material was transported off-site to United Oil Recovery (UOR) for disposal.

On March 7, 2005, Earth Tech initiated the installation of a waterline to connect a frac tank (located in the Former Gas Holder Soil Removal Area) to the TWTS to dewater the excavation areas east of Water Street during RA activities. Earth Tech excavated a trench (approximately 2-foot-wide by 3-foot-deep) in a southwest direction diagonally across Broad Street and the Support Zone (SZ) area (south of the warehouse). During excavation activities, the following structures were encountered: two pipes approximately 2 feet bgs, concrete slabs, concrete footers, and sections of brick. Earth Tech dismantled each of the structures except for the two pipes, which were left intact.

On March 14, 2005, an area of stained soil was encountered during the trench excavation activities. The stained soil was encountered approximately 15 feet northeast of Broad Street at approximately 2 feet bgs, and a fuel oil odor and a very light sheen were present in the trench. Earth Tech removed the stained soil, and stockpiled the material in the Former Gas Holder Soil Removal Area. On March 15, 2005, Earth Tech initiated the installation of the double-walled waterline and three 2½-inch-diameter power conduits (for submersible pumps, air handling units, foam sprayer, etc.) in the trench. Earth Tech surrounded the double-walled waterline and three power conduits with bedding sand, and then backfilled with soil fill and crushed stone. Earth Tech connected the electrical lines to a three-phase electrical panel box located on the CSXT property on March 16, 2005.

On March 11 and March 12, 2005, Earth Tech constructed a wood-frame structure over the carbon units in the TWTS to help contain heat and thaw the carbon units prior to replacement. Envirotrol, a subcontractor to Earth Tech, replaced the carbon units on March 18, 2005.

On July 26, 2005, Earth Tech initiated the disassembly, decontamination, and demobilization of the TWTS components. On July 27, 2005, EP&S and Earth Tech initiated decontamination of the TWTS storage tanks using a vacuum truck. The impacted material (i.e., NAPL and sludge) from the storage tanks were transported off-site to the United Industrial Services, Inc. (USI) disposal facility.

Earth Tech initiated removal and consolidation of the TWTS pad on August 1, 2005; the stone was reused within the Former Gas Holder Soil Removal Area as backfill. As documented in a July 19, 2005 letter from ARCADIS BBL to the NYSDEC (Appendix L), ARCADIS BBL collected three water samples on July 11, 2005 from the sumps within the TWTS pad to confirm the stone material was not impacted prior to its reuse. The water samples were collected and analyzed consistent with the procedures used for sampling and analysis of treated water for discharge to the City of Hudson's POTW. Based on the water sample analytical results and visual observations of the material, the stone was determined to be suitable for reuse as backfill within the Former Gas Holder Soil Removal Area. However, five discrete areas of the TWTS pad were segregated and disposed of off site due to the presence of visibly impacted material.

A daily operations log was maintained by the Earth Tech during periods of operation of the TWTS and is included in Appendix F.

4.9.3 Sampling Activities for On-site TWTS

In accordance with the Final BOD, during the first month of operation, weekly sampling events were conducted on the following dates in 2004: June 29, July 7, July 14, and July 26. Following the fourth round of weekly sampling, sampling was conducted once a month on the following dates in 2004: August 18, October 4, October 19, November 23, December 15, December 29; and the following dates in 2005: March 28, April 27, May 25, June 29, and July 25 (included in Appendix E and summarized in Table 2). For both weekly and monthly sampling activities, water samples were sent to SGS for analysis (i.e., pH, BTEX, naphthalene, biological oxygen demand, TSS, and oil and grease). With the exception of two sampling events, the data assessment for the weekly and monthly sampling events indicated no exceedances, and Earth Tech initiated discharge of the treated effluent to the POTW or the Hudson River. The two exceedances recorded during the monthly sampling events are discussed below.

As documented in a January 3, 2005 letter from ARCADIS BBL to the NYSDEC (Appendix A), the data assessment of the December 15, 2004 samples indicated that the effluent sample concentration for the TSS exceeded the POTW discharge limits (i.e., 69 milligrams per liter [mg/L], with a maximum allowable concentration of 50 mg/L). Based upon these analytical results, ARCADIS BBL instructed Earth Tech to cease discharge of treated water to the POTW and store the water until it could be re-treated, re-sampled, and acceptable results for TSS were obtained. Earth Tech discontinued discharge of treated water to the POTW, and performed the necessary activities (i.e., recirculation of treated water through the TWTS) to correct the exceedance. On December 29, 2004, ARCADIS BBL collected one sample from the influent and effluent from the TWTS to confirm that the effluent sample concentration for TSS met the POTW discharge limits. Water samples were sent to SGS for analysis (i.e., TSS). The data assessment indicated no exceedance, and Earth Tech resumed discharge of the treated effluent to the POTW.

The data assessment of the March 28, 2005 samples indicated that the effluent sample had an elevated pH that exceeded the POTW discharge limits (i.e., 9.65 standard units [S.U.], with an allowable concentration within the range of 6 to 9 S.U.) due to the use of a fresh carbon unit within the TWTS. The POTW operator provided verbal approval for Earth Tech to discharge the treated water to the POTW following a conference between ARCADIS BBL, Earth Tech, and the POTW operator. Following approval from the POTW, Earth Tech discharged the treated effluent to the POTW.

During the RA, additional sampling events were conducted to confirm that the effluent discharge from the TWTS was within the limits allowed for discharging the treated water to either the Hudson River or the City's POTW via the City sanitary sewer system. These additional sampling events (included in Appendix E and summarized in Table 1) included the following:

- On November 10, November 18, and November 23, 2004, ARCADIS BBL collected one sample at batch intervals of 10,000, 25,000, and 40,000 gallons following the reconfiguration of the TWTS for winterization (see Section 4.9.2). Water samples were sent to SGS for analysis. The data assessment indicated no exceedances, and Earth Tech resumed discharge of treated effluent to the POTW following the reconfiguration.

- On November 30, 2005, ARCADIS BBL collected one sample of treated water generated from the flooding of Embayment #1 in preparation for discharge to the Hudson River. Water samples were sent to SGS for analysis. The data assessment indicated no exceedances, and Earth Tech initiated discharge of the treated effluent to the Hudson River.

4.10 Well Decommissioning

ADT decommissioned a total of three monitoring wells (i.e., OW-1, MW-01, and MW-04) and one DNAPL collection well (i.e., CW-01). The wells were decommissioned consistent with the Final BOD and Contract Documents, as described below.

ADT decommissioned MW-04 on July 23, 2005, which consisted of a 2-inch-diameter PVC stick-up monitoring well located in the northeast corner of Lot 15 (as shown on Figure 2). ADT grouted MW-04 with approximately 60 gallons of Portland cement from approximately 27 feet bgs to within approximately 18 inches of the surface. Following abandonment of MW-04, Earth Tech removed the casing of MW-04 to approximately 1 foot bgs. In addition, ADT decommissioned the DNAPL collection well CW-01 on July 23, 2005. CW-01 was located in the southeast corner of Lot 15 and consisted of a 2-inch-diameter PVC flush-mounted collection well. Impacted material and free product was encountered during the abandonment of CW-01. ADT abandoned CW-01 down to approximately 32 feet bgs and grouted CW-1 to existing grade with approximately 90 gallons of Portland cement. Collection well CW-01 was then replaced with collection well CW-01R (also referred to as CW-01A) as discussed in Section 9 of this Final Report.

On July 26 and July 27, 2005, ADT decommissioned monitoring well OW-1, which consisted of a 2-inch-diameter PVC monitoring well located in the northwest corner of Lot 15 (see Figure 2). ADT was unable to auger past approximately 6 to 8 feet bgs because the well casing was bent at that depth. As an alternative, MAB used a CAT325B excavator to pull the well and the well casing out of the ground, approximately 16½ feet of the 8-inch-diameter steel casing and the entire OW-1 monitoring well was removed. The casing was coated with MGP-impacted material. Following removal of the well casing ADT augured down to below the bottom elevation of the well to an approximate depth of 27 feet bgs. ADT grouted OW-1 monitoring well from approximately 27 feet bgs to surface grade with Portland cement.

On July 27, 2005, ADT decommissioned MW-01 located in Lot 16.2 (see Figure 2), which consisted of a 2-inch-diameter PVC stick-up well. MAB assisted ADT with removal of the MW-01 monitoring well casing. MAB used a CAT235B excavator to dislodge the well casing and removed the casing approximately 1 foot to allow ADT to completely remove the well casing. ADT removed approximately 11 feet of the 8-inch-diameter steel well casing, and 29 feet of the 2-inch-diameter PVC pipe with a drill rig. ADT augured down to 29 feet bgs, and grouted the MW-01 well location with Portland cement from 29 feet bgs to surface grade with approximately 70 gallons of Portland cement.

5. Remedial Activities

This section presents a discussion of the RA activities conducted at the Site as part of the selected remedy, including soil/sediment removal and backfilling activities at the following removal areas:

- Peninsula Soil Removal Area;
- Surface Soil Removal Areas (three areas);
- Embayment #1 and SD-54 Cell Sediment Removal Areas;
- East Bank Soil Removal Area; and
- Former Tar Separator and Former Gas Holder Soil Removal Areas.

In summary, approximately 43,000 tons of native material were removed from the above-listed removal areas and transported off-site for either thermal treatment or disposal. Assuming an average density of 1.5 tons per cy, this mass indicates a removal volume of approximately 28,700 cy. This actual volume of removal exceeds the design removal volume of approximately 16,300 cy (i.e., 5,000 cy of sediment; 11,300 cy of soil). This additional volume of removal was achieved primarily by conducting additional excavation beyond the vertical and horizontal limits of excavation identified in the Final BOD. A more detailed description of the soil/sediment removal activities associated with the above-listed removal areas is presented below.

5.1 Peninsula Soil Removal Area and Surface Soil Removal Areas

Consistent with the Final BOD, Earth Tech removed impacted surface and subsurface soils located in three Surface Soil Removal Areas and the Peninsula Soil Removal Area, and backfilled the excavations with clean soil material. The RA activities were conducted on the following dates:

- On May 6 and May 10, 2004, Earth Tech removed a 2-foot-deep excavation area (approximately 30 cy) at the southeast corner of Lot 15 (south of the warehouse) and stockpiled the material within the excavation limits for subsequent off-site transportation and treatment.

- On May 7 and May 11, 2004, Earth Tech excavated two discrete areas, one on the southeast corner of Lot 16.2 (approximately 30 cy) and one on the east side of Lot 15 (adjacent to the railroad tracks) (approximately 30 cy) – both approximately 2 feet bgs. Excavated material was stockpiled within the excavation limits in preparation for off-site transportation and treatment. A representative of AT&T Fiber Optics verified that the fiber optic cable in the proximity of the 2-foot-deep excavation area on the east side of Lot 15 was beyond the limits of the excavation prior to Earth Tech initiating excavation activities within this area.

- On May 10, 2004, Earth Tech performed a 6-foot-deep excavation (approximately 25 cy) within the peninsula between Embayments #1 and #2. Excavated material was placed on a temporary staging area, which consisted of a bermed area covered with a LLDPE liner, and mixed with imported fill to dry and stabilize the material.

Each excavation area was backfilled with imported fill in 1-foot-thick lifts following the loading and off-site transportation of the excavated material to the RE·SOIL treatment facility by Goulet. Air monitoring was performed during these RA activities as described in Section 6.

5.2 Embayment #1 and East Bank Soil Removal Area

This section addresses the RA activities (i.e., pre-trenching, sheetpile installation, excavation stability, soil and sediment removal, and backfilling) related to the removal and replacement of sediment and soil from the

Embayment #1 (including the SD-54 Cell) Sediment Removal Area and the East Bank Soil Removal Area, respectively.

5.2.1 Pre-Excavation Trench Activities

Consistent with the Final BOD and Contract Documents, pre-excavation trenching activities were performed along the eastern sheetpile wall alignment of the East Bank Soil Removal Area to a depth of approximately 7 feet bgs to identify the presence of any buried pipes or structures. Pipes or structures observed during pre-excavation trenching activities along the eastern sheetpile wall alignment of the East Bank Soil Removal Area included, but were not limited to, the following:

- On May 6, 2004, Earth Tech excavated in the alignment of the eastern sheetpile wall of the East Bank Soil Removal Area and located a 6-inch-diameter clay pipe as identified in the Final BOD. The pipe did not contain any material; approximately 11 feet of the pipe was removed and the remaining portion of the pipe was plugged with a 6-inch pipe plug (expandable rubber).

- On May 6, 2004, MAB excavated along the northern half of the eastern sheetpile wall of the East Bank Soil Removal Area to locate a 30-inch-diameter clay pipe identified within the Final BOD. The 30-inch-diameter clay pipe was not located; however, a wood box pipe (approximately 18 inches wide by 6 inches deep) was encountered approximately 8 feet bgs along the alignment of the eastern sheetpile wall. The wood box pipe contained coal tar and extended east from the east sheetpile wall to the edge of Water Street, rising to approximately 5 feet bgs. The wood box pipe and its contents were removed in their entirety and the trench was backfilled.

In addition, pre-excavation trenching activities were performed to identify the presence and facilitate the removal of material (e.g., timbers, piles, rocks, and other debris) within the alignment of the northern and southern sheetpile walls of Embayment #1 and the East Bank Soil Removal Area.

Pre-excavation trenching was conducted along the northern sheetpile alignment of Embayment #1 and the East Bank Soil Removal Area to an approximate depth of 15 to 20 feet bgs, and extended approximately 8 to 10 feet north of the northern sheetpile wall and 120 feet west of the northeast corner of the East Bank Soil Removal Area along the northern sheetpile wall alignment. Pipes or structures observed during pre-excavation trenching activities along the north sheetpile wall included, but were not limited to, the following:

- On April 27, 2004, a section of a concrete wall approximately 100 feet east of the western sheetpile wall (mouth of Embayment #1) along the north side of the Embayment #1 was observed and removed to an approximate depth of 5 feet bgs. No impacted material was observed behind or beneath the concrete wall.

- On April 29, 2004, MAB performed pre-excavation trenching activities to a depth of approximately 15 to 20 feet bgs, during which NAPL and MGP-impacted timbers and cobbles were observed. In addition, MAB encountered a 10-inch-diameter clay-tile pipe approximately 8 feet bgs immediately east of the 29th pair of sheets installed from the northwest corner of the north sheetpile wall. Earth Tech plugged the pipe at the request of the NYSDEC. MAB also encountered horizontal timbers at approximately 8 to 12 feet bgs, and a stone foundation east of the 29th pair of sheets installed for the north sheetpile wall at approximately 10 feet bgs. MAB pre-trenched the area where the north wall moved back to its original position (see Section 10); only a trace amount of MGP material was observed approximately 8 feet bgs, which was removed and transported off-site for treatment/disposal as part of the pre-trenching activities.

Pre-excavation trenching was conducted along the southern sheetpile alignment of Embayment #1 and the East Bank Soil Removal Area to an approximate depth of 15 to 20 feet bgs, and extended approximately 15 to 20 feet south of the southern sheetpile wall and 170 feet east of the southwest corner of Embayment #1 along the southern sheetpile wall alignment. In addition, pre-excavation trenching was conducted, as needed, along the perimeter of the SD-54 Cell sheetpile wall alignment. During pre-excavation activities within these areas, MAB and Earth Tech encountered impacted material, timbers, cobbles, and debris.

Following pre-trench excavation activities, backfill material was placed in the trench and compacted.

5.2.2 Sheetpile Wall Installation and Removal

Prior to the placement of the steel sheeting, water sealing material (Adeka Ultra Seal A-30) was applied to the interlocks of each sheet. A visual inspection of the interlocks was done to confirm that premature swelling did not occur; if swelling occurred the sealing material was removed and reapplied. The sheets were placed in pairs, in lengths of 25, 35, 45, and 65 feet, using a Terex HC 80-ton or Terrex 110-ton crane equipped with an APE Model 150 Vibratory Driver/Extractor vibratory hammer. As required, a hydraulic hammer attached to a CAT 325C excavator was used in conjunction with the vibratory hammer to drive the sheeting to final grade. The sheeting was placed along the Embayment #1 and SD-54 Cell Sediment Removal Area and the East Bank Soil Removal Area between March 2004 and May 2004 as described below:

- MAB installed a total of 2,340 sf of Arbed AZ-18 (manufactured by Skyline [AZ-18]) steel sheeting along the western sheetpile alignment of the Embayment #1 Sediment Removal Area (mouth of Embayment #1).

- MAB installed a total of 4,400 sf of Hoesch 1700 (manufactured by Hoesch [H 1700]) steel sheeting along the southern sheetpile alignment of the Embayment #1 Sediment Removal Area and the East Bank Soil Removal Area.

- MAB installed a total of 3,850 sf of H 1700 steel sheeting along the northern sheetpile alignment of the Embayment #1 Sediment Removal Area and the East Bank Soil Removal Area.

- MAB installed a total of 1,350 sf of H 1700 steel sheeting along the eastern sheetpile alignment of the East Bank Soil Removal Area.

- MAB installed a total of 4,800 sf of H 1700 watertight steel sheeting along the SD-54 Cell Sediment Removal Area sheetpile alignment.

MAB was unable to drive a number of steel sheets to final grade, and consequently cut the tops of the steel sheets to match the final design elevation. A total of nine sheets were cut and included sheets located in the SD-54 Cell and the north and west walls of Embayment #1. The location and length of steel sheeting removed was recorded by MAB and submitted to ARCADIS BBL for documentation (see Appendix C).

On May 28, 2004, Earth Tech surveyed the sheetpile walls located within Embayment #1, the SD-54 Cell Sediment Removal Area, and the East Bank Soil Removal Area to determine if the steel sheeting was installed consistent with the design elevation of 6 feet above mean sea level (amsl). Where steel sheeting was observed at elevations below 6 feet amsl, MAB welded additional steel sheeting to the tops of the steel sheets to raise them to within the required design elevation.

Consistent with the Final BOD and Contract Documents, a permanent sheetpile wall was installed around the SD-54 Cell Sediment Removal Area and along the western alignment of Embayment #1 (i.e., the mouth of the embayment). As described in the Final BOD and Contract Documents, the steel sheetpile wall installed along the north, south, and east sides of Embayment #1 and the East Bank Soil Removal Area was to be removed upon completion of the RA activities. However, following the completion of the remedial activities within Embayment #1 and the East Bank Soil Removal Area, steel sheetpile walls within these areas were not removed. The steel sheetpile walls were left in-place to provide additional protection against the potential lateral subsurface migration of impacted material from surrounding properties (e.g., the former oil terminal) into the remediated Embayment #1.

Following the excavation and backfilling activities, consistent with the Final BOD and Earth Tech's approved technical submittal, *Dive Plan Permanent Sheetpile Embayment National Grid Water Street Site Operable Unit 1 – Hudson, New York* (Earth Tech, April 2005) (see Appendix C), SDSC and MAB initiated cutting of the permanent sealable sheetpile wall at the mud line (i.e., sediment surface) along the west side of Embayment #1 on May 2, 2005. Embayment #1 was then flooded and the internal bracing system was removed (see Section 5.2.3 below); MAB removed the steel sheeting using a crane as a dive team from SDSC cut the steel sheeting using underwater burn rods. SDSC and MAB completed the cutting of the permanent sealable sheetpile wall on May 4, 2005.

5.2.3 Excavation Stability

Initially the bracing system within Embayment #1 and SD-54 Cell Sediment Removal Area and the East Bank Soil Removal Area consisted of a tie-back system; however, due to site conditions (i.e., the presence of extensive subsurface obstructions along the north and south sides of Embayment #1), the design was modified to utilize an internal bracing system. MAB installed the internal bracing system between May 12 and August 9,

2004. Equipment used to construct the internal bracing system consisted of a CAT 325C excavator, CAT 950B loader, and a Terex HC-80 Crane.

In general, the internal bracing system consisted of two rows of HP 14x73 steel H-pile beams driven vertically into Embayment #1 and the East Bank Soil Removal Area. The H-pile beams served as support columns for the internal bracing system. The vertical columns were topped with 24-inch- and 30-inch-diameter steel pipes that extended from the northern sheetpile wall to the southern sheetpile wall. Cross bracing, consisting of HP 14x73 H-pile beams, were installed between the vertical columns. Diagonal cross-bracing was also inserted between the vertical columns and the steel sheetpile walls. Whalers, consisting of two horizontal rows of HP 14x117 steel H-pile beams separated by vertical spacers consisting of HP 14x73 steel H-pile beams, were welded along the interior of the steel sheetpile walls within Embayment #1 and the East Bank Soil Removal Area. Sections of HP 14x73 and HPx102 H-pile beams were installed diagonally (i.e., connecting the western steel sheetpile wall to the northern and southern sheetpile walls) within the southwestern and northwestern corners of Embayment #1. In addition, MAB installed 24, 15-foot-long steel sheets along the peninsula, south of Embayment #1, to support five tie-backs installed for the southern sheetpile wall of Embayment #1 and the East Bank Soil Removal Area.

Contractor submittals related to the internal bracing system for Embayment #1 and the East Bank Soil Removal Area excavations are included in Appendix C.

Consistent with the Final BOD, a pressure relief system consisting of a series of pressure relief wells and piezometer pairs was installed within Embayment #1, the SD-54 Cell Sediment Removal Area, and the East Bank Soil Removal Area excavations to control and monitor the hydraulic gradients during excavation.

On August 5, 6, 9, 10, and 11, 2004, Earth Tech installed and developed nine piezometer pairs (i.e., a total of 18 piezometers) within Embayment #1, the SD-54 Cell, and the East Bank Soil Removal Area. In general, each piezometer consisted of a 2-inch-diameter steel pipe with a 30-inch well screen installed using a vibratory hammer. The well screen for one of the piezometers in each pair was installed at a depth of 18 to 20 feet bgs (or 8 to 10 feet below the excavation depth), and the well screen for the other piezometer was installed at a depth of 13 to 15 feet bgs (or 3 to 5 feet below the excavation depth).

In addition, Earth Tech installed a total of 70 vertical drains within Embayment #1, the SD-54 Cell, and the East Bank Soil Removal Area as part of the pressure-relief system. Each vertical drain consisted of a 2-foot-long steel tipped sump attached to a 25-foot-long, 2-inch-diameter slotted screen. The vertical drains were installed to approximately 27 feet bgs within Embayment #1 (approximately 17 feet below the bottom of the design excavation depth).

Earth Tech initiated the installation of the vertical drains for the pressure-relief system along the western sheetpile wall of Embayment #1 on August 13, 2004. From August 13 to 18, 2004, Earth Tech partially installed a total of 26 vertical drains within Embayment #1 with installation depths ranging from approximately 10 to 22 feet below the bottom of Embayment #1. Earth Tech was unable to drive the vertical drains to the design depth of 27 feet bgs, as such, Earth Tech attempted to install the vertical drains using a geoprobe. With limited success, Earth Tech contracted ECSI to install the remaining drains. The partially installed vertical drains were subsequently removed by ECSI.

On September 1, 2004, ECSI initiated the installation of the vertical drains within Embayment #1 along the southern sheetpile wall using a geoprobe rig. During installation of the first vertical drain, the slotted screen was damaged before it reached the required 27-foot depth. ECSI attempted to pre-drill the vertical drain location by inserting and extracting a 2-inch-diameter point with a solid metal shaft to a depth of 27 feet below the bottom

of Embayment #1, and then installing the vertical drain. However, the vertical drain met resistance at about 22 feet and bent the slotted screen. ECSI repeated the procedure with a 3¼-inch-diameter solid metal shaft, and was able to drive the vertical drain to the required design depth of 27 feet below the bottom of Embayment #1. ECSI installed a total of two slotted relief wells along the southern sheetpile wall. ECSI continued to install the slotted relief wells on September 2, 2004 along the southern sheetpile wall.

On September 13, 2004, ECSI resumed the installation of the vertical drains using a new placement method that consisted of the installation of 3¼-inch-diameter well casings, and installation of pre-welded slotted screen sections into the well casing to a depth of 27 feet below the bottom of Embayment #1. Slotted screen sections were welded together by Precision Welding or Silvernail Welding prior to installation. ECSI continued to install the vertical drains on the following dates: September 13 to 17, 24, 27, and 28, 2004.

Vertical hydraulic gradients were monitored periodically throughout excavation activities within the Embayment #1 and SD-54 Cell Sediment Removal Areas, and the East Bank Soil Removal Area using a number of piezometers.

On October 28, 2004, Earth Tech hand-bailed five pressure relief wells (i.e., PRW-12, PRW-13, PRW-14, PRW-15, and PRW-43) in an effort to relieve the pressure gradient within the PZ-06 piezometer pair and to determine the rate of recharge for the aforementioned pressure relief wells. Each well recharged by a minimum of 50% after approximately 1 hour following bailing activities. On October 29, 2004, Earth Tech bailed all of the water out of the five pressure relief wells adjacent to PZ-03 for a second time; each well had fully recharged.

On November 3, 2004, Earth Tech installed a QED pump in pressure relief well PR-13 (adjacent to the PZ-03 piezometers) and actively began pumping out of this well to a sump in Embayment #1 to relieve the critical pressure gradients in the area near PZ-03. Earth Tech also hand-bailed four additional wells.

On November 4, 2004, Earth Tech installed four additional QED pumps in pressure relief wells (i.e., PRW-12, PRW-14, PRW-15, and PRW-43) and actively began pumping out of these wells to a sump in Embayment #1 to relieve the critical pressure gradients in the area near PZ-03. Earth Tech continued to actively pump the five pressure relief wells until November 28, 2004.

On November 24, 2004, Earth Tech installed a pump in five pressure relief wells (i.e., PRW-2, PRW-3, PRW-4, PRW-5, and PRW-6) along the mouth of Embayment #1 adjacent to PZ-02 to relieve the critical pressure gradients near PZ-02. Earth Tech continued to actively pump the five pressure relief wells until November 28, 2004.

Flooding of Embayment #1 occurred between November 29 and December 6, 2004, and as a result, no measurements were recorded and active pumping did not occur. Due to the flooded conditions within Embayment #1 and the general completion of excavation activities within the Embayment #1 and SD-54 Cell Sediment Removal Areas, and the East Bank Soil Removal Area, measurements and active pumping of the piezometers were discontinued. On January 4, 2005, Earth Tech removed the QED pumps from the ten pressure relief wells in Embayment #1.

Earth Tech tremie grouted each piezometer and well to the top of the riser pipe (approximately 2 feet above the isolation layer) using a tremie pipe, and later removed the 2-foot riser pipe. Prior to tremie grouting the wells, Earth Tech used an interface probe to check for the presence of DNAPL. On January 25, 2005, Earth Tech encountered approximately 3 to 4 feet of DNAPL in PRW-27. Earth Tech utilized a heat wand to warm up the DNAPL prior to bailing the DNAPL out of the well on January 26, 2005. On February 2, 2005, Earth Tech utilized a steam generator to heat up and flush the DNAPL out of PRW-27 prior to abandonment of this well on

February 3, 2005. Earth Tech abandoned the piezometers and pressure relief wells on the following dates in 2005: January 13, January 21, January 24 to 28, January 31, and February 1 to 4.

Following completion of the remedial activities within the Embayment #1 and SD-54 Cell Sediment Removal Areas, and the East Bank Soil Removal Area, MAB initiated the removal of the internal bracing system on March 22, 2005. MAB removed the section of the internal bracing system decontaminated the steel bracing components as necessary and reused the steel bracing within the Former Gas Holder Soil Removal Area. MAB used a crane and 950 loader to remove the internal bracing system.

Monitoring information related to the pressure relief wells and piezometers within the Embayment #1 and SD-54 Cell Sediment Removal Areas, and the East Bank Soil Removal Area, is included in Appendix J.

5.2.4 Soil and Sediment Excavation

Between September 2004 and February 2005, a total of approximately 8,642 cy of soil and sediment from the East Bank Soil Removal Area, Embayment #1, and SD-54 Cell Sediment Removal Area were excavated and transported off-site for treatment and/or disposal (the estimated removal volumes identified in the ROD and Final BOD were 3,100 and 5,000 cy for the East Bank Soil Removal Area and Embayment #1 [including the SD-54 cell], respectively – for a total of 8,100 cy). The final limits and depths of the excavation areas are shown on Figure 3.

Consistent with the Final BOD, excavation activities involved the removal of visibly impacted material up to 10 feet below the existing sediment and soil surface within Embayment #1 and the East Bank Soil Removal Area, respectively. However, in some areas, further excavation activities were conducted (below the designed excavation depth of 10 feet bgs) upon observation of impacted material (e.g., mobile NAPL) (see Figure 3).

On September 29, 2004, Earth Tech initiated excavation of sediments at the east end of Embayment #1 and the adjacent east bank soils. In general, sediments from Embayment #1 and east bank soils were excavated and transported to a temporary stockpile located at the east end of the temporary excavation enclosure within the East Bank Soil Removal Area. Stockpiled sediments were augmented with east bank soils, soils from Lot 16.2 grading activities, and imported pulverized stone dust to stabilize the material prior to off-site transportation and treatment/disposal. A screen plant and conveyance system, located inside the enclosure adjacent to the temporary stockpile, was used to loadout trucks located along the exterior of the east end of the excavation enclosure. Material (e.g., timbers) that could not be loaded out via the screen plant and conveyance system due to the size of the material were loaded out through a temporary access road and overhead door located at the east end of the temporary excavation enclosure. Sediments removed from the western end of Embayment #1, outside of the temporary excavation enclosure, were removed and transported to temporary stockpiles under the temporary excavation enclosure for consolidation prior to off-site transportation and disposal. Earth Tech placed wooden timber crane mats in the bottom of the excavation to stabilize the soil during excavation activities. Earth Tech excavated sediments in the western end Embayment #1, proceeding east to west, to an approximate depth of 7 to 8 feet bgs. By November 17, 2004, Earth Tech had completed excavation within the western end of Embayment #1 to a depth of 7 to 8 feet bgs.

On November 22, 2004, C.T. Male began surveying the excavation depths within Embayment #1 and laying out a 10-foot by 10-foot excavation confirmation grid over Embayment #1 and the East Bank Soil Removal Area as shown in Appendix M. From November 22 to 24, 2004, Earth Tech excavated impacted material along the northern sheetpile wall in the western end of Embayment #1 to a depth of 10 feet bgs. Impacted material was excavated and transported to a temporary stockpile located at the east end of the temporary excavation enclosure in preparation for off-site transportation and treatment/disposal (as described above).

From November 29, 2004 to December 6, 2004, Earth Tech was unable to conduct excavation activities within Embayment #1 or the East Bank Soil Removal Area due to the flooding of Embayment #1 caused by the Hudson River's high water levels following a storm event.

On December 7 and 8, 2004, Earth Tech excavated timbers and debris (outside of the temporary excavation enclosure) in the southwest corner of Embayment #1; the material was excavated and directly loaded out from a temporary access road along the south side of Embayment #1 (i.e., along the peninsula). Prior to loading, trucks were covered with polyethylene sheeting to reduce the possible contact of the exterior of the trucks during loading.

Earth Tech excavated sediments and debris from the center and south side of Embayment #1 (outside of the excavation enclosure) to a depth of 10 feet bgs on December 8, 9, and 13 to 16, 2004. Excavated materials were stockpiled towards the south sheetpile wall in preparation of direct loadout from the temporary access road along the peninsula. On December 16, 2004, Earth Tech completed excavation within Embayment #1 to a depth of 10 feet bgs.

Earth Tech excavated (below the designed excavation depth of 10 feet bgs) within the southwest corner of Embayment #1 to remove additional impacted material. Impacted material was removed to a depth of 12 feet bgs; however, excavation below 12 feet bgs within the southwest corner of Embayment #1 was determined to be unsafe due to the proximity of the impacted material to the sheetpile wall. As such, an engineered containment system was installed within the southwest corner of Embayment #1 to encapsulate the isolated area of impacted material that remained in-place following excavation activities consistent with the Removal Action Contingency Plan outlined in Section 4.6.2 of the Final BOD. Prior to the placement of the engineered containment system, Earth Tech installed a 6-inch-thick absorbent layer of wood chips above the impacted material in the southwest

corner of Embayment #1 to reduce the potential surface migration of mobile NAPL following the placement of backfill.

On December 16, 2004, Earth Tech resumed excavation activities within the northern end of the East Bank Soil Removal Area to a depth of 10 feet bgs. Earth Tech transported the excavated material to a temporary stockpile located at the east end of the temporary excavation enclosure in preparation for off-site transportation and treatment/disposal. On December 22, 2004, Earth Tech began to clean and disassemble the screen plant and conveyance system in preparation for moving it out of the temporary excavation enclosure and to complete excavation of impacted material in the East Bank Soil Removal Area. Accordingly, remaining impacted material stockpiled within the east end of the temporary excavation enclosure was loaded out through a temporary access road and overhead door located at the east end of the temporary excavation enclosure.

On December 27, 2004, Earth Tech began to excavate within the former location of the screen plant and conveyance system in the southern end of the East Bank Soil Removal Area to a depth of 10 feet bgs. Earth Tech continued to excavate in the southern end of the East Bank Soil Removal Area to a depth of 10 feet bgs working northward along the east sheetpile wall. Earth Tech stockpiled the excavated material within the east end of the temporary excavation enclosure in preparation for off-site transportation and treatment/disposal. Earth Tech continued to loadout stockpiled material through the overhead door located at the east end of the temporary excavation enclosure.

On December 29, 2004, pockets of mobile NAPL were observed at a depth of 10 feet bgs in the south end of the East Bank Soil Removal Area, approximately 30 to 40 feet north of the southern sheetpile wall and 5 feet west of the eastern sheetpile wall (i.e., excavation grids D-3 and E-3 [excavation grids referenced from as-built surveys included in Appendix M]). On December 30, 2004 and January 5, 2005, Earth Tech excavated within this area (i.e., excavation grids D-2, D-3, E-2, and E-3) to a depth of 13 feet bgs; ARCADIS BBL and the

NYSDEC did not observe any further indications of mobile NAPL at a depth of 13 feet bgs. Excavated material was stockpiled within the east end of the temporary excavation enclosure in preparation for off-site transportation and treatment/disposal. Earth Tech continued to loadout stockpiled material through the overhead door located at the east end of the temporary excavation enclosure.

On January 3, 2005, Earth Tech excavated within the northeast corner of the East Bank Soil Removal Area to a depth of 10 feet bgs. Upon completion of excavation in the aforementioned area of the east bank, pockets of mobile NAPL were observed at a depth of 10 feet bgs. Earth Tech excavated within these areas (i.e., excavation grids K-3 to K-6 and L-3 to L-6) to a depth of 13 feet bgs; ARCADIS BBL and the NYSDEC did not observe any signs of mobile NAPL at a depth of 13-feet bgs. During the excavation Earth Tech encountered cobbles, timbers, and mobile NAPL to a depth of 13-feet bgs. Excavated material was stockpiled within the east end of the temporary excavation enclosure in preparation for off-site transportation and treatment/disposal. Earth Tech continued to loadout stockpiled material through the overhead door located at the east end of the temporary excavation enclosure.

On January 7, 2005, Earth Tech excavated test pits within the East Bank Soil Removal Area (adjacent to the exterior of the southeast side of the SD-54 Cell) to a depth of 14 feet bgs to determine the extent of NAPL within this area. Mobile NAPL was observed at 13 feet bgs within the test pit. On January 10, 2005, Earth Tech excavated this area (i.e., excavation grids B-10 and B-11) to a depth of 14 feet bgs; ARCADIS BBL and the NYSDEC did not observe any signs of mobile NAPL at a depth deeper than 14 feet bgs. Following excavation, Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs. In addition, Earth Tech excavated a portion of excavation grid B-9 to a depth of 14 feet bgs, and continued to encounter mobile NAPL at this depth. Earth Tech excavated this area to a depth on 18 feet bgs to remove mobile NAPL. Upon completion of excavation activities, ARCADIS BBL and the NYSDEC did not observe any signs of mobile NAPL and Earth Tech backfilled the B-9 grid area to a depth of 10 feet bgs with imported sand. On January 11, 2005, Earth Tech

excavated another portion of the B-9 grid (adjacent to the portion excavated on January 10, 2005) to a depth of 14 feet bgs to remove mobile NAPL. No mobile NAPL was observed at a depth beyond 14 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 11, 2005, Earth Tech excavated an area east of the SD-54 Cell within the East Bank Soil Removal Area (i.e., excavation grids D-8, E-8, F-8, and G-9) to a depth of 12 feet bgs to remove mobile NAPL. No mobile NAPL was observed at a depth below 12 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 11, 2005, Earth Tech excavated an area adjacent to the northeast side of the SD-54 Cell within the East Bank Soil Removal Area (i.e., excavation grids G-6, G-7, G-8, H-6, and H-7) to remove mobile NAPL below the design depth of 10 feet bgs. Earth Tech excavated to 16 feet bgs in G-6, G-7, G-8, and H-7 to remove a french drain consisting of gravel and mobile NAPL. In grid H-6, Earth Tech excavated to a depth of 18 feet bgs to remove an 18-inch-diameter corrugated steel pipe surrounded by 6-inch-diameter stones and some mobile NAPL. No mobile NAPL was observed at a depth of 18 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 12, 2005, Earth Tech excavated an area on the north side of East Bank Soil Removal Area (i.e., excavation grids K-6, K-7, K-8, L-6, L-7, and L-8) to a depth of 15 feet bgs to remove mobile NAPL. No mobile NAPL was observed at a depth deeper than 15 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 13, 2005, Earth Tech excavated an area on the north side of East Bank Soil Removal Area (i.e., excavation grids K-9, L-9, and L-10) to a depth of 14 feet bgs to remove mobile NAPL. No additional mobile

NAPL was observed at a depth greater than 15 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 13, 2005, Earth Tech excavated an area on the north side of East Bank Soil Removal Area (i.e., excavation grids H-7, H-8, H-9, J-8, J-9, J-10, K-10, K-11, and L-11) to a depth of 13 feet bgs to remove mobile NAPL. No mobile NAPL was observed at a depth greater than 13 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs.

On January 18, 2005, Earth Tech excavated along the eastern sheetpile wall (i.e., grid F-2) to a depth of 17 feet bgs, and encountered an 18-inch-diameter corrugated steel pipe surrounded by 6-inch-diameter stones. The pipe appeared to have been split in half by the east sheetpile wall as the portion of the pipe that was visible was directly up against the east wall. Earth Tech removed the portion of the 18-inch-diameter pipe inside the east sheetpile wall and continued to remove the 6-inch stones encountered in this area (an area approximately 4 feet in diameter) down to a depth of 17 feet bgs. The 6-inch stones appeared to be coated with a sheen and a minimal amount was still present at 17 feet bgs. However, the sheets along the eastern sheetpile wall began to deflect inward and visible cracking of the soil above and outside the east wall was observed after excavation to 17 feet bgs. Earth Tech stopped excavation within this area due to health and safety concerns.

Earth Tech also excavated in the area of the former stockpile within the enclosure (i.e., grids G-3 and H-3). Large cobbles, timbers, and mobile NAPL were encountered along the south side to a depth of 15 feet bgs. No mobile NAPL was observed at a depth below 15 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs. Earth Tech stockpiled the material in grid G-4 to create a new stockpile. In addition, Earth Tech excavated along the east sheetpile wall (i.e., grid J-3) to a depth of 15 feet bgs to remove mobile NAPL.

On January 19, 2005, Earth Tech continued excavation in the former location of the east bank stockpile (i.e., grids F-3, G-3, G-4, and H-4) to a depth of 14-feet bgs to remove mobile NAPL. No mobile NAPL was observed at a depth deeper than 14 feet bgs, and Earth Tech backfilled this area with imported sand to a depth of 10 feet bgs. Earth Tech completed excavation of the East Bank Soil Removal Area to a depth of 10 feet bgs on January 19, 2005.

Air and turbidity monitoring was performed during RA activities as described in Section 6. Earth Tech utilized a CAT 4200 backhoe, Link Belt 225 excavator, RC-100 Mini loader, CAT Mini excavator, and a CAT 330 excavator to perform the excavation activities within the East Bank Soil Removal Area, Embayment #1, and the SD-54 Cell Sediment Removal Area.

Excavated materials (e.g., soils, sediments, and debris) were transported to either the RE·SOIL (i.e., MGP-impacted material) or the Albany County Landfill (i.e., non-hazardous material), depending on the material type and size, using Hudson Logistics and Fiacco trucking companies. Waste manifests were created to document the transportation of the impacted material to the disposal facilities, copies of the load tickets and waste manifests are included in Appendix K and are summarized in Tables 5, 6, and 7.

5.2.5 Backfill of Excavation Areas

Following excavation activities within Embayment #1, the East Bank Soil Removal Area, and the SD-54 Cell, clean imported soils were used to backfill the areas consistent with the Final BOD and Contract Documents. A 5-foot-thick sand backfill layer was installed directly over the bottom of the excavations (i.e., Embayment #1 and the East Bank Soil Removal Area), followed by a 3-foot-thick isolation layer within Embayment #1 and soil back fill within the East Bank Soil Removal Area. In general, backfill material consisted of imported clean off-

site material from Colarusso, and was placed in 1-foot-thick loose lifts and compacted using a Dynapac 5021 roller.

Earth Tech installed a total of approximately 1,892 cy of imported sand within Embayment #1 and the East Bank Soil Removal Area for the 5-foot-thick sand backfill layer on the following dates in 2004: November 22 and 23, and December 9, 14 to 17, 20 to 23; as well as the following dates in 2005: January 3 to 5.

Following the installation of the 5-foot-thick sand backfill layer, Earth Tech installed a 3-foot-thick isolation layer within Embayment #1 on the following dates in 2005: January 5 to 7, 10 to 13, 17 to 19, 20, and 21. Earth Tech installed a total of approximately 1,758 cy of imported isolation material within Embayment #1. As prescribed in the Final BOD, ARCADIS BBL collected four post-restoration samples from the 3-foot-thick isolation layer in Embayment #1 using a 2-foot-long macrocore with a 2-foot-long Lexan liner. Samples were sent to SGS for analysis of PAHs. No constituents were detected; laboratory analytical results are included in Appendix L and summarized in Table 8.

Within the East Bank Soil Removal Area, imported soil backfill material was placed over the 5-foot-thick sand backfill layer on the following dates in 2005: January 5 to 7, 21, 24, 25, 27, 28, and 31, and February 1, 3, and 4. Earth Tech installed a total of approximately 7,000 cy of imported soil within the East Bank Soil Removal Area. In accordance with the Contract Documents, SMT performed compaction tests within the East Bank Soil Removal Area utilizing a nuclear density gauge. Compaction testing was conducted following the placement and compaction of backfill material in 1-foot-thick lifts staring at 5 feet bgs. Each test exceeded the required minimum compaction criteria. The compaction test results are included in Appendix C.

A layer of non-woven geotextile and erosion protection stone was installed over the 3-foot-thick isolation layer within Embayment #1. A total of approximately 1,000 cy of erosion protection stone consisting of 3- to 6-inch-

diameter stones with a layer thickness in excess of 1 foot was placed over the geotextile from January 28, 2005 to February 4, 2005.

Following the installation of the erosion protection stone, Earth Tech installed a layer of Type 1 armor stone along the perimeter of Embayment #1 (i.e., the northern and southern slopes) from January 7, 2005 to February 11, 2005.

Consistent with the Final BOD, following the installation of the engineered containment system within the SD-54 Cell, a 5-foot-thick sand backfill layer was installed in the SD-54 Cell. On February 21 and 22, 2005, Earth Tech installed a total of approximately 320 cy of imported sand within the SD-54 Cell. Following the installation of the 5-foot-thick sand backfill layer, Earth Tech installed a 3-foot-thick isolation layer within the SD-54 Cell on February 22 and 23, 2005. Earth Tech installed a total of approximately 210 cy of imported isolation soil within the SD-54 Cell. As prescribed in the Final BOD, ARCADIS BBL collected one post-restoration sample from the 3-foot-thick isolation layer in Embayment #1. The sample was sent to SGS for analysis of PAHs. No constituents were detected; laboratory analytical results are included in Appendix L and summarized in Table 8.

A layer of non-woven geotextile and erosion protection stone was installed over the 3-foot-thick isolation layer in the SD-54 Cell. A total of approximately 130 cy of erosion protection stone consisting of 3- to 6-inch-diameter stones with a layer thickness in excess of 1 foot was installed over the non-woven geotextile on February 23, 2005.

5.2.6 Engineered Containment System

On January 12 and 13, 2005, Earth Tech installed an engineered containment system within the southwest corner of Embayment #1 to encapsulate an isolated area of impacted material that remained in-place (below the designed excavation depth of 10 feet bgs) following excavation activities. Impacted material was removed to a depth of 12 feet bgs; however, excavation below 12 feet bgs within the southwest corner of Embayment #1 was determined to be unsafe due to the proximity and depth of the impacted material to the sheetpile wall. As such, a containment system was installed consistent with Section 4.6.2 of the Final BOD. The containment system covered approximately 400 square feet (20 feet by 20 feet), and consisted of a 60-mil LLDPE geomembrane, covered by a non-woven geotextile fabric and a 1-foot-thick layer of clean sand. Along the south and west side of the containment system (adjacent to the southern and western sheetpile walls) wooden forms (1 foot high by 2 feet wide) were installed and filled with bentonite to create a seal between the sheetpile wall and the containment system. Trenches (1 foot high by 2 feet wide) were excavated along the north and east side of the containment system. The edge of the 60-mil LLDPE geomembrane was placed in the trench, and the trench was backfilled with bentonite to form a bentonite seal, and key the containment system into native soil.

From February 14 to 18, 2005, Earth Tech installed and graded a 6-inch sand bedding layer over the base of the SD-54 Cell excavation. On February 18 and 21, 2005 Earth Tech installed a 60-mil LLDPE geomembrane over the bedding layer using a CAT 330 excavator. The 60-mil LLDPE geomembrane was cut flush with the perimeter of the permanent steel sheetpile wall of the SD-54 Cell. Following placement of the 60-mil LLDPE geomembrane, wooden forms (1 foot high by 2 feet wide) were installed along the perimeter of the SD-54 Cell within the permanent steel sheetpile wall, and filled with bentonite to create a seal between the sheetpile wall and the containment system. The 60-mil LLDPE geomembrane and bentonite seal were covered with a non-woven geotextile.

On February 22, 2005, C.T. Male surveyed the limits of the liner system as shown on Figure 4; a copy of the as-built survey is included in Appendix M. Following placement of the geotextile, backfill material was placed consistent with Section 5.2.5 of this Final Report.

5.3 Former Tar Separator and Former Gas Holder Soil Removal Areas

This section addresses the activities (i.e., test pit excavations, pre-excavation trenching and drilling, sheetpile installation, excavation stability, soil removal, and backfilling) related to the removal and replacement of soil from the Former Tar Separator and the Former Gas Holder Soil Removal Areas.

5.3.1 Test Pit Excavations

Prior to the initiation of RA activities within the Former Tar Separator Soil Removal Area and the Former Gas Holder Soil Removal Area, Earth Tech excavated a number of test pits to determine the existing conditions within these areas. These test pit excavations are described below.

On January 20, 2005, Earth Tech excavated a test pit using a Link Belt 225 excavator on the north side of the warehouse near the southwest corner of the Former Gas Holder Soil Removal Area. An 18-inch-thick concrete slab believed to be associated with a former gas holder was encountered in this area at approximately 6 inches bgs. The edge of this slab was approximately 5 feet north of the warehouse. Earth Tech excavated a test pit to a depth of approximately 4 feet bgs between the edge of the concrete slab and the warehouse. MGP-impacted material, NAPL, bricks, two abandoned pipes (one 3 inches in diameter and one 4 inches in diameters), and other debris were encountered. MGP-impacted material and debris encountered within the test pit were removed and transported off-site for treatment/disposal. Where pipes were present at the excavation limits, they were cut, drained (if free product and/or liquid were present), and plugged. The test pit was backfilled with clean fill, and the excavated material was temporarily stockpiled within the Former Gas Holder Soil Removal Area for future removal and disposal.

On January 25, 2005, Earth Tech excavated two test pits in the Former Gas Holder Soil Removal Area to determine the extent and location of the former brick gas holder on the east side of the Former Gas Soil Removal Holder Area. Earth Tech excavated to approximately 4 feet bgs in two locations around the former brick gas holder. The brick wall was identified at these two locations; the brick wall of the holder appeared to be slightly outside the designed perimeter of the steel sheetpile wall at both of these locations. In addition, impacted material was encountered in both of these test pits. In the test pit excavated on the southern edge of the former brick gas holder, a brick wall was observed just to the south of the former brick holder wall. A concrete slab was observed just below the surface directly on top of this brick wall. Neither the brick wall nor its underlying slab was disturbed at that time. Each test pit was backfilled with native soils. Based upon visual observations during the test pit excavations, Earth Tech extended the sheetpile wall alignment to encompass the entire former brick gas holder on the southeast side of the Former Gas Holder Soil Removal Area to capture the observed impacted material as part of the larger removal activities (see Figure 6).

At the request of National Grid, on February 3, 2005, Earth Tech excavated a test pit directly against the north wall of the warehouse (located 12 to 15 feet west of the northeast corner of the warehouse) to expose and assess the conditions of the warehouse foundation. Impacted material and NAPL were encountered down to approximately 4 feet bgs, along with two 3-inch-diameter steel pipes and one 8-inch-diameter clay-tile pipe. The test pit was excavated to a depth of approximately 7 to 8 feet bgs to expose the warehouse foundation. The warehouse foundation extended approximately 1 foot away from the north warehouse wall. MGP-impacted material and debris encountered within the test pit were removed and transported off-site for treatment/disposal. Where pipes were present at the excavation limits, they were cut, drained (if free product and/or liquid were present), and plugged. Following excavation, the test pit was backfilled with clean fill to existing grade.

5.3.2 Slab Removal

On January 24 and 26, 2005, Earth Tech excavated to 6 inches bgs within the Former Gas Holder Soil Removal Area to expose the concrete slab of the former gas holders located in the southwest and northeast corners of the area.

On January 26, 2005, Earth Tech initiated removal of the concrete slab associated with the former gas holder located in the southwest corner of the Former Gas Holder Soil Removal Area within the alignment of the steel sheetpile wall. From January 26 to 28, 2005, several attempts were made to cut the concrete slab using a 6522 concrete saw rig; however, the concrete slab could not be removed due to the thickness (approximately 4 feet). On February 1, 2005, Earth Tech initiated the removal of the concrete slab within the alignment of the steel sheetpile wall with a hoe-ram bit attached to the Link Belt 225 excavator. A portion of a 5- to 6-foot-diameter brick-lined storm sewer, containing two 8- to 10-inch-diameter pipes (one steel, one clay-tile), was discovered during the demolition of the concrete slab. The area below the pipes was filled with concrete. Earth Tech removed the pipes and concrete encountered within the storm sewer, and excavated immediately to the west of the brick structure to remove impacted material, which consisted primarily of sludge and large cobbles that were coated with a silvery-grey sheen. In addition, Earth Tech performed pre-excavation trenching to a depth of approximately 7 feet bgs along the steel sheetpile wall alignment from the location of the storm sewer to the eastern limits of the southeast corner of the southwest side of the Former Gas Holder Soil Removal Area proposed steel sheetpile wall. Impacted material and NAPL was encountered to a depth of 7 feet bgs; however, a clean light grey silt/clay material was encountered at 7 feet bgs within the pre-excavation trench. Impacted material encountered during pre-excavation trenching was temporarily stockpiled at the eastern end of the Former Gas Holder Soil Removal Area for future removal and off-site transportation and treatment/disposal. The pre-excavation trench was backfilled with native materials generated during the removal of the upper 6 inches of material from the top of the concrete slabs of the former gas holders. During the concrete demolition

and excavation activities Earth Tech conducted localized air monitoring and crack and vibration monitoring of the warehouse.

On January 28, 2005, Earth Tech initiated removal of a concrete slab associated with the former gas holder located in the northeast corner of the Former Gas Holder Soil Removal Area within the alignment of the steel sheetpile wall using a 6522 concrete saw rig. The concrete slab could not be removed due to the thickness (approximately 2 feet). Earth Tech dismantled and removed the concrete slab with a hoe-ram bit attached to the Link Belt 225 excavator. No impacted material was observed below the concrete slab. During the concrete demolition and excavation activities Earth Tech conducted localized air monitoring and crack and vibration monitoring of the warehouse.

5.3.3 Pre-Excavation Trenching Activities

Consistent with the Final BOD, pre-excavation trenching activities were performed along the sheetpile alignments of the Former Tar Separator Soil Removal Area and the Former Gas Holder Soil Removal Area to identify the presence of any buried pipes or structures. Pipes and structures observed during pre-excavation trenching activities along the steel sheetpile wall alignment of the Former Tar Separator Soil Removal Area and the Former Gas Holder Soil Removal Area are described below.

Earth Tech performed pre-excavation trenching activities along the northwest corner of the Former Gas Holder Soil Removal Area to remove obstructions within the steel sheetpile wall alignment on January 31, 2005 and February 1 to 3, 2005. During these activities, Earth Tech encountered a concrete vault (approximately 6 feet by 10 feet by approximately 7 feet deep) approximately 1 feet bgs in the alignment of the steel sheetpile wall. The concrete vault contained bricks, fill material, and a significant amount of water. Following dewatering of the vault, a sludge material mixed with brick fragments was observed at approximately 4 feet bgs within the

concrete vault, and a sheen was observed. Earth Tech removed the observed materials and demolished and removed the concrete vault in its entirety using a hoe-ram bit attached to the Link Belt 225 excavator. A wooden box structure was connected to the underside of the bottom slab of the vault. During the pre-excavation trenching activities, following removal of the concrete vault, NAPL was observed in the water that had recharged into the excavation area and an MGP-odor was present. An 18-inch-diameter corrugated steel pipe (assumed to be the former NYSDEC recovery well) surrounded by 6-inch-diameter cobbles was encountered immediately outside the former location of the east wall of the concrete vault (within the alignment of the steel sheetpile wall). Earth Tech removed the impacted material still present within the excavation to a depth of 7 feet bgs, and then backfilled the majority of this area with native surficial soils (from above the concrete slabs).

On February 4 and 7, 2005, Earth Tech performed pre-excavation trenching activities along the western side of the Former Gas Holder Soil Removal Area within the alignment of the steel sheetpile wall (south of the former location of the approximate 6 foot by 10 foot concrete vault). Earth Tech continued to perform pre-excavation trenching along the west side of the Former Gas Holder Soil Removal Area working north to south to a depth of 7 to 8 feet bgs. During pre-excavation trenching activities, a second concrete vault (measuring approximately 6 feet by 6 feet) was encountered in this area. Impacted material and NAPL were observed in the concrete vault. Earth Tech demolished and removed the concrete vault (including the impacted material and NAPL observed within) to a depth of approximately 7 feet bgs using a hoe-ram bit attached to the Link Belt 225 excavator. In addition, six pipes that ranged from 6 to 12 inches in size at depths ranging from 3 to 6 feet bgs were located in close proximity to the former locations of the two concrete vaults. These pipes ran from the excavation area to the west (beneath Water Street.), to the southwest, and directly to the south. Sludge and NAPL were observed draining out of these pipes into the former concrete vault location. The void space left behind following removal of this second concrete vault recharged with water and sludge, impacted material and NAPL were present in this area (sludge and NAPL continued to drain into the area from the six pipes). Following dewatering of the void space to the frac tank (on the east side of the Former Gas Holder Soil Removal Area),

each pipe was allowed to completely drain and fully cleaned using absorbent pads and plugged with a Portland cement/bentonite grout mixture to seal off the ends of the pipe. Remaining impacted material in this area was removed to approximately 7 feet bgs, and the area was backfilled with clean fill material. Debris and impacted material removed during pre-excavation trenching activities were consolidated and temporarily stockpiled in the Former Gas Holder Soil Removal Area for future removal and off-site transportation and treatment/disposal.

From February 8, 2005, Earth Tech performed pre-excavation trenching along the southern alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 9 and 10[1]) to a depth of 7 feet bgs. Earth Tech encountered the northern edge of the former gas holder located in the southwest corner of the Northern Former Gas Holder Soil Removal Area. Impacted material was encountered at a depth of 4 to 7 feet bgs. In addition, Earth Tech performed pre-excavation trenching activities along the western steel sheetpile alignment of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 8 and 9) to a depth of 7 feet bgs. Impacted material was encountered at a depth of 4 to 7 feet bgs within this area. Impacted material was removed from these areas, and the pre-excavation trenches were backfilled with clean imported fill. Earth Tech also encountered a slab with a brick foundation at approximately 4 feet bgs. From February 10 to 11, 2005, Earth Tech used a hoe-ram bit attached to the Link Belt 225 excavator to demolish the corner of the concrete slab that obstructed the alignment of the steel sheetpile wall on the southeast side of the Former Gas Holder Soil Removal Area.

On February 9, 2005, Earth Tech performed pre-excavation trenching activities along the southern alignment of the Southern Former Gas Holder Soil Removal Area (i.e., east of survey point 8) to a depth of 7 feet bgs. Impacted material was encountered at a depth of 4 to 7 feet bgs within this area. Earth Tech also encountered the outer edge of the southeast former brick gas holder and a steel tank on the inside of the brick holder at

[1] Survey points referenced from Engineering Drawing G-4 of the Final BOD, and approximately correlate with the final as-built sheetpile alignments.

approximately 2 feet bgs. Impacted material was removed from this area, and the pre-excavation trench was backfilled with clean imported fill.

On February 14, 2005, Earth Tech initiated pre-excavation activities along the north side of the warehouse within the alignment of the southern steel sheetpile wall of the Former Tar Separator Soil Removal Area. Specifically, Earth Tech performed pre-excavation trenching activities along the north side of the warehouse to approximately 4 to 5 feet bgs, working westward toward Water Street. Impacted material was encountered approximately 3 to 4 feet bgs in this area. During the pre-excavation trenching activities along the north wall of the warehouse the following structures were encountered: an 8-inch by 8-inch steel plate approximately 1 feet bgs; one 8-inch-diameter clay pipe approximately 3 feet bgs (inside the sheetpile wall alignment); a second 8-inch-diameter clay pipe approximately 3 feet bgs (located outside the sheeting alignment) containing impacted material; a 15-inch-diameter cast iron pipe approximately 1 feet bgs near the northwest corner of the warehouse; and an 18-inch-diameter corrugated steel NYSDEC recovery sump surrounded by 6-inch-diameter stones (inside the sheetpile wall alignment). Earth Tech cleaned the impacted material out of the 8-inch-diameter clay pipe (outside the sheeting alignment), and inserted a plug using a Portland cement/bentonite grout mixture. The 15-inch-diameter cast iron pipe was broken up using a hoe-ram bit attached to the Link Belt 225 excavator. Structures (i.e., pipes) encountered within the pre-excavation trench were removed for subsequent off-site transportation and disposal.

From February 15 to 16, 2005, Earth Tech continued to perform pre-excavation trenching down to approximately 4 to 5 feet bgs along the north side of the warehouse in the southern sheeting alignment of the Eastern Former Tar Separator Soil Removal Area (i.e., between survey points 17 and 18). During pre-trenching activities, a small brick holder (approximately 10 to 12 feet in diameter) was encountered directly adjacent to the north side of the warehouse, which contained a steel tank (a baffle tank) approximately 10 feet in diameter. Impacted material, NAPL, and coal tar were present in the area where the steel tank was encountered. Due to

the proximity of this small brick holder to the north side of the warehouse, Earth Tech installed flowable fill in the void space between the outside of the southern steel sheetpile wall alignment of the Former Tar Separator Area and the north wall of the warehouse to provide additional support for the warehouse foundation prior to the removal of the brick holder. Earth Tech plugged all the sections of open pipes remaining outside the Former Tar Separator Soil Removal Area when the flowable fill was installed between the steel sheeting and the north wall of the warehouse. Earth Tech dismantled and removed a significant portion of the 12-foot-diameter brick holder, and removed the steel tank and placed the steel tank on a temporary staging pad within the Former Gas Holder Soil Removal Area. The steel tank was approximately 6 feet deep, located approximately 4 to 10 feet bgs, and was coated with coal tar. Impacted material and coal tar was present starting at 3 feet bgs along the foundation of the warehouse. Earth Tech also removed several pipes with the exception of one 4-inch pipe that ran beneath the warehouse at approximately 4 feet bgs (it appeared to contain non-impacted water). Earth Tech removed as much of the impacted material as possible, augmented it for stabilization, and staged the material on a temporary pad in the Former Gas Holder Soil Removal Area for future removal and off-site transportation and treatment/disposal. In addition, Earth Tech performed pre-excavation trenching along the north side of the warehouse outside of the northwest corner of the warehouse (i.e., southwest corner of the Western Former Tar Separator Soil Removal Area; at survey point 19). Earth Tech encountered impacted material below 3 to 4 feet bgs. The following pipes were encountered in this area at this depth as well:

- A 14-inch-diameter pipe running directly along the western steel sheetpile alignment from beneath the warehouse to approximately 2 feet east of the northwest corner of the warehouse;

- A 14-inch-diameter pipe running parallel to the north side of the warehouse from beneath Water Street approximately 2 feet east of the northwest corner of the warehouse;

- An 8-inch-diameter clay pipe running directly below the north wall of the warehouse toward Water Street, this pipe was located outside the sheeting alignment in this area and was left intact;

- Two 3-inch-diameter pipes running parallel to the north wall of the warehouse from beneath Water Street, a significant amount of water ran into the pre-trenched area from these pipes; and

- A 2-inch-diameter pipe running from beneath the warehouse, from which water ran into the pre-trenched area.

Earth Tech dismantled and removed the 14-inch-diameter pipes that were encountered in the above area; neither of these pipes contained any liquids. Earth Tech placed the impacted material encountered during pre-trenching into the excavation (i.e., the inside of the sheeting alignment) for future removal and off-site transportation and treatment/disposal. Earth Tech initiated pre-trenching along the western steel sheeting alignment down to approximately 4 to 5 feet bgs, working northward from the southwest corner of the alignment (i.e., the western alignment of the Western Former Tar Separator Soil Removal Area; between survey points 19 and 20). Earth Tech encountered impacted material beginning at approximately 3 feet bgs. Earth Tech continued to encounter the 14-inch-diameter pipe that ran parallel to Water Street (from beneath the warehouse) along the western steel sheetpile wall alignment, and the other 14-inch-diameter pipe encountered near the northwest corner of the warehouse (that ran east from beneath Water Street) that appeared to make a 90º turn to the north and was likewise encountered along the western steel sheetpile wall alignment running parallel to the first 14-inch-diameter pipe. Earth Tech dismantled and removed the sections of these pipes that were encountered in the western sheetpile wall alignment. Earth Tech also encountered an 8-inch-diameter clay pipe (outside the western steel sheetpile alignment) that ran parallel to Water Street in a northward direction. Earth Tech dismantled a portion of this pipe, a significant amount of water drained into the pre-trenched areas from this pipe (the water did not contain a sheen and did not appear to be visibly impacted).

On February 17, 2005, Earth Tech continued pre-excavation trenching activities along the northern wall of the warehouse to a point 10 feet east of the northeast corner of the warehouse. No impacted material was encountered and the trench was backfilled. Earth Tech also preformed pre-excavation trenching activities along the east end of the Former Gas Holder Soil Removal Area adjacent to the railroad tracks (i.e., the eastern alignment of the Southern Former Gas Holder Soil Removal Area; between survey points 7 and 13) to approximately 4 feet bgs. No impacted material was encountered.

On February 25, 2005, Earth Tech conducted pre-excavation trenching outside the alignment of the south steel sheetpile wall of the Former Gas Holder Soil Removal Area (i.e., the southern alignment of the Southern Former Gas Holder Removal Area; between survey points 7 and 8) to install deadmen steel sheeting within the area. During the pre-excavation trenching activities Earth Tech encountered two pipes, one 8-inch-diameter open ended pipe that contained a tar product, located approximately 42 feet east of the warehouse, and a second pipe (located approximately 65 feet east of the warehouse), which was in poor condition/decayed and ran through an impacted sand layer. These pipes and their contents were removed during pre-excavation trenching activities, cut at the face of the excavation, and sealed with a bentonite/cement mixture. Following pre-excavation trenching activities, Earth Tech backfilled the area.

Earth Tech conducted localized air monitoring and crack and vibration monitoring of the warehouse during these activities.

5.3.4 Pre-Excavation Drilling

Consistent with the Final BOD and Contract Documents, pre-excavation drilling activities were performed along the steel sheetpile wall alignment of the Former Tar Separator and the Former Gas Holder Soil Removal Areas to identify the presence of any buried obstructions (e.g., pipes, structures).

On February 20, 2005, Earth Tech and MAB performed pre-drilling activities along the southern sheetpile alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 9 and 10, 2 and 14) utilizing a 16 foot auger attached to an ABI Rig. MAB encountered impacted material midway between the southern alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 9 and 10), and approximately 25 feet north of survey point 14. Debris material was also encountered in this area. The impacted material and debris encountered within this trench were removed.

On February 20 and 22, 2005, MAB performed pre-drilling activities along the remainder of the Northern and Southern Former Gas Holder Soil Removal Areas alignment (i.e., between survey points 7 and 8, 8 and 9, 7 and 13, 2 and 12, 11 and 12, 1 and 11, 1 and 10, 20 and 21) utilizing a 20-foot auger attached to an ABI Rig. During pre-excavation drilling activities the following obstructions (e.g., pipes or structures) or impacted material were encountered:

- impacted material along the western alignment of the Southern Former Gas Holder Soil Removal Area (i.e., approximately 20 feet east of survey point 8);
- a 15-inch rectangular duct approximately 3 feet bgs near the northeast corner of the Northern Former Gas Holder Soil Removal Area (i.e., near survey point 2);
- a foundation consisting of a rectangular stone parallel to the northeastern steel sheetpile wall alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 2 and 12);
- impacted material encountered along the northwestern steel sheetpile wall alignment of the Northern Former Gas Holder Soil Removal Area (i.e., 16 to 20 feet west of survey point 1);
- a steel underground storage tank approximately 20-feet in length by 5-feet in diameter, along the northwestern steel sheetpile wall alignment of the Northern Former Gas Holder Soil Removal Area (i.e., approximately 35 feet west of survey point 11); and

- impacted material along the western steel sheetpile alignment of the Northern Former Gas Holder Soil Removal Area (i.e., approximately 21 feet south of survey point 1).

Following the pre-excavation drilling activities, MAB and Earth Tech backfilled the pre-excavation drill holes. Earth Tech conducted localized air monitoring and crack and vibration monitoring of the warehouse during these activities.

In general, where necessary, Earth Tech extended the sheetpile limits to capture impacted material that was observed during the aforementioned pre-excavation trenching and drilling within the overall excavation, as further discussed below.

5.3.5 Temporary Watertight and Permanent Sealable Sheetpile Installation and Removal

Prior to the placement of the steel sheeting within the Former Tar Separator Soil Removal Area, water sealing material, Swellseal® by DeNeef Construction Chemicals, Inc., was applied to the interlocks of each sheet. The interlocks were visually inspected to confirm that premature swelling did not occur; if swelling occurred, the sealing material was removed and reapplied. The sheets were placed during February 2005 in lengths of 25 feet, using an ABI Rig attached with an ABI-HPZ-T-630 or ABI-MR2V-925-V5 sheet driver. Installation of the steel sheetpile wall within the Former Tar Separator Area began on February 14, 2005 along the alignment of the south steel sheetpile wall, adjacent to the north wall of the warehouse. Due to spacing constraints associated with the hoses on the hydraulic press clearing the edge of the warehouse roof, the center alignment of the south steel sheetpile wall was positioned 24 inches north of the north wall of the warehouse (i.e., 12 inches from the building foundation). In addition, the alignment of the southern steel sheetpile wall was extended approximately 10 feet east of the northeast corner of the warehouse to provide additional support for the warehouse foundation

during excavation activities. MAB installed a total of 2,400 sf of watertight steel sheeting along the steel sheetpile wall alignment of the Former Tar Separator Area.

Prior to the placement of the steel sheeting within the Former Gas Holder Soil Removal Area, water sealing material, Swellseal® by DeNeef Construction Chemicals, Inc., was applied to the interlocks of each sheet. The interlocks were visually inspected to confirm that premature swelling did not occur; if swelling occurred, the sealing material was removed and reapplied. The sheets were placed between February 2005 and March 2005 using an ABI Rig attached with an ABI-HPZ-T-630 or ABI-MR2V-925-V5 sheet driver.

MAB installed various types of watertight steel sheeting around the Former Gas Holder Soil Removal Area. The types of sheeting installed included AZ-13, AZ-18, and H 1700 watertight steel sheeting placed in lengths of 30, 35, 45, and 50 feet. Specific locations and lengths of the types of sheeting can be found in the as-built survey submittal package included in Appendix C.

Based upon visual observations during test pit excavation activities (see Section 5.3.1), Earth Tech extended the southern sheetpile wall alignment to encompass the entire former brick gas holder on the southeast side of the Former Gas Holder Soil Removal Area (see Figure 6). On March 15, 2005, MAB initiated welding steel tips to the bottom of the steel sheeting to install the sheeting into the shallow bedrock near the northwest corner of the Former Gas Holder Soil Removal Area.

Following excavation and backfilling activities, the temporary watertight sheeting within the Former Tar Separator and Former Gas Holder Soil Removal Areas was removed using the ABI Rig from July 12 to 26, 2005. During excavation activities associated with removing the steel sheeting along the southern alignment of the Southern Former Gas Holder Soil Removal Area (i.e., east of survey point 8), Earth Tech encountered impacted material to approximately 8 feet bgs. Therefore, Earth Tech excavated an area approximately 12 feet

by 12 feet by 8 feet deep, south of the Former Gas Holder Soil Removal Area. In addition, MAB was unable to remove the steel sheeting near the southwest corner of the Southern Former Gas Holder Soil Removal Area (i.e., near survey point 8) due to health and safety concerns as a result of the instability of the north warehouse wall (i.e., potential collapse of the north wall) following soil cracking during the steel sheeting removal in that area. The steel sheeting in this area was cut to approximately 4 feet bgs, and backfilled. Consistent with the Final BOD and Contract Documents, the steel sheeting along the south, east, and west walls of the Former Tar Separator Soil Removal Area remained in-place following RA activities. MAB cut these sheets to approximately 2 feet bgs. The location and length of steel sheeting installed by MAB was recorded and submitted to ARCADIS BBL for documentation (see Appendix C).

5.3.6 Excavation Stability

On March 23 and 25, 2005, Earth Tech initiated excavation activities within the Former Tar Separator Area to allow access for the installation of the internal bracing system. Earth Tech used an air stripper and BioSolve® to reduce air emissions during excavation activities.

MAB installed the internal bracing system within the Former Tar Separator Area on April 1, 4 and 5, 2005. In general, the internal bracing system consisted of whalers (i.e., HP14x102 H-pile beams) welded to the interior of the steel sheeting along the alignment of the north and south steel sheetpile walls. Additional whalers (i.e., HP 14x117) were welded to the interior of the steel sheeting along the alignment of the east and west steel sheetpile walls. The whalers were installed approximately 5 feet bgs. Horizontal struts, consisting of HP 14x73 H-pile beams, were welded between the whalers and evenly spaced within the excavation areas. MAB had a crane and 950 loader on-site to facilitate the installation of the internal bracing system.

In general, the bracing system within the Former Gas Holder Soil Removal Area consisted of whalers (i.e., W 24x192, HP 14x73 H-pile beams, double C 12x30, and HP 14x117 H-pile beams) welded to the interior of the steel sheeting along the perimeter of the steel sheetpile wall alignments approximately 6 to 9 feet bgs. Struts, consisting of HP 14x73 H-pile beams, were welded horizontally within the corners of the Former Gas Holder Soil Removal Area.

As part of the tie-back system, MAB installed approximately 20, 10-foot long steel sheets approximately 36 feet south of the southern alignment of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 7 and 8) on March 15, 2005. MAB used a variable moment hammer attached to an ABI rig.

MAB also installed steel sheets approximately 23 feet south of the eastern alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 2 and 14) on the following dates: March 17 to 18 and April 8, 2005. MAB used a variable moment hammer attached to an ABI rig and a variable moment hammer attached to a crane**.**

MAB installed approximately 15, 10-foot long steel sheets approximately 36 feet west of the western alignment of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 8 and 9, adjacent to survey points 9 and 10) on March 29, 2005. MAB used a variable moment hammer attached to a crane for these installation activities.

MAB installed approximately 12, 10-foot long steel sheets approximately 23 feet north of the northwest alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 1 and 11) on March 29 and March 30, 2005. MAB used a variable moment hammer attached to a crane for these installation activities.

MAB installed approximately 12, 10-foot long steel sheets approximately 23 feet north of the northeast alignment of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 2 and 12) on March 30, 2005. MAB used a variable moment hammer attached to a crane for these installation activities.

Prior to the installation of the excavation support system within the Former Gas Soil Removal Holder Area, MAB and Earth Tech preformed pre-excavation activities to allow access for the installation of the whalers, diagonal corner struts, and tiebacks. The excavated material was stockpiled within the Former Gas Holder Soil Removal Area until it was transported off-site for treatment/disposal. During the pre-excavation activities the following structures were encountered within the sheetpile wall alignment of the Former Gas Holder Soil Removal Area:

- On March 6, 2005, Earth Tech excavated inside the northeastern sheetpile wall alignment of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 13 and 14), and encountered an 8-inch-diameter pipe at approximately 5 feet bgs. The pipe ran east toward the eastern sheetpile wall along a line approximately 6 feet south of the northeast corner of the Southern Former Gas Holder Soil Removal Area (i.e., survey point 13) and appeared to continue toward the railroad tracks. The pipe contained impacted water with a sheen present.

- On March 31, 2005, Earth Tech excavated along the interior of the eastern sheetpile wall of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 7 and 13) to approximately 7 feet bgs. A 4-inch-diameter pipe filled with turbid water and a horizontal wooden structure were encountered at approximately 6 feet bgs, 5 feet southwest of the northeast corner of the Southern Former Gas Holder Soil Removal Area (i.e., survey point 13).

- On April 12, 2005, Earth Tech excavated along the inside of the southern sheetpile wall of the Southern Former Gas Holder Soil Removal Area westward toward survey point 8, and encountered a steel tar separator tank near the southwest corner (i.e., near survey point 8) at approximately 3 feet bgs, with the outer edge of the tank located approximately 3 to 4 feet inside the southwestern corner of the sheetpile wall alignment. The steel tank was approximately 8 feet in diameter and approximately 6 feet deep, and contained coal tar and impacted material.

- On April 25, 2005, Earth Tech excavated along the inside of the western sheetpile wall (i.e., survey points 1 to 10) and along the southern sheetpile wall of the Northern Former Gas Holder Soil Removal Area (i.e., between survey points 9 and 10), Earth Tech encountered a 12-inch-diameter cast iron pipe at approximately 4 feet bgs, approximately 6 to 8 feet northeast of the southwest corner of the Northern Former Gas Holder Soil Removal Area (i.e., survey point 10).

As stated above, where impacted material and obstructions were encountered during pre-excavation activities, they were removed and temporarily stockpiled within the larger excavation areas for future removal and off-site transportation and treatment/disposal.

MAB installed deadmen whalers and diagonal corner struts within the Former Gas Holder Soil Removal Area on the following dates in 2005: March 31, and April 1, 7, 8, 11 to 15, 18, 22, and 25 to 29.

MAB installed the tie-rods between the deadmen and the steel sheetpile wall alignment within the Former Gas Holder Soil Removal Area on the following dates in 2005: March 31, April 1, 5 to 8, 15, 18 to 22, and May 4. The following structures or impacted material were encountered:

- On March 31, 2005, MAB excavated along the north side of the deadmen within the northwest side of the Former Gas Holder Soil Removal Area to approximately 7 feet bgs to install the deadmen whalers. During this excavation, a sheen and liquid NAPL were present in the water that pooled in the bottom of the excavation. No impacted material or coal tar was observed in the exposed areas where the excavation was conducted.

- On April 1, 2005, MAB excavated the area south of the deadmen along the northwest side of the Former Gas Holder Soil Removal Area to approximately 7 feet bgs to facilitate tie-back installation within this area. MAB encountered timbers and impacted material (consisting of a grey coarse sand and gravel coated with a sheen) at approximately 6 feet bgs. Impacted material and timbers encountered at approximately 6 to 7 feet bgs were segregated from non-impacted native material and removed. MAB excavated south of the deadmen to approximately 10 feet of the north wall of the Former Gas Holder Soil Removal Area to approximately 7 feet bgs. Following the installation of the tie-rods within this area MAB, installed flowable fill and backfilled with non-impacted native material.

- On April 5, 2005, during excavation activities associated with the installation of the tie-rods north of the northern sheetpile wall (approximately midway along the northern alignment of the Northern Former Gas Holder Soil Removal Area near survey point 11), MAB encountered impacted material with brick debris and coal tar at approximately 6 feet bgs. MAB removed all visibly impacted material from this area; the material did not appear to be impacted below 7 feet bgs. Following the installation of the tie-rods within this area MAB, installed flowable fill and backfilled with non-impacted native material.

- On April 6, 2005, during excavation activities associated with the installation of the tie-rods north of the northern sheetpile wall of the Northern Former Gas Holder Soil Removal Area, MAB encountered impacted material with timbers and coal tar at approximately 6 feet bgs directly adjacent to the northern sheetpile wall

of the Former Gas Holder Soil Removal Area. Impacted material extended approximately 3 to 4 feet north of the northern wall, in the area adjacent to the northeast deadmen sheets. MAB removed visibly impacted material from this area; the material was not impacted below 7 feet bgs. Following the installation of the tie-rods within this area MAB, installed flowable fill and backfilled with non-impacted native material.

- On April 15, 2005, MAB excavated outside of the alignment of the Former Gas Holder Soil Removal Area between the southern sheetpile wall of the Southern Former Gas Holder Soil Removal Area (i.e., south of survey points 7 and 8) and the southern deadmen sheets to approximately 3 feet bgs. On April 19, 2005, MAB excavated three trenches from approximately 3 to 7 feet bgs in preparation for the installation of the three western tie-rods in this area. MAB encountered isolated pockets of impacted material and pieces of wood minimally impacted with coal tar at approximately 3 to 5 feet bgs. MAB also encounter a 6-inch-diameter pipe at approximately 3 to 4 feet bgs near the south deadmen anchor sheets that appeared to run southwest towards the western end of the south deadmen sheets. MAB encountered a t-section of an 8-inch-diameter pipe in this area that contained coal tar, which was in proximity of the 8-inch-diameter pipe that was encountered and sealed during installation of the southern deadmen wall. MAB removed the pipes from this area upon completion of excavation of the deadmen anchor trenches. In addition, MAB also encountered impacted material to the south of the southern deadmen anchor sheets at approximately 3 to 6 feet bgs. MAB segregated the visibly impacted material, and staged the material on polyethylene sheeting in preparation for off-site transportation and treatment/disposal. Following the installation of the tie-rods within this area, MAB backfilled with non-impacted native material and compacted the backfilled areas utilizing a hand held skid impactor and pneumatic vibratory hammer.

- On April 19, 2005, MAB continued excavation for installation of the three central tie-rods south of the Former Gas Holder Soil Removal Area, between the southern sheetpile wall of the Southern Former Gas Holder Soil Removal Area and southern deadmen sheets to approximately 3 feet bgs. MAB excavated three

trenches from approximately 3 to 7 feet bgs in preparation for the installation of the three central tie-rods in this area. MAB removed several 1- and 2-inch-diameter pipes (containing non-impacted material) throughout this area at approximately 3 to 5 feet bgs. Scattered pockets of impacted material were encountered in the trenches from 3 to 7 feet bgs, which consisted primarily of timbers, brick debris, and sand lenses that were impacted with NAPL. MAB encountered product that emitted a diesel fuel odor at approximately 4 to 5 feet bgs, approximately 20 feet north of the south sheetpile wall. MAB also encountered a sand lens impacted with NAPL from approximately 5 to 7 feet bgs in proximity to the southern deadmen sheets. MAB removed all pipes encountered in this area and placed all impacted material removed from this area on polyethylene sheeting in preparation for off-site transportation and treatment/disposal (segregated from the non-impacted material). Following the installation of the tie-rods within this area, MAB backfilled with non-impacted native material and compacted the backfilled areas utilizing a hand held skid impactor and pneumatic vibratory hammer. MAB excavated down to approximately 7 feet bgs behind the southern deadmen anchor sheets (south of the sheets) in preparation to install the central deadmen whaler in this area. MAB encountered impacted material directly behind the southern deadmen anchor sheets at approximately 5 to 7 feet bgs, which consisted primarily of timbers, large debris, NAPL, and minimally impacted coal tar material. MAB removed the impacted material from this area and placed it on polyethylene sheeting in preparation for off-site transportation and treatment/disposal. Following the installation of the tie-rods within this area, MAB backfilled with non-impacted native material and compacted the backfilled areas utilizing a pneumatic vibratory hammer with the Link Belt excavator.

- On April 20, 2005, MAB continued excavation for installation of the eastern central tie-rods between the south Former Gas Holder Soil Removal Area between the southern sheetpile wall of the Southern Former Gas Holder Soil Removal Area (i.e., south of survey points 7 and 8) and south deadmen sheets to approximately 5 feet bgs. MAB encountered several abandoned 4-inch-diameter pipes in this area from

approximately 3 to 4 feet bgs. Isolated pockets of minimally impacted material were encountered in these trenches from 3 to 5 feet bgs, which consisted primarily of large timbers and wood debris. MAB removed all the pipes from this area and placed all impacted material removed from the trenches on polyethylene (segregated from non-impacted material) in preparation for off-site transportation and treatment/disposal. In addition, MAB excavated down to approximately 5 feet bgs behind the south deadmen anchor sheets (south of the sheets) and installed the eastern deadmen whaler in this area. A small quantity of minimally impacted material was encountered directly behind the southern deadmen anchor sheets from approximately 3 to 4 feet bgs, although the area appeared to be virtually non-impacted. MAB removed the impacted material from this area and placed it on polyethylene in preparation for off-site transportation and treatment/disposal. MAB then began to backfill over the tie-rods in the two eastern trenches using non-impacted native material. MAB performed compaction of the material using the pneumatic vibratory hammer attached to its Link Belt excavator.

- On April 20, 2005, MAB initiated excavation on the southwest side of the Former Gas Holder Soil Removal Area in preparation for installation of the crisscrossed tie-rods in the square area between the southwest sheetpile wall of the Northern Former Gas Holder Soil Removal Area (i.e., survey points 9 and 10) and the northern wall of the tar separator area and between the western wall of the Southern Former Gas Holder Soil Removal Area (i.e., survey points 8 and 9) and the western deadmen anchor sheets running parallel to Water Street. During excavation activities MAB encountered impacted material and coal tar from approximately 2 to 7 feet bgs in this area, and an MGP-odor was present. A non-impacted clay layer was observed at approximately 7 to 8 feet bgs throughout this area. MAB removed all impacted material encountered in this area and placed it in the stockpile within the Former Gas Holder Soil Removal Area alignment in preparation for off-site transportation and treatment/disposal. MAB excavated directly behind (the west side) the western deadmen wall on the southwest side of the Former Gas Holder Soil Removal Area to install the deadmen whalers. During the excavation MAB encountered coal tar and impacted material

behind the western deadmen wall down to 7 feet bgs. MAB also encountered a 2-foot by 1-foot wood box structure directly behind the western deadmen wall at approximately 4 to 5 feet bgs, which contained a 6-inch-diameter cast-iron pipe that appeared to contain coal tar. The pipe from this wood box ran in a south-southeast direction along the western deadmen wall toward the north wall of the Former Tar Separator Soil Removal Area. MAB removed the wood box structure, the 6-inch-diameter pipe and impacted material to approximately 7 feet bgs directly behind the western deadmen wall and placed the impacted material within the Former Gas Holder Soil Removal Area sheetpile alignment for future removal and off-site transportation and treatment/disposal. Earth Tech backfilled this area with imported soil fill following the installation of the tie-rods on April 25, 2005.

Contractor submittals related to the internal bracing system for the Former Tar Separator Soil Removal Area and Former Gas Holder Soil Removal Area are included in Appendix C.

ECSI initiated the installation of the piezometers within the Former Gas Holder Soil Removal Area on May 11, 2005. ECSI utilized a geo-probe to install a total of eight 1-inch-diameter PVC piezometers within the Northern and Southern Former Gas Holder Soil Removal Areas (see Figure 6). On May 13, 2005, ECSI developed the piezometer wells near the southwest corner (i.e., survey point 8) and along the southern sheetpile wall of the Southern Former Gas Holder Soil Removal Area (i.e., between survey points 7 and 8), during which NAPL was encountered and removed. NAPL was not encountered in any other piezometer. Information related to the piezometers within the Former Gas Holder Soil Removal Area is included in Appendix J.

Following the completion of the remedial activities within the Former Gas Holder Soil Removal Area, MAB removed the bracing system (including the tie-rods and deadmen anchor sheets). Lastly, as discussed above, impacted material and debris encountered within or outside of the proposed excavation areas during the installation of the bracing systems was removed and transported off-site for treatment/disposal.

5.3.7 Warehouse Stabilization and Monitoring

Consistent with the Final BOD and Contract Documents, on January 11, 2005 Precision Welding initiated fabrication of roof truss fishplates, which were installed by a subcontractor to Earth Tech. From January 12 to 13, and January 17 to 21, 2005, Earth Tech's carpentry subcontractor reinforced the roof trusses within the existing warehouse consistent with the Final BOD, and installed additional stabilization supports consistent with Earth Tech's contract submittal included in Appendix C.

A truss monitoring system, consisting of a laser level mounted on a level concrete pad and anchored in concrete, was established within the northwest interior of the warehouse and measured a target on each truss to monitor movement, if any. On January 24 and 25, 2005, Earth Tech's subcontractor completed the installation of the laser survey points for the warehouse trusses for monitoring.

Vibra Tech and C.T. Male installed a vibration monitoring system consisting of an on-site seismograph connected to an alarm, which was set to sound if vibrations reached a magnitude of 80% of the requirements of the specifications.

In addition, a total of 19 Avongaurd crack monitors were installed throughout the warehouse on January 24, 2005, and monitored throughout the remedial activities within the Former Tar Separator and Former Gas Holder Soil Removal Areas. On August 18, 2005, Earth Tech installed a new crack monitor in the crack at the northeast corner of the warehouse (set at zero) to monitor for additional warehouse settlement along the north wall.

In general, the only significant movement detected was observed on the crack monitors located on the exterior of the northeast corner of the warehouse. As of the last recorded measurement on August 22, 2005, the crack

located in the northeast corner of the warehouse increased by approximately 21 millimeters over the course of remedial activities. This area was subsequently repaired during the warehouse restoration activities.

Contractor submittals related to warehouse stabilization and monitoring are included in Appendix C. Monitoring data associated with the warehouse monitoring are included in Appendix N.

5.3.8 Soil Excavation and Backfilling

Earth Tech initiated excavation activities along the west end of the Western Former Tar Separator Soil Removal Area on April 6, 2005. Excavated material within the west end of the Western Former Tar Separator Soil Removal Area consisted primarily of coarse gravel coated with NAPL (to approximately 11 feet bgs), a non-impacted clay layer (approximately 11 to 13 feet bgs) and clean undisturbed silty material (approximately 13 feet bgs). As Earth Tech excavated further to the east within the Western Former Tar Separator Soil Removal Area, the amount of clay material decreased, and the material became more of a silty fine sand. The silty material was impacted with NAPL to approximately 13 feet bgs, but did not appear to be impacted from 13 to 14 feet bgs. During the excavation of the Western Former Tar Separator Soil Removal Area, Earth Tech excavated approximately 2 feet into the 10-foot-deep excavation area (from the boundary of the 14-foot-deep excavation area) to approximately 13 feet bgs to remove NAPL impacted material. Following the excavation of the Western Former Tar Separator Soil Removal Area, NAPL impacted material was observed on the east wall of the Western Former Tar Separator Soil Removal Area below the design excavation depth of 10 feet bgs of the adjacent Eastern Former Tar Separator Soil Removal Area. Earth Tech placed absorbent pads in the Western Former Tar Separator Soil Removal Area to remove NAPL impacted material (below the design excavation depth of 10 feet bgs) that entered the excavation area from the adjacent Eastern Former Tar Separator Soil Removal Area. Earth Tech scraped the bottom of the Western Former Tar Separator Soil Removal Area to

remove visibly impacted material as well as the material removed from directly against the sheetpile walls with hand shovels.

Earth Tech initiated excavation activities within the Eastern Former Tar Separator Soil Removal Area on April 8, 2005. Earth Tech initiated excavation in the west end of the Eastern Former Tar Separator Soil Removal Area, and encountered NAPL impacted material to 13 feet bgs (3 feet below the design excavation depth of 10 feet bgs). At 13 feet bgs a non-impacted silty material was encountered. Earth Tech proceeded to excavate from west to east to a depth of 13 feet bgs to remove all of the impacted material. Earth Tech completed excavation activities in this area on April 11, 2005.

Earth Tech performed crack and vibration monitoring for the warehouse and air monitoring during excavation activities. Groundwater encountered during excavation activities was pumped to a frac tank located in the Former Gas Holder Soil Removal Area. Earth Tech used an air handling unit and Bio-Solve to minimize odors during excavation activities (as approved by NYSDEC). Excavated material was stockpiled in the east side of the Former Tar Separator Soil Removal Area. Pulverized stone dust was mixed with the excavated material during loadout activities to stabilize the material and minimize odors prior to transport off-site to the Resoil facility for treatment and disposal. The excavation areas were covered with polyethylene sheeting during overnight periods to further minimize odors.

As documented in a May 2, 2005 letter from ARCADIS BBL to the NYSDEC (see Appendix L), consistent with the Final BOD, ARCADIS BBL collected post-excavation confirmation soil samples from the Western and Eastern Former Tar Separator Soil Removal Areas on April 7 and 11, 2005, respectively. ARCADIS BBL collected two grab soil samples to be analyzed for BTEX constituents and a composite sample of the material from the two sample locations to be analyzed for PAHs at the bottom of the Western and Eastern Former Tar Separator Soil Removal Areas. Specifically, the samples from the Western Former Tar Separator Soil Removal

Area were collected from 14 to 14.5 feet bgs, and the samples from the Eastern Former Tar Separator Soil Removal Area were collected from 13 to 13.5 feet bgs (below the design excavation depth of 10 feet bgs). Each sample was collected using a stainless steel trowel. The samples were sent to SGS for analysis; analytical results associated with the confirmation soil samples are included in Appendix L and summarized in Table 8.

Approximately 650 cy of material were excavated from the Former Tar Separator Soil Removal Area, which is greater than the design removal volume of 500 cy.

Earth Tech backfilled the Former Tar Separator Soil Removal Area to 5 feet bgs from April 8 to 12, 2005. Backfill material was placed in 1-foot-thick loose lifts using a CAT 330 excavator and a BW60H compactor. Following the removal of the internal bracing system (e.g., whalers, struts, etc.) from the Former Tar Separator Soil Removal Area, Earth Tech completed the backfill activities utilizing a Dynapac 5021 compactor on May 3 and May 4, 2005. Earth Tech installed a total of approximately 650 cy of imported soil within the Former Tar Separator Soil Removal Area. In accordance with the Final BOD, SMT performed compaction tests within the Former Tar Separator Soil Removal Area using a nuclear density gauge. Compaction testing was conducted following the placement and compaction of backfill material in 1-foot-thick lifts staring at 5 feet bgs. Each test exceeded the required minimum compaction criteria. The compaction test results are included in Appendix O.

On May 6, 2005, Earth Tech initiated excavation activities within the western 16-foot-deep excavation area of the Former Gas Holder Soil Removal Area (i.e., the Northern Former Gas Holder Soil Removal Area). Earth Tech encountered heavily impacted material, coal tar, brick debris, and timbers to approximately 10 feet bgs. A non-impacted clay layer and native silt layer was encountered at approximately 13 feet bgs. Pockets of course gravel material containing coal tar were present below 13 feet bgs in the middle of the Northern Former Gas Holder Soil Removal Area; Earth Tech excavated to approximately 14 feet bgs to remove the pockets of impacted material. Non-impacted soil was observed at 14 feet bgs. On May 10, 2005, a 12-inch-dimater wood

pipe was encountered along the west wall. The pipe ran in a southwest direction from the middle of the north wall to the southwest corner of the cell. The pipe did not appear to be impacted, but was removed nonetheless.

On May 12, 2005, Earth Tech excavated four test pits in the Northern Former Gas Holder Soil Removal Area to a depth of 16 feet bgs to confirm that no impacted material was present below 13 feet bgs. Earth Tech encountered minimal impacted material in one of the test pits (which was removed) located near the center of the west cell, and no NAPL or coal tar was observed below 13 feet bgs. In addition, on May 13, 2005, Earth Tech excavated three additional test pits in the eastern part of the Northern Former Gas Holder Soil Removal Area to a depth of 16 feet bgs to confirm that no impacted material was present below 13 feet bgs. Native silt material was present from 13 to 16 feet bgs; no impacted material was observed.

On May 20, 2005, Earth Tech initiated excavation activities within the Southern Former Gas Holder Soil Removal Area (i.e., the 20-foot-deep excavation area), which continued to June 6, 2005. Earth Tech exposed the brick wall of the southern brick holder during excavation of impacted material to a depth of 16 feet bgs. Earth Tech dismantled the walls of the brick holder using a Link Belt PC-130 excavator with a hoe-ram. During excavation of the southern holder, Earth Tech encountered impacted material, coal tar, and NAPL to approximately 18 feet bgs. Earth Tech excavated inside and outside of the south brick holder to approximately 18 to 20 feet. A 5-inch-diameter pipe along the northern wall of the south brick holder was encountered at approximately 18 to 20 feet; the pipe contained impacted water, coal tar, and NAPL. Earth Tech removed the pipe section (including its contents) within the brick holder. A layer of non-impacted silt was observed at approximately 13 to 14 feet bgs outside of the brick wall (near the southwest corner of the Southern Former Gas Holder Soil Removal Area; survey point 8), and deeper pockets of NAPL were present in this area. During excavation activities east of the south holder (20-foot-deep excavation area), small pockets of coal tar and wood debris stained with coal tar were present along the south wall of the Southern Former Gas Holder Soil Removal

Area at approximately 20 feet. Small pockets of coal tar and NAPL were present on the bottom of the north holder (20-foot-deep excavation area). All impacted material was removed and disposed of or treated off-site.

On June 6, 2005, two test pits were excavated to approximately 14 to 16 feet bgs within the 16-foot-deep excavation area (i.e., west of the north brick holder) to confirm the depth of impacted material. Earth Tech then initiated excavation of the 16-foot-deep excavation area (i.e., west of the north brick holder) on June 7, 2005. A pipe sump, stained with coal tar and NAPL, was removed at approximately 8 to 10 feet bgs east of the eastern end of the northwestern sheetpile alignment of the Northern Former Gas Holder Soil Removal Area (i.e., survey point 11). Earth Tech continued excavation of the 16-foot-deep excavation area and encountered/removed a 3-inch-diameter pipe at approximately 8 feet bgs (i.e., between survey points 2 and 12). During excavation of the north holder, a number of 18-inch-diameter concrete pillars were encountered to a depth of approximately 20 to 25 feet bgs. Non-impacted silt continued to be encountered at 14 feet bgs in this area. Earth Tech dismantled and removed the pillars to the depth of non-impacted material (approximately 14 feet bgs) and the excavation was stopped short of the design depth of 16 feet bgs. On June 13, 2005, two test pits were excavated from approximately 14 to 16 feet bgs to verify with the NYSDEC that no impacted material was observed at this depth. One additional test pit was excavated in the north holder from approximately 14 to 16 feet bgs and non-impacted silt was present in the test pit as well. The north holder excavation activities were completed on June 14, 2005.

As documented in a June 3, 2005 letter from ARCADIS BBL to the NYSDEC (see Appendix L), ARCADIS BBL collected one grab and one composite soil sample from the west side of the 16-foot-deep excavation area at a depth of 13 to13.5 feet bgs (representing the excavation bottom) on May 13, 2005. On June 6 and 24, 2005, ARCADIS BBL collected one grab and one composite soil sample from the west and east side of the 20-foot-deep excavation area at a depth of 20 to 20.5 feet bgs (representing the excavation bottom). The analytical results were provided to the NYSDEC in June 21 and July 13, 2005 letters from ARCADIS BBL, respectively

(Appendix L). In addition, as documented in a June 28, 2005 letter from ARCADIS BBL to the NYSDEC (Appendix L), ARCADIS BBL collected one grab and one composite soil sample from the western portion of the east side of the 16-foot-deep excavation area at a depth of 14 to14.5 feet bgs on June 14, 2005 (representing the excavation bottom). Each sample was collected using a stainless steel trowel. The samples were sent to SGS for analysis; each grab soil sample was analyzed for BTEX constituents and each composite sample was analyzed for PAHs. The analytical results associated with the confirmation soil sampling are included in Appendix L.

Excavation and stockpile materials were sprayed with odor suppressant to minimize odors. Open excavations were covered with odor suppressant foam, and stockpiles were covered with polyethylene sheeting and canvas tarps to further minimize odors. Stone dust was used to augment excavated material for stabilization. Excavated materials were stockpiled within the Former Gas Holder Soil Removal Area for load out from a temporary access road along the east side of the Former Gas Holder Soil Removal Area. Earth Tech used a CAT 4200 backhoe, CAT 330 excavator, Link Belt 225 excavator, CAT mini-excavator, RC-100 Mini loader, and Deere 625 loader to facilitate excavation activities. Material was transported to RE·SOIL, Albany County Landfill, and ESMI via Geisel, Fiacco, and Goulet trucking companies.

Earth Tech backfilled the Former Gas Holder Soil Removal Area to 5 feet bgs on the following dates in 2005: May 16 to 18, June 9 and 10, 13 to 17, 20 to 24, 27 to 30, and July 1, 4 to 8, and 11. Backfill material was placed in 1-foot-thick loose lifts utilizing a Dynapac 5021 compactor. Earth Tech installed a total of 8,128 cy of imported soil within the Former Gas Holder Soil Removal Area. In accordance with the Final BOD, SMT performed compaction tests within the Former Gas Holder Soil Removal Area using a nuclear density gauge. Compaction testing was conducted following the placement and compaction of backfill material in 1-foot-thick lifts starting at 5 feet bgs. Each test exceeded the required minimum compaction criteria. The compaction test analytical results are included in Appendix O.

6. Environmental Monitoring

6.1 Community Air Monitoring Program

Air monitoring was performed during intrusive remediation activities as prescribed in the CAMP. The purpose of the air monitoring was to monitor and measure potential airborne releases of constituents of concern during RA activities that could affect downwind communities. The community air monitoring program included real-time and time-integrated air monitoring as described below.

6.1.1 Real-Time Air Monitoring

Earth Tech performed real-time air monitoring for VOCs and particulate matter less than 10 microns in diameter (PM10) during implementation of intrusive activities (e.g., excavation and material handling activities). Earth Tech monitored particulate matter using a Thermoandersen PDR-1000AN. Perimeter and work zone VOCs were monitored using a PGM-5020 AreaRAE with a ProRAE Remote data collection system, and a MultiRAE Plus and MiniRAE 2000, respectively. In addition, Earth Tech collected meterological data using a 6150 Vantage Pro Weather Station with 6510C WeatherLink data logger. See Appendix C for Contractor submittals related to the air monitoring program. Earth Tech's real-time air monitoring results are provided in Appendix G.

In addition to Earth Tech's air monitoring activities, ARCADIS BBL also performed real-time air monitoring for VOCs and PM10 using a MiniRAE 2000 and a Thermoandersen PDR-1000AN, respectively, on the following dates: October 8, 18, 20, and 26, 2004; November 2 and 15, 2004; December 12, 2004; and May 9, 2005. ARCADIS BBL performed the additional real-time air monitoring as a quality assurance and quality

control measure to supplement Earth Tech's air monitoring program. No exceedances were detected by ARCADIS BBL. Appendix H contains ARCADIS BBL's real-time air monitoring logs.

6.1.2 Time-Integrated Air Sampling

Time-integrated air samples were collected for analysis of PAHs and VOCs to document the effectiveness of Earth Tech's air emission controls. ARCADIS BBL conducted time-integrated air samples using modified USEPA Method TO-13 for PAHs and USEPA Method TO-15 for VOCs for comparison to the Draft New York State Air Guide-1 (Air Guide-1) Short Term Guideline Concentrations (SGCs).

ARCADIS BBL collected a total of 33 time-integrated air samples (from one upwind and two downwind locations). Time-integrated air samples were collected once per week for the first month of sampling (i.e., October 6, 14, 22, and 28, 2004) during excavation and material handling activities. During the first month of time-integrated air sampling no exceedances of the SGCs were observed. As such, in accordance with the CAMP, time-integrated air samples were collected twice a month thereafter during intrusive activities on the following dates: November 10 and 23, 2004; December 22, 2004; May 10 and 25, 2005; and June 9 and 21, 2005. No exceedance of the SGCs were observed during the subsequent bimonthly time-integrated air sampling either. Time-integrated air sampling analytical results are summarized in Tables 3A and 3B and included in Appendix I.

6.2 Water Column and Surface Water Monitoring

Consistent with the CQAP, ARCADIS BBL performed water column monitoring activities during sheetpile installation and intrusive soil/sediment activities in, and around, the embayments of the Hudson River. On March 24, 2004, ARCADIS BBL installed an ISCO water column monitor at two locations (i.e., one upstream

and one downstream location) within the Hudson River approximately 200 feet from Embayment #1. On June 18, 2004, the ISCO water column monitor at the downstream location was repositioned south of Embayment #3 to monitor the impact, if any, of discharging treated water from the TWTS to the Hudson River. In general, samples were collected at approximately mid-depth on an hourly basis to form one composite sample per location. An action level of 50 nephelometric turbidity units (NTUs) variance between the upstream and downstream locations was applied. Turbidity monitoring yielded a total of 264 upstream and downstream measurements. All results were below the action level for the full extent of RA activities. The monitoring results were documented by ARCADIS BBL and are summarized in Table 4.

7. Citizen Participation

Citizen participation activities were undertaken to facilitate the public's understanding of the environmental issues and inform interested parties of the nature and progress of the remedial activities at the Site.

Before initiating remedial activities at the Site, a public meeting was held on March 23, 2004 at the City of Hudson's City Hall to inform the surrounding community and interested parties about the planned remedial efforts at the Site. The meeting date and location were published in local newspapers, and mailings (to potentially affected/interested public individuals and groups) and Community Fact Sheets were distributed.

Consistent with the CPP, repository sites were maintained at both the Hudson Area Association Library in Hudson, New York, and the NYSDEC in Albany, New York. The following documents are maintained in these repositories: ROD, RD Work Plan, EE/CA, Final BOD, CAMP, CQAP, SAP, WHDP, and CPP. The documents maintained at the Hudson Area Association Library repository were enclosed in an April 7, 2004 letter from ARCADIS BBL to the Hudson Area Association Library (see Appendix A).

In addition to these pre-remedial activities, a representative was present on-site and available to answer questions for the duration of remedial activities at the Site, and contact information for a National Grid representative was also posted on-site via signage to respond to additional inquiries. An ARCADIS BBL representative was also on-site during the City of Hudson's Flag Day events during 2004 and 2005 to provide further information and answer questions from the public.

8. Site Restoration

This section discusses the site restoration activities that were conducted following soil and sediment removal and replacement activities associated with the Peninsula Soil Removal Area, Surface Soil Removal Area, the Embayment #1 and SD-54 Cell Sediment Removal Area, and Former Tar Separator and Former Gas Holder Soil Removal Areas.

8.1 Embayment #1 and Waterfront Park Restoration

Prior to the initiation of site restoration activities along the south bank of Embayment #1, Earth Tech installed a new silt curtain on August 16, 2005. The original silt curtain was removed on August 11, 2005 due to its poor condition. Earth Tech removed the new silt curtain from the mouth of Embayment #1 on September 28, 2005 following the completion of restoration activities within Embayment #1.

On August 16, 2005, Earth Tech initiated the excavation of the south bank of Embayment #1 to slope the bank in preparation for the installation of a non-woven geotextile and rip rap within this area. As documented in an August 2, 2005 letter from ARCADIS BBL to the NYSDEC (Appendix A), as an additional layer of protection, Earth Tech installed Organoclay Reactive Core Mat (RCM) over the excavated areas within the south bank of Embayment #1 prior to the placement of the specified non-woven geotextile fabric, erosion protection stone, and Type 1 armor stone. Earth Tech initiated the installation of the Organoclay RCM, non-woven geotextile, and the erosion protection stone over the south bank on August 17, 2005. Earth Tech and its subcontractors, SDI and Precision Welding, cut the steel sheets of the south sheetpile wall of Embayment #1 to the design elevations, and draped the Organoclay RCM over the top of the steel sheets to create a seal between Organoclay RCM and the south sheetpile wall. A Bentomat geosynthetic clay liner (GCL) was also used due to the availability of the

material during construction. Earth Tech initiated the installation of Type 1 armor stone over the erosion protection stone on August 19, 2005. Earth Tech completed installation activities from west to east along the south bank of Embayment #1.

Earth Tech installed a total of six light poles within the park area. As necessary, Earth Tech excavated shallow trenches (approximately 3 to 4 feet deep) to install electrical conduits for utilities (e.g., light poles) for the new park area. Earth Tech backfilled the trenches with run-of-bank sand and compacted the material with a plate tamper. On September 29, 2005, Earth Tech drilled to approximately 7 feet bgs at six designated light pole locations using a drill rig with a 20-inch-diameter auger bit. A small amount of stained material was removed from a light pole location north of the southeast corner of Lot 16.2 (adjacent to Embayment #2) and a diesel fuel odor was present. The stained material was removed from this location during the auguring process and stockpiled in preparation for off-site transportation and disposal. Earth Tech was unable to properly auger one of the light pole locations (located on the northeast side of Embayment #2) due to shallow groundwater in this area; instead, Earth Tech excavated this location to achieve the desired depth of approximately 7 feet bgs. During the excavation activities, Earth Tech encountered and removed a small amount of minimally impacted debris material.

Earth Tech then installed sonotubes in five of the six light pole locations and filled each sonotube with concrete to create a footer for each light pole. Earth Tech was unable to install a sonotube in one of the light pole locations (located on the northeast side of Embayment #2) due to the shallow groundwater; instead, Earth Tech installed a circular form out of rebar with a rectangular base to serve as footer for the light pole. Earth Tech poured concrete over the bottom of the rebar form to a point above the shallow groundwater and let the concrete set. On September 30, 2005, Earth Tech placed a shortened sonotube over the top of the concrete and filled the sonotube with concrete to complete the footer in this location. A representative from SMT was on-site to evaluate the integrity of the concrete poured for the light pole footers. On October 10 and October 11, 2005,

Earth Tech completed the installation of the six light poles in Lot 16.2. Electricians from L&L made the connection to provide power and installed the crooks and light bulbs in the six new light poles installed in Lot 16.2.

At the request of the City, Earth Tech also installed a pull box and electrical conduit along the north side of Embayment #1 on September 30, 2005.

Earth Tech excavated a trench along the north sheetpile wall within Embayment #1 (between the north sheetpile wall and the concrete retaining wall north of the north sheetpile wall), and backfilled the trench with non-woven geotextile and crusher-run stone on September 2, 2005. The crusher-run stone was installed to provide frost protection within this area. On September 7, 2005, Precision Welding initiated the installation of the steel cap along the north sheetpile wall of Embayment #1, which was completed on September 27, 2005.

On October 3, 2005, Earth Tech initiated the placement of crusher-run stone for the layout of the sub-grade for the new walkway (to be brick-stamped) within Lot 16.2. On October 5 and 7, 2005, Colarusso installed asphalt over the crusher-run stone for the new walkway in Lot 16.2.

On October 3, 2004, Cloverleaf Nurseries, a subcontractor to Earth Tech, installed a total of 15 trees within Lot 16.2. On October 4, 2005, Earth Tech began placement of the topsoil from Gro Max, LLC over the surface of the peninsula south of Embayment #1. On October 7, 2005, Cloverleaf Nurseries initiated the installation of sod in Lot 16.2 (above the topsoil) and around the comfort station in the City's park located north of Lot 16.2. Cloverleaf Nurseries completed the installation of the sod placement over the eastern section of Lot 16.2 (excluding the area east of Embayment #2 where the grass-crete pad was installed) on October 17, 2005. Cloverleaf Nurseries also placed sod (excess material) over an area east of the office trailers (extreme southeastern portion of the Former Gas Holder Soil Removal Area).

On October 4, 2005, Colarusso excavated the western edge of Water Street (beginning near the City Park entrance) in preparation for sidewalk installation along the east side of Lot 16.2. Colarusso placed and compacted crusher-run stone along the western edge of Water Street for subbase. On October 10, 2005, Colarusso set the forms and rebar for the concrete sidewalk to be installed along the east side of Lot 16.2, and installed concrete within the forms. On October 7, 2005, a crew from Colarusso installed the concrete curb along the east side of Lot 16.2.

On October 4, 2005, Earth Tech installed the form and sonotube for the new flagpole to be installed on the north side of Embayment #1 and a bike rack in Lot 16.2 on the northeast side of Embayment #2. On October 7, 2005, Earth Tech installed park benches and trash receptacles on their concrete foundations around Lot 16.2. On October 14, 2005, Earth Tech installed a new flagpole on the north side of Embayment #1.

On October 14, 2005, Colarusso completed paving the western edge of Water Street, and began the installation of the grass-crete pad between the new concrete sidewalk and the new asphalt walkway on the east side of Embayment #2. Cloverleaf Nurseries began and completed sod placement over the area where the grass-crete pad was installed on the east side of Embayment #2.

The new waterfront park expansion was opened to the public on October 17, 2005, with National Grid, NYSDEC, ARCADIS BBL, and City representatives present to answer questions regarding the RA.

8.2 Former Gas Holder Soil Removal Area

On August 2, 2005, Earth Tech fine graded the western surface of the Former Gas Holder Soil Removal Area with an AVS posi-track loader prior to the installation of the final surface material. Earth Tech initiated

installation of approximately 275 cy of stone (i.e., No. 3 stone and crusher-run stone) on August 3, 2005. Earth Tech used a AVS posi-track loader, RC-100 Mini loader, CAT4200 backhoe, a Link Belt 225 excavator, and Dynapac 5021 compactor on-site to facilitate site restoration activities. Certain crushed stone removed from the temporary TWTS pad was also transported to and used at the Former Gas Holder Soil Removal Area. Earth Tech completed the placement of the stone material on August 8, 2005.

On August 5, 2005, Earth Tech completed backfilling the uppermost portion of Former Gas Holder Soil Removal Area with general fill material. Where necessary, Earth Tech installed topsoil, from Gro Max, LLC facility, within the Former Gas Holder Soil Removal Area to final grade. Topsoil installation was completed on August 16, 2005. On August 18, 2005, landscapers from Seasons East, Inc. hydroseeded the topsoil graded on the east side of the Former Gas Holder Soil Removal Area. On August 22, 2005, Earth Tech mobilized several sprinklers to water the topsoil hydroseed on the east side of the Former Gas Holder Soil Removal Area.

Earth Tech's fence subcontractor, CFI, arrived on-site and began installing fence posts around the perimeter of the Former Gas Holder Soil Removal Area on August 23, 2005. Due to obstructions, CFI had difficulty installing the fence corner post near the northwest corner of the warehouse. Earth Tech excavated this area to allow CFI to install the corner post for the Former Gas Holder Soil Removal Area perimeter fencing (see Section 10 of this Final Report). Following excavation and backfill of this area, CFI installed the fence post and fencing. CFI completed the fence installation within this area on September 2, 2005.

9. DNAPL Monitoring System Installation

This section discusses the DNAPL monitoring system installed at the Site during the performance of the RA program.

9.1 DNAPL Collection Well Installation

Consistent with the Final BOD and Contract Documents, PWI as a subcontractor to Earth Tech, installed a DNAPL collection well (i.e., CW-01R) in the south holder area of the Former Gas Holder Soil Removal Area (see Figure 6) to replace the original collection well CW-01. PWI initiated the installation of CW-01R on August 16, 2005, at a point approximately 45 feet north of the northeast corner of the warehouse. PWI performed continuous split spoon sampling of the native material (i.e., below the 20-foot-deep excavation depth) in 2-foot intervals for visual inspection to determine if DNAPL was present. Consistent with the Contract Documents, split spoon sampling was conducted until two consecutive sample intervals were free of DNAPL. PWI continued to encounter small amounts of DNAPL and coal tar intermingled with the tight native silty material in all 2-foot sample intervals from 20 to 30 feet bgs (DNAPL was first observed at approximately 21 feet bgs) with the material observed to exhibit a MGP-odor. The most significant amount of DNAPL was encountered in the 28- to 30-foot interval.

On August 16, 2005, PWI continued the installation of the CW-01R well to 35 feet bgs. No DNAPL was present in the 30- to 32-foot and 32- to 34-foot depth intervals, although the material from 30 to 31 feet bgs had a noticeable MGP-odor. The material encountered from 30 to 34 feet bgs was primarily a non-impacted clayey silt material. PWI collected a sample from the 34- to 35-foot depth interval to ensure that two full 2-foot depth intervals were free of DNAPL. The material collected from the 34- to 35-foot depth interval consisted of a non-

impacted clay silt with no odor. Based upon the observations of the material at the CW-01R well location, the sump for this well was installed from 32 to 35 feet bgs, and the well was screened from 19.5 to 32 feet bgs (covering the area where DNAPL was encountered) between the excavation depth of 20 feet bgs (clean imported fill to 20 feet bgs) and the non-impacted native material at 32 feet bgs. On August 17, 2005, PWI completed the installation of sand pack and cap for the CW-01R DNAPL collection well. Copies of the boring logs are included in Appendix P.

9.2 DNAPL Monitoring Well Installation

To monitor the potential presence and quantity of DNAPL near Embayment #1, three DNAPL monitoring wells were installed, as follows.

On August 18, 2005, PWI initiated the installation of the DNAPL monitoring well (RW-1) located along the east side of the north wing wall on the north side of Embayment #1, approximately 5 feet north of the Embayment #1 northern perimeter sheetpile wall. PWI installed RW-1 to a depth of 27 feet bgs using a drill rig. PWI set the well screen interval at 10 to 25 feet bgs, and completed grouting of the sump on this date. On August 22, 2005, PWI completed installation of the sand pack for RW-1.

On August 19, 2005, PWI initiated the installation of DNAPL monitoring well (RW-2) located along the east side of the southern end of the south wing wall on the south side of Embayment #1, approximately 13 to 14 feet south of the Embayment #1 southern perimeter sheetpile wall. PWI installed RW-2 to a depth of 27 feet bgs using a drill rig. PWI set the RW-2 well screen interval at 5 to 25 feet bgs. On August 22, 2005, PWI completed installation of the sand pack and cap for RW-2.

On August 23, 2005, PWI initiated the installation of DNAPL monitoring well (RW-3) located adjacent to the south side of Embayment #1, west of the NYSDEC's AOC #1. PWI installed RW-3 to a depth of 27 feet bgs using a drill rig. PWI set the RW-3 well screen interval at 5 to 25 feet bgs, and grouted the sump. On August 23, 2005, PWI completed installation of the sand pack and cap for RW-3.

On August 23, 2005 PWI developed RW-1 and RW-2; RW-3 was developed on August 24, 2005. Copies of the boring logs are included in Appendix P.

9.3 DNAPL Monitoring

As required by the ROD and Order on Consent, a post-remedial DNAPL monitoring plan will be implemented at the Site. Monitoring activities will include DNAPL monitoring, groundwater monitoring, and periodic maintenance (as needed) as discussed in the January 2007 *Operation, Maintenance, and Monitoring (OM&M) Plan* (ARCADIS BBL, 2007).

10. Modifications to RA

During the RA several modifications to the approved design documents were implemented. Those modifications were discussed with NYSDEC prior to their implementation and are summarized in this section.

10.1 Air Emissions/Odor Controls

The temporary excavation enclosure was not used as an air emissions/odor control during excavation activities within the Former Tar Separator or the Former Gas Holder Soil Removal Areas, due to the difficulties associated with the relocation of the temporary excavation enclosures as well as space limitations. Alternative approaches were used within these areas as discussed in Section 4.4 of this Final Report.

10.2 Excavation Limits

The alignment of the north sheetpile wall of Embayment #1 and the East Bank Soil Removal Area was adjusted to the south to account for obstructions within the original design alignment. The sheetpile wall was installed as close as possible to a concrete retaining wall located north of Embayment #1; however, wood pilings below the retaining wall were slanted diagonally outward away from the concrete wall. With the approval of the NYSDEC, the alignment of the north sheetpile wall was moved south along the edge of the retaining wall in an effort to avoid the diagonal wood bracing below the concrete retaining wall. The void north of the sheetpile wall was investigated to determine the extent, if any, of impacted material in this area. The alignment of the north wall returned to its originally designed alignment at approximately 110 feet to 115 feet east of the northwest corner of the sheetpile wall (as shown on Figure 3).

As described in Section 4.4 of this Final Report, the temporary steel sheetpile walls west of Water Street (i.e., surrounding Embayment #1 and the East Bank Soil Removal Area) were not removed following completion of the remedial activities within Embayment #1 and the East Bank Soil Removal Area. Instead, the steel sheetpile walls were left in-place.

Lastly, as described in Section 4.4 of this Final Report, following the excavation of two test pits in the Former Gas Holder Soil Removal Area, Earth Tech extended the sheetpile wall alignment to encompass the entire former brick gas holder on the southeast side of the Former Gas Holder Soil Removal Area.

10.3 Engineered Containment System - Southwest Corner of Embayment #1

On January 12 and 13, 2005, Earth Tech installed an engineered containment system (containment system) within the southwest corner of Embayment #1 to encapsulate an isolated area of impacted material that remained in-place (below the designed excavation depth of 10 feet bgs) following excavation activities. Impacted material was removed to a depth of 12 feet bgs; however, excavation below 12 feet bgs within the southwest corner of Embayment #1 was determined by Earth-Tech to be unsafe due to the proximity of the impacted material to the sheetpile wall. As such, a containment system was installed. The engineered containment system installed in the southwest corner of Embayment #1 is described in further detail in Section 4.4 of this Final Report.

10.4 Embayment #1 Restoration Activities

As documented in an August 2, 2005 letter from BBL to the NYSDEC (Appendix A), Earth Tech installed Organoclay RCM as an additional geosynthetic layer along portions of the Embayment #1 shoreline. The installation of the Organoclay RCM is described in Section 8 of this Final Report.

10.5 Embayment #2 Restoration Activities

Although not a component of the OU-1 Site, work activities were performed within Embayment #2 and are summarized in this section.

Prior to performing restoration activities along the banks of Embayment #2, Earth Tech installed a silt curtain along the mouth of Embayment #2 on November 30, 2004. In addition, Earth Tech installed an 11-foot and 8-foot silt curtain across the mouth of Embayment #2 on March 29 and March 30, 2005, respectively.

On December 1, 2004; December 20, 2004; and March 7 to March 8, 2005; Earth Tech conducted preparation activities (e.g., clearing and grubbing, fence removal, debris removal, etc.) in preparation for Embayment #2 restoration activities. Earth Tech removed the fence along the southern perimeter of the Site, adjacent to the CSX property, to allow access to the southern bank of Embayment #2. Duryea, a subcontractor to Earth Tech, performed clearing and grubbing activities along the banks of Embayment #2. The brush and wood debris generated during this activity was transported off-site for disposal.

Earth Tech initiated the removal of horizontal and vertical timbers (above the water line) along the shoreline of Embayment #2 using a floating platform (installed in Embayment #2 to serve as a working platform) and CAT 330 excavator on April 14, 2005. As needed, Earth Tech performed limited excavation activities to remove tree

trunks and debris from the banks of Embayment #2. Earth Tech continued clearing activities along the banks of Embayment #2 on April 18 to 22, April 25 to 29, and May 2 to 4, 2005. During timber and debris removal along the north bank of Embayment #2 on April 27, 2005, Earth Tech removed a large piece of concrete along the northwest side of Embayment #2. On April 28 and 29, 2005, Earth Tech removed a large piece of concrete debris embedded approximately 3 to 4 feet into the sediment, located on the southwest tip of the peninsula. The concrete debris was broken-up with a hoe-ram and transported off-site for disposal. Timbers, trash, and debris material removed during clearing activities along the shoreline of Embayment #2 were transported off-site to the Albany County Landfill.

On April 19, 2005, Earth Tech initiated the installation of non-woven geotextile fabric and Type 2 armor stone along the southern bank of Embayment #2. Earth Tech continued the placement of the geotextile fabric and Type 2 armor stone along the south bank of Embayment #2 on April 20 to 22, 25 to 26, and 28, 2005. On April 22, 2005, Earth Tech initiated the installation of the geotextile fabric and Type 2 armor stone along the east bank of Embayment #2. Placement of the non-woven geotextile fabric and Type 2 armor stone along the north bank of Embayment #2 was initiated on April 26, 2005, and continued on April 28 to 29 and May 2 to 4, 2005. On May 5, 2005, Earth Tech initiated the installation of the non-woven geotextile fabric and Type 2 armor stone along the river bank near the northwest corner of Embayment #2.

In general, the Embayment #2 restoration activities were conducted during low tide, and turbidity monitoring was performed throughout restoration activities.

10.6 Additional Areas of Concern Identified by NYSDEC

During RA activities at the Site, the NYSDEC identified several “Areas of Concern” (AOCs) that required additional investigation and potential remediation prior to the completion of RA activities (see Figures 9 and

10). The additional AOCs were identified in a March 3, 2005 letter from the NYSDEC to National Grid. Following discussions between National Grid and the NYSDEC, National Grid performed the following investigation and remediation activities associated with the additional AOCs identified by the NYSDEC, as described below. Correspondence related to these AOCs is included in Appendix A.

10.6.1 AOC #1

Additional investigation activities (i.e., installation of 11 test borings) were conducted within AOC #1 (adjacent to the southern sheetpile wall in Embayment #1) to determine the presence, if any, of impacted material within this area. PWI initiated the installation of the test borings in AOC #1 on June 23, 2005 using a drill rig (soil boring logs are included in Appendix P). Following installation, PWI tremie-grouted each test boring location. Test boring TB-86 was installed outside the original grid, west of the northwestern boring (TB-85) and approximately 4 feet south of the sheetpile wall, to delineate the presence of impacted material. Impacted material containing coal tar and NAPL was encountered from approximately 10 to 17 feet bgs in boring TB-89. TB-92 contained visibly impacted material at 5 to 9 feet bgs. On June 28, 2005, PWI installed TB-93 at the northeast corner of AOC #1 and encountered impacted material at a depth of 8 to 18 feet bgs. On June 28, 2005, PWI installed an additional test boring (TB-95) because TB-94 was installed several inches within the south sheetpile wall. Installation of this 11th, and final, test boring represented the last investigative activity undertaken at AOC #1 before the start of remedial activities in this area (Note that as-built survey locations of these test borings are not shown as the entire area in which they were installed was excavated, shortly thereafter, as further discussed below).

While excavating the southern bank of Embayment #1 to slope the bank in preparation for restoration activities (e.g., placement of erosion protection stone), Earth Tech encountered stained timbers west of RW-3 along the south bank of Embayment # 1 at approximately 7 feet bgs. On August 28, 2005, Earth Tech excavated a trench

from RW-3 to a point approximately 25 to 30 feet west of RW-3 (within NYSDEC AOC #1) to remove all stained timbers in this area to approximately 8 feet bgs. Earth Tech installed localized absorbent booms to the west of the excavation area following the observation of a sheen on the water during excavation activities.

On August 30, 3005, Earth Tech excavated impacted material and timbers that were located adjacent to the eastern end of the south bank of Embayment #1, within the former NYSDEC AOC #1. Stained timbers, debris, and coarse gravel material impacted with coal tar were encountered and removed below 8 feet bgs, and an MGP odor was present during excavation in this area. Earth Tech continued excavating this area (approximately 25 feet long by 6 feet wide) to approximately 15 to 16 feet bgs. Stained timbers, debris, and coarse gravel material impacted with coal tar were encountered and removed to approximately 16 feet bgs. Earth Tech placed excavated materials on a temporary staging pad (consisting of an earthen berm overlaid with a polyethylene liner) on the peninsula south of Embayment #1. Stone dust was mixed with the excavated material for stabilization, prior to the material being transported off-site for disposal. Earth Tech established a containment system around the excavation area consisting of the following: absorbent pads on the water surface in the excavation area; a row of absorbent booms along the northern end of the excavation area (adjacent to where the sheeting was previously cut along the south wall of Embayment #1); Organoclay RCM and bento-mats covering the armor stone between the excavation area and the southeast side of Embayment #1; and a section of geotextile fabric covering the mats above the armor stone for primary sheen containment. In addition, Earth Tech established a second row of localized absorbent booms across the southeast end of Embayment #1, which ran from the sheeting adjacent to well RW-3 to the rip rap in the middle of the east bank area for secondary containment. At the request of the NYSDEC, a new absorbent boom was also installed across the mouth of Embayment #1.

On August 31, 2005, Earth Tech excavated the southern sidewall of the trench adjacent to the eastern end of the south bank of Embayment #1 (within NYSDEC AOC #1) to remove impacted material and timbers that were

identified below 8 feet bgs. Earth Tech encountered and removed large stained timbers, debris, cobbles and coarse gravel material impacted with coal tar from approximately 8 to 16 feet bgs along the south sidewall of this excavation area. A non-impacted silt layer was encountered and removed at approximately 14 to 15 feet bgs in the southwest area of the excavation, an impacted coarse gravel lens was encountered and removed at 15 to 16 feet bgs as Earth Tech excavated eastward along the south side of this excavation area. Following excavation of impacted materials, the total area excavated was approximately 25 feet long by 9 feet wide by 18 feet bgs. Earth Tech placed the excavated materials on a temporary staging pad (consisting of an earthen berm overlaid with a polyethylene liner) on the peninsula south of Embayment #1. Stone dust was mixed with the excavated material for stabilization, prior to the material being transported off-site for disposal.

On September 1, 2005, Earth Tech excavated the southern sidewall of the trench adjacent to the eastern end of the south bank of Embayment #1 (within NYSDEC AOC #1) to remove impacted material and timbers that were visible below 8 feet bgs. The excavation was completed in a southeast direction along the southern sidewall. Large stained timbers, debris, cobbles, and coarse gravel material impacted with coal tar were encountered below 8 feet bgs. A vertical timber wall was also encountered (and removed) running in a southeast direction from a point along the south sheetpile wall of Embayment #1 approximately 2 to 3 feet west of RW-3. Earth Tech excavated approximately 4 feet of material outside the south side of the vertical timber wall; impacted material was encountered from approximately 8 to 10 feet bgs. An apparent non-native clay layer was encountered from approximately 10 to 12 feet bgs and a non-impacted silt layer was encountered from approximately 12 to 13 feet bgs during these excavation activities. Earth Tech placed excavated materials on a temporary staging pad (consisting of an earthen berm overlaid with a polyethylene liner) on the peninsula south of Embayment #1. Stone dust was mixed with the excavated material for stabilization, prior to the material being transported off-site for disposal.

On September 6, 2005, Earth Tech excavated the southern sidewall of the trench adjacent to the eastern end of the south bank of Embayment #1 (within NYSDEC AOC #1) to remove impacted material and timbers that were visible below 8 feet bgs. Earth Tech excavated in the southeast direction along the southern sidewall along the inside of the vertical timber wall, and approximately 4 to 5 feet south of the vertical timber wall. Earth Tech encountered and removed impacted material on the south side of the vertical timber wall from approximately 8 to 10 feet bgs, and non-impacted silt at approximately 11 to12 feet bgs to the south of the timber wall. Large stained timbers, debris, cobbles and coarse gravel material impacted with NAPL and coal tar below 8 feet bgs were encountered and removed between the south sheetpile wall and the vertical timber wall as excavation progressed eastward in this area (impacted material was removed to approximately 16 to 18 feet bgs). Stained horizontal timbers were encountered and removed between the south sheetpile wall and the vertical timber wall. Earth Tech performed localized work zone air monitoring for VOCs with a PID; no exceedances were recorded. Earth Tech placed excavated materials on a temporary staging pad (consisting of an earthen berm overlaid with a polyethylene liner) on the peninsula south of Embayment #1. Stone dust was mixed with the excavated material for stabilization, prior to the material being transported off-site for disposal.

On September 7, 2005, Earth Tech reconfigured the location of the temporary staging pad further to the east to allow for continued excavation along the south side of the NYSDEC AOC #1 excavation area (the west side of the pad had been obstructing the excavation area) and reconstructed the berms for the pad with non-impacted native material. Earth Tech benched the surface along the east side of the AOC #1 excavation area to allow for deeper excavation in AOC #1 and utilized the non-impacted surficial material removed during benching activities to extend the temporary staging pad further to the north. Earth Tech created new berms on the north side of the staging pad with the surficial material and covered the area with polyethylene sheeting in preparation for resuming excavation in AOC #1.

On September 7, 2005, Earth Tech excavated (below 8 feet bgs) in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1) to continue removal of impacted material and timbers, working eastward along the exterior of the Embayment #1 south sheetpile wall. Impacted material (which appeared to consist primarily of organic matter) that contained NAPL and coal tar down to approximately 18 to 20 feet bgs was encountered and removed as Earth Tech excavated eastward along the south sheetpile wall in this area. Earth Tech placed excavated materials on a temporary staging pad (consisting of an earthen berm overlaid with a polyethylene liner) on the peninsula south of Embayment #1. Stone dust was mixed with the excavated material for stabilization, prior to the material being transported off-site for disposal. The AOC #1 excavation area was approximately 46 feet long by 23 feet wide by 14 to 18 feet deep as of September 7, 2005.

On September 8, 2005 Earth Tech excavated (below 8 feet bgs) in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1) to continue working eastward along the exterior of the Embayment #1 south sheetpile wall. Impacted material (which appeared to consist primarily of organic matter) that contained NAPL and coal tar down to approximately 16 to 18 feet bgs was encountered as Earth Tech excavated eastward along the south sheetpile wall in this area. Earth Tech placed impacted material on the temporary staging pad, and sprayed Bio-Solve during excavation activities in AOC #1 to minimize odors. Earth Tech continued localized air monitoring for VOCs with a PID during excavation activities in AOC #1 and no exceedances were detected. To delineate the extent of impacted material within AOC #1, Earth Tech excavated a test pit trench (running north to south) approximately 5 feet east of the current eastern sidewall of the AOC #1 excavation on September 8, 2005. In the northern side of the trench (adjacent to the Embayment #1 south sheetpile wall), a non-impacted clay layer was encountered from approximately 6 to 12 feet bgs, and that non-impacted native silt was encountered at approximately 12 feet bgs (no impacted material was observed). In the southern half of the trench, shallow groundwater was encountered at approximately 3 to 4 feet bgs and a significant amount of non-impacted pea-sized gravel was present (the water did not contain a sheen). Gravel and a few timber fragments were encountered to approximately 12 feet bgs, where non-impacted native silt was

once again encountered (no impacted material was observed in this portion of the trench as well). The trench was backfilled with non-impacted native fill and the location was marked to delineate the east side of the AOC #1 excavation area. Overall, the trench ran in a north-south direction for a length of approximately 32 feet (from the Embayment #1 south sheetpile wall to a point approximately 32 feet south of the south wall) and was located approximately 60 feet east of the RW-3 well location.

On September 9, 2005, Earth Tech excavated (below 8 feet bgs) in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1) and continued working eastward along the exterior of the Embayment #1 south sheetpile wall. Impacted material (which appeared to consist primarily of organic matter) that contained NAPL and coal tar was encountered and removed as Earth Tech excavated eastward along the south sheetpile wall in this area. Non-impacted silt was encountered at approximately 14 to 15 feet bgs as excavation progressed eastward in this area (between the south wall and the vertical timber wall). Earth Tech removed the vertical timber wall from within the AOC #1 excavation area as they continued to excavate to the east in this area. A significant amount of visibly non-impacted pea-sized stone was encountered above sheets of polyethylene and geotextile fabric at approximately 4 to 5 feet bgs along the eastern side of the AOC #1 excavation area, which appeared to be the same material encountered in the test pit trench. Earth Tech placed impacted material on the temporary staging pad and sprayed Bio-Solve during excavation activities in AOC #1 to minimize odors. Earth Tech continued localized air monitoring for VOCs with a PID during excavation activities in AOC #1 and no exceedances were detected.

On September 12, 2005, Earth Tech excavated (below 8 feet bgs) in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1) and continued working eastward along the exterior of the Embayment #1 south sheetpile wall. Impacted material (which appeared to consist primarily of organic matter) that contained NAPL was encountered, and a non-impacted silt was encountered at approximately 13 to 15 feet bgs in the eastern section of the excavation area. Earth Tech mobilized a Link Belt long-stick excavator and

began scraping material from the bottom of the western section of AOC #1 (areas previously excavated to approximately 15 to 16 feet bgs) below the surface of the water to remove any remaining impacted material from the bottom of excavation area and placed the material on the temporary staging pad. Impacted material was encountered and removed along the bottom of the western section of AOC #1. Earth Tech also mobilized a skimmer to be utilized with the drum-vac system to skim NAPL and sheens from the surface of the water in AOC #1 during excavation activities. Earth Tech placed impacted material on the temporary staging pad, and sprayed Bio-Solve during excavation activities in AOC #1 to minimize odors. Earth Tech continued localized air monitoring for VOCs with a PID during excavation activities in AOC #1 and no exceedances were detected.

On September 13, 2005, Earth Tech excavated (below 8 feet bgs) in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1) and continued working eastward along the exterior of the Embayment #1 south sheetpile wall. Earth Tech placed impacted material on the temporary staging pad, and sprayed Bio-Solve during excavation activities in AOC #1 to minimize odors. Earth Tech continued localized air monitoring for VOCs with a PID during excavation activities in AOC #1 and no exceedances were detected.

Pea-sized stone and primarily non-impacted clay and silt beneath the pea stone was encountered along the east side of the excavation area. Visibly impacted material was removed along the eastern sidewall of AOC #1 on September 13, 2005, and the NYSDEC agreed that horizontal delineation of impacted material had been achieved along the east side of the excavation area. The angle of the vertical timber wall in this area straightened out along its eastern edge and ran in a north to south direction between the south sheetpile wall and the southeast corner point of the timber wall. Earth Tech completed removal of all visible timbers associated with the vertical timber wall from this area. Earth Tech used a drum-vac and skimmer to remove any sheens and product off of the water surface in the AOC #1 excavation area (a boom was set up around the skimmer to collect sheen/product from a localized area within AOC #1). Water was placed into 55-gallon drums. Residual material consisting primarily of grainy wood fibers, slight sheens, and traces of NAPL were present on the water

placed within the drums following skimming activities. On September 13, Earth Tech began air sampling for VOCs downwind of the AOC #1 excavation area using summa canisters and a low flow air pump.

On September 14, 2005, Earth Tech excavated along the southern sidewall in the NYSDEC AOC #1 excavation area (the eastern end of the south bank of Embayment #1), and excavated an additional 4 to 5 feet south into the southern sidewall of AOC #1 and removed large timbers and impacted material coated with NAPL and sheens from this area down to approximately 11 to12 feet bgs. Earth Tech removed two pairs of 15-foot-long steel sheets (deadmen anchor sheets left behind by MAB) along the south sidewall of AOC #1 to facilitate excavation of impacted material in this area. A non-impacted clay layer was present along the exposed face of the south sidewall. The NYSDEC agreed that all visibly impacted material had been removed along the south sidewall of this area and agreed that horizontal delineation of impacted material had been achieved for the entire excavation area. Earth Tech swept the surface of the water in AOC #1 with the absorbent booms to isolate any sheens and to collect debris (e.g. timber fragments) floating on the surface of the water. All debris was removed from the water and new absorbent booms were installed around the perimeter of the excavation area to continue absorbing any sheens. The NYSDEC agreed that it would not be necessary to continue using the drum-vac and skimmer in AOC #1 due to lack of product on the surface of the water.

On September 15, 2005, Earth Tech excavated along the bottom of the NYSDEC AOC #1 excavation area (the eastern end of the southern bank of Embayment #1) with the long-stick excavator to remove any remaining impacted material from this area. Earth Tech removed some impacted material coated with NAPL and sheens along the bottom of AOC #1 down to approximately 12 to 14 feet bgs and placed the saturated material on the eastern sidewall of the excavation area to allow the material to be gravity-dewatered prior to placement on the temporary staging pad. Once dewatered, Earth Tech placed the impacted material on the temporary staging pad. A sheen and a minimal amount of product were generated and collected on the surface of the water in AOC #1 during excavation activities. Earth Tech excavated several passes along the bottom of AOC #1 and removed the

impacted material from the bottom of the excavation (the last few buckets excavated consisted of non-impacted material). Earth Tech completed excavation within the AOC #1 excavation area on September 15, 2005.

On September 16, 2005, Earth Tech excavated adjacent to well RW-3 on the west side of the AOC #1 excavation area (the eastern end of the southern bank of Embayment #1) to remove impacted material from this area (associated with the remaining section of the vertical timber wall). Impacted material coated with a sheen and a small amount of NAPL was encountered to approximately 8 to 10 feet bgs during the excavation activities. Earth Tech removed large timbers from this area and medium-sized angular gravel (primarily non-impacted) was encountered and removed in the RW-3 area down to approximately 10 feet bgs. Following excavation in the area adjacent to RW-3 down to approximately 8 to 10 feet bgs, Earth Tech encountered primarily non-impacted angular gravel and a clay layer above non-impacted silt at approximately 10 feet bgs. Earth Tech cut RW-3 within its screened interval at approximately 10 feet bgs using the excavator bucket.

Earth Tech completed excavation within the entire AOC #1 excavation area (including the RW-3 area) on September 16, 2005. The final excavation limits of AOC #1 are shown on Figure 9.

On September 19, 2005, Earth Tech backfilled the benched area on the east side of the AOC #1 excavation area with non-impacted overburden material previously removed during restoration activities along the north wall of Embayment #1. On September 20, 2005, BCI utilized a pump truck to install flowable fill in the NYSDEC AOC #1 excavation area (below the surface of the water). BCI began installation of flowable fill in 2-foot-thick lifts along the bottom of AOC #1 using the pump truck with a 4-inch-diameter tremie pipe (for minimum water contact prior to installation). No significant water displacement occurred during the installation of the flowable fill into AOC #1. BCI installed a total of 132 cy of flowable fill along the bottom of AOC #1 on September 20, 2005. On September 21, 2005, Earth Tech conducted pressure tests for the flowable fill installed on September 20, 2005 to determine if 24 hours was a sufficient cure time for the flowable fill. Earth Tech tested the strength

of the flowable fill in the 5-gallon buckets that were submerged below the surface of the water in AOC #1 overnight, the top 2 inches of material in the buckets contained a film of silt and sediment (that had been stirred up during installation of the flowable fill), but the flowable fill was solid beneath the top 2 inches within the buckets. Earth Tech conducted another round of pressure tests on the 2-foot-thick lift of flowable fill within AOC #1 by pressing the 225 excavator bucket down onto the top of the lift at six locations within this area. The flowable fill supported the weight of the excavator (the tracks of the excavator were lifted up into the air) for each pressure test. Based upon the results of the pressure tests, installation of flowable fill in AOC #1 continued with a minimum cure time of 24 hours between lifts. On September 22, 2005, BCI installed a total of 88 cy of flowable fill in AOC #1, and an additional 99 cy of flowable fill was installed on September 23, 2005. A total of 319 cy of flowable fill was installed in AOC #1. On September 26, 2005, Earth Tech backfilled and compacted non-impacted native fill material in 1-foot-thick lifts using a Link Belt 225 excavator, CAT4200 backhoe, and a Dynapac5021 compactor soil above the layer of flowable fill installed in AOC #1.

10.6.2 AOC #3

On June 29, 2005, Earth Tech excavated in AOC #3 (south of Broad Street), and encountered the brick wall of a circular brick structure at approximately 2 feet bgs. The brick structure appeared to continue under Broad Street. The material removed from within the brick structure to 3 feet bgs contained large gravel, wood, slag, and cinders, but very little impacted material. Below 3 feet bgs, Earth Tech found impacted material coated with a grey sheen and a fuel oil odor was present; no NAPL was observed. Earth Tech excavated along the south side of the brick structure to 8 feet bgs, and exposed the bottom of the structure. The bottom of the brick structure appeared to consist of a wood base and a clay layer and vertical timber supports beneath the bottom of the structure; no impacted material was encountered outside of the structure. On July 1, 2005, Earth Tech excavated inside the brick structure to the clay layer (approximately 6 to 7 feet bgs), and closer to the edge of Broad Street. A 4-inch-diameter pipe was encountered at approximately 5 to 6 feet bgs, and the material

consisted of coarse material coated with a grayish sheen. No MGP odors were observed. A soil sample was collected from the impacted material and sent to the Woods Hole Group laboratory for alkylated PAH and TPH fingerprint analysis. The final limits of the excavation conducted in and around AOC #3 in June/July 2005 are shown on Figure 10.

As discussed in Section 9, additional excavation activities were conducted in AOC #3 by Earth Tech in Spring 2006 in accordance with the November 10, 2005 *Work Plan for Additional Activities at Operable Unit 1* (ARCADIS BBL, 2005) (Additional Activities Work Plan; Appendix A), as approved by NYSDEC and NYSDOH in a November 28, 2005 letter to National Grid.

10.6.3 AOC #5

Additional investigation activities were conducted within AOC #5 (north of Embayment #1) to determine the presence, if any, of impacted material within this area. PWI initiated the installation of the test borings in AOC #5 on June 29, 2005 using a drill rig (soil boring logs are included in Appendix P). Following the installation of the test borings, PWI tremie-grouted each test boring location. On July 5, 2005, PWI encountered impacted material in TB-103 at approximately 10 to 18 feet bgs; an additional test boring (TB-104) was installed to delineate the limit of impacted material and showed no major impacts. PWI was unable to install four test borings (i.e., TB-112, TB-113, TB-114, and TB-115) located north of Embayment #1 (between the north sheetpile wall along Embayment #1 and the concrete retaining wall); instead, ARCADIS BBL installed these test borings on July 19, 2005 using a NES 40-foot skyjack and a truck-mounted geoprobe. Locations of the as-built test borings are shown on Figure 9.

10.6.4 AOC #7

Additional investigation activities were conducted within AOC #7 (directly east of the eastern sheetpile wall of the East Bank Soil Removal Area) to determine the presence, if any, of impacted material within this area. PWI initiated the installation of the test borings in AOC #7 on July 6, 2005 using a drill rig (soil boring logs are included in Appendix P). On July 7, 2005 Earth Tech installed an additional boring (TB-111) at the request of the NYSDEC because a minimal amount of NAPL and coal tar was observed in TB-109. No NAPL or coal tar was observed in TB-111. PWI completed the installation of 11 test borings within AOC #7 on July 7, 2005. Locations of the as-built test borings are shown on Figure 9.

10.6.5 AOC #8

On June 27, 2005, MAB excavated behind the northwest deadmen anchor sheets, in the area of AOC #8 (northeast corner of the Northern Former Gas Holder Soil Removal Area), to approximately 7 feet bgs to remove the deadmen whalers. During the excavation activities no impacted material was encountered, NYSDEC agreed that no further excavation would be necessary within AOC #8. The area was backfilled with non-impacted native fill (see Figure 10 for final excavation limits).

10.6.6 AOC #9

On July 6, 2005, Earth Tech initiated excavation activities within AOC #9 (adjacent to the east side of Water Street). During excavation, Earth Tech encountered and removed large cobbles coated with a sheen and NAPL at approximately 2 feet bgs, approximately 10 to 12 feet east of the eastern edge of Water Street. Pockets of NAPL, coal tar, and impacted material west of the deadmen anchor sheets from approximately 2 to 8 feet bgs

were also encountered and removed. During excavation of the west side of AOC #9 (approximately 5 to 6 feet east of Water Street) Earth Tech excavated a number of pipes including the following:

- two 2-inch-diameter pipes at approximately 2 feet bgs;
- one 3-inch-diamter pipe at approximately 2 to 3 feet bgs;
- one 15-inch-diameter and one 14-inch-diameter cast iron pipe at approximately 3 feet bgs;
- one 6-inch-diameter-pipe at approximately 4 to 5 feet bgs;
- one 4-inch pipe at approximately 6 feet bgs; and
- one 4-inch-diameter at approximately 3 feet bgs.

Earth Tech excavated the east side of AOC # 9, and encountered and removed impacted material, NAPL, and coal tar to a depth of 10 feet bgs. A non-impacted clay layer was encountered at approximately 10 to 11 feet bgs. Earth Tech continued excavation in the eastern half of AOC #9 to depths ranging from approximately 10 to 12 feet bgs to remove all visible NAPL and coal tar. Earth Tech excavated on the western half of AOC #9 to remove the course gravel material containing NAPL and coal tar to approximately 12 feet bgs, to the non-impacted clay layer. Earth Tech dismantled and removed the visible portions of abandoned 15-inch-diameter and 14-inch-diameter cast iron pipes (at approximately 3 to 4 feet bgs), and backfilled AOC #9 after the NYSDEC agreed that NAPL and coal tar impacted materials had been removed. On July 19, 2005, Earth Tech excavated a test pit along the eastern shoulder of Water Street beginning approximately 4.5 feet north of the north wall of the warehouse. Earth Tech excavated working northward along the eastern edge and encountered and removed a seam of impacted material from approximately 3 to 4 feet bgs. Earth Tech excavated to a depth of approximately 5 feet bgs (to a clay layer) in the southern half of the test pit and encountered the following pipes:

- one 2-inch-diameter steel pipe at approximately 3 feet bgs;

- one 4-inch-diameter steel pipe at approximately 4 feet bgs;
- one 8-inch-diameter clay pipe at approximately 4 feet bgs containing impacted material; and
- remaining portions of the 15-inch-diameter and 14-inch-diameter cast iron pipes at approximately 3 feet bgs containing impacted material and coal tar.

Earth Tech removed the pipes within these areas, and continued to excavate the test pit to a point approximately 32 feet north of the south end of the test pit to approximately 5 feet bgs. Earth Tech found and removed a 10-inch by 15-inch wood duct that contained impacted material and coal tar, the wood duct appeared to run south-southwest beneath Water Street. Earth Tech removed the contents of the duct under the road and plugged the duct with bentonite/grout. In addition, Earth Tech encountered and removed a 4-inch-diameter pipe to the edge of Water Street. At the street, the contents were removed and the opening was plugged with a bentonite/grout mixture. In addition, Earth Tech excavated the test pit to a point approximately 41 feet north of the south end of the test pit to approximately 8 feet bgs to remove impacted bedding material. A 12-inch-diameter terra cotta pipe, running parallel to Water Street at approximately 6 to 7 feet bgs, that ran to an abandoned brick standpipe along the eastern edge of Water Street and took a 90º turn west beneath Water Street was also removed. Earth Tech excavated to a point approximately 61 feet north of the south end of the trench (65 feet north of the north wall of the warehouse). The final test pit was approximately 61 feet-long, 5 feet-wide, and 5 to 8 feet deep. The trench was backfilled with non-impacted native material. The final excavation limits of AOC #9 are shown on Figure 10.

10.6.7 AOC # 11

On June 30, 2005, Earth Tech excavated AOC #11 (adjacent to the east sheetpile wall of the Former Tar Separator Soil Removal Area). Earth Tech excavated a portion of AOC #11 (i.e., from survey point 8 to a point approximately 14 feet east) and encountered impacted material (small amounts of coal tar) from approximately

3 to 7 feet bgs. The impacted material was removed, placed on polyethylene sheeting, and the area was backfilled. On July 1, 2005, Earth Tech excavated between the east wall of the Former Tar Separator Soil Removal Area and along the south central Former Gas Holder Soil Removal Area steel sheetpile wall (see Figure 10). Earth Tech encountered impacted material, pipes, coal tar, and a pool of NAPL in this area. Earth Tech excavated to approximately 12 to 13 feet bgs to remove all impacted material. The NYSDEC agreed that Earth Tech effectively removed all impacted material from the area, and the area was backfilled. The final excavation limits of AOC #11 are shown on Figure 10.

10.6.8 AOC # 16

On June 28, 2005, Earth Tech excavated a trench in AOC #16 (approximately 6 feet west of the western edge of Water Street) approximately 83 feet long, 5 feet wide, and 6 feet deep (see Figure 10). During the excavation, a brick foundation was encountered along the west side of the excavation (10 to 11 feet west of Water Street), and a greenish-grey clay was encountered from approximately 4 to 6 feet bgs. Earth Tech excavated test pits in two locations within the trench to a depth of 8 feet bgs, one at the southern end of the trench and the other at a point approximately 30 feet north of the southern end of the trench. A small pocket of impacted material (containing NAPL) was encountered from approximately 6 to 8 feet bgs at a point 30 feet north of the southern end of the trench. The impacted material was removed, and placed on polyethylene sheeting in the east side of the Former Gas Holder Soil Removal Area for off-site disposal/treatment. Non-impacted timbers, pipes or impacted bedding were encountered in the trench, and the NYSDEC agreed that no further excavation was needed. The trench was backfilled with non-impacted material. The final excavation limits of AOC #16 are shown on Figure 10.

10.6.9 AOC B

On July 13, 2005 Earth Tech excavated behind the southeast deadmen anchor sheets (located on the southeast side of the Former Gas Holder Soil Removal Area) to remove the deadmen whaler and tie-rods. During the excavation activities, Earth Tech encountered and removed pockets of impacted material and small amounts of NAPL and coal tar in this area at approximately 2 to 6 feet bgs. A clay layer was present at approximately 5 feet bgs. Following the removal of the deadmen whalers and tie-rods, Earth Tech excavated further south to excavate an 8-inch-diameter pipe and impacted material within AOC B. Upon excavation of AOC B, the 8-inch-diameter pipe was observed to be an 8-inch-diameter well casing for an unmarked 2-inch PVC well. Earth Tech also encountered and removed pockets of impacted material to 8 feet bgs, and three 2-inch-diameter pipes at approximately 4 to 6 feet bgs. In addition, Earth Tech excavated further north and west along the western edge of the southeast deadmen sheets to remove pockets of coal tar at approximately 3 to 5 feet bgs. Earth Tech excavated approximately 17 feet (north-south) by 14 feet (east-west) by 6 to 7 feet deep beyond the extent of AOC B. The western edge of this excavation area ran parallel to the east wall of the warehouse in a line approximately 19 feet east of the warehouse wall; the northern edge of this excavation ran west to east in line with the location of MW-OW4. The final excavation limits of AOC B are shown on Figure 10.

10.7 Wing Walls Adjacent to Embayment #1

National Grid, based on concerns expressed by the NYSDEC, installed two wing walls adjacent to the north and south sheetpile walls of Embayment #1. The steel sheetpile wing walls were installed to provide additional protection against potential impacts to the Hudson River, from any remaining impacted material along the exterior sides of the sheetpile walls left-in-place.

On July 27, 2005, Earth Tech and MAB initiated the installation of the wing walls perpendicular to the north and south sheetpile wall of Embayment #1. A 20-inch-diameter tubular caisson (15 feet in length) was installed directly against the south sheetpile wall (40 feet east of the western end of the Embayment #1) and directly against the north sheetpile wall (15 feet east of the western end of the north sheetpile wall) of Embayment #1. MAB pre-drilled these caissons down to approximately 25 feet bgs using an 18-inch-diameter auger bit attached to an ABI rig, and placed the material removed from within the caissons on polyethylene. Timbers, cinders, and brick fragments were present in the material removed during pre-drilling of the caissons, but no visibly impacted material was observed.

On July 28, 2005, Earth Tech excavated surficial material from approximately 0 to 3 feet bgs in the alignment of the north and south wing walls in preparation for MAB to install steel sheeting for this wing wall below final grade. During the excavation of the north wing wall, Earth Tech encountered the concrete retaining wall in the alignment of the north wing wall, which appeared to continue further to the west of the north wing wall alignment. Earth Tech broke through and removed the section of the concrete retaining wall within the alignment of the north wing wall using a 225 excavator. MAB mobilized a cement truck and filled the 20-inch-diameter caisson installed for the south wing wall with flowable fill mixed with 100 pounds of bentonite powder (4.6% bentonite was used, exceeding the minimum 4% bentonite requested by the NYSDEC); the caisson for the south wing wall was filled with approximately 2.5 cy of flowable fill. MAB removed the caisson from along the south sheetpile wall of Embayment #1, and installed a pair of 45-foot-long steel sheets into the flowable fill against the south wall of Embayment #1. MAB proceeded to install three additional pairs of 25-foot-long sheets to the south of the 45-foot-long sheets to complete installation of the south wing wall. The wing wall extended 16 feet south of the south sheetpile wall of Embayment #1. The tops of the steel sheets were driven down to the approximate elevation of 2 feet, which was 1 foot lower than the designed installation elevation of 3 feet. However, the NYSDEC informed ARCADIS BBL this elevation was preferred. As such, the steel sheets of the south wing wall were left at the 2-foot elevation.

MAB proceeded to drive the 20-inch-diameter caisson for the north wing wall down an additional 2 to 3 feet (as requested by the NYSDEC) to enable the flowable fill to be installed to the appropriate depth within the caisson. MAB pre-drilled the caisson for the north wing wall using the 18-inch-diameter auger bit with the ABI rig. During pre-drilling of this caisson, a light sheen was present in the river, which covered an area ranging from the 10-inch-diameter outfall pipe near the dock in the City's Park (north of Lot 162) to a point downstream near the Embayment #1 north sheetpile wall. MAB then pre-drilled the alignment of the north wing wall using the 18-inch-diameter auger bit with the ABI rig (no impacted material was observed during pre-drilling activities).

MAB installed flowable fill (mixed with 100 pounds of bentonite) into the caisson for the north wing wall and mixed the flowable fill in the caisson with the 18-inch-diameter auger bit with the ABI rig. The caisson for the north wing wall was filled with approximately 2 cy of flowable fill. MAB removed the caisson for the north wing wall and installed a pair of 45-foot-long steel sheets into the flowable fill perpendicular to the Embayment #1 north wall to begin installation of the north wing wall. Prior to the placement of the steel sheeting, water sealing material, Adeka Ultra Seal A-30 was applied to the interlocks of each sheet. As MAB prepared to install the second pair of sheets for the north wing wall, the NYSDEC informed ARCADIS BBL and Earth Tech that there was a small hole (approximately 2 to 3 inches in diameter) in one of the 32-foot-long steel sheets (approximately 26 feet down from the top of the sheet), and that it would not be acceptable for MAB to install this sheet for the north wing wall. The NYSDEC located another approximately 32-foot-long steel sheet (without a small hole), and requested that MAB use this sheet for the north wing wall. Per the NYSDEC's request, MAB applied Adeka Ultra Seal A-30 joint sealant to the interlocks of the new 32-foot-long steel sheet and installed this sheet in the north wing wall. The NYSDEC expressed an issue with installing this new sheet immediately following application of Ultra Seal A-30. During installation of the 32-foot-long steel sheet, MAB forced the previously installed 45-foot-long steel sheet deeper below grade. MAB chained the 45-foot-long steel sheets to the north sheetpile wall of Embayment #1, and then drove the top of the new 32-foot-long steel sheet

down to the same grade as the 45-foot-long steel. MAB installed two pairs of 25-foot-long steel sheets to complete installation of the north wing wall, which ran approximately 16 feet north of the north steel sheetpile wall of Embayment #1. The tops of steel sheets were installed to the following approximate elevations: 45-foot-long steel sheets at 2.5 feet; 32-foot-long steel sheets at 2.5 feet; and both pairs of 25-foot-long steel sheets at 3 feet.

Following installation of the north and south wing walls adjacent to Embayment #1, the area was backfilled with native material.

The northern wing wall was subsequently modified in Spring 2006 consistent with the NYSDEC's November 10, 2005 Work Plan.

10.8 Fence Installation Activities

On August 23, 2005, CFI began installing fence posts around the perimeter of the Former Gas Holder Soil Removal Area. Because CFI encountered difficulty installing the fence corner post in proximity to the northwest corner of the warehouse, Earth Tech excavated the surficial material, which allowed CFI to install the corner post. During excavation activities, coal tar and LNAPL were encountered at approximately 3 feet bgs. In addition, Earth Tech encountered a 4-inch-diameter pipe (containing impacted water) at approximately 3 feet bgs running in an east-southeast direction along the north side of the warehouse. Earth Tech removed the impacted material (primarily stone and crusher-run stone) down to 3 feet bgs, and directly loaded the material out with the truckload of Embayment #1 restoration spoils for off-site disposal.

On August 25, 2005, Earth Tech further excavated this area and encountered impacted material laden with coal tar to approximately 4 feet bgs, working northward away from the north wall of the warehouse. Earth Tech

encountered the southwest corner of the permanent Former Tar Separator Soil Removal Area steel sheets (i.e., survey point 19); impacted material was present to approximately 4 feet bgs. In addition, an 8-inch-diameter pipe was encountered at approximately 3 feet bgs, located between the north wall of the warehouse and the south sheetpile wall of the Former Tar Separator Soil Removal Area. The pipe ran in an east to west direction parallel to the north wall of the warehouse towards Water Street. Earth Tech cleaned out impacted material from the broken ends of the 8-inch-diameter pipe and then plugged the pipe at both ends with bentonite chips mixed with water. Earth Tech also excavated the impacted material from the area (including liquids) down to approximately 7 feet bgs. Within the area between the edge of the road and the western sheetpile wall, Earth Tech encountered a clay layer at approximately 6 feet bgs.

The final excavation area adjacent to the northwest corner of the warehouse was approximately 8 feet long by 6 feet wide by 7 feet deep. The excavation area was backfilled with clean soil fill and crusher-run stone to final grade.

11. Additional Remedial Activities

While the original remedial construction activities were completed in October 2005, the NYSDEC requested that National Grid complete additional remedial activities at the Site. Earth Tech re-mobilized to the Site in April 2006 and completed several additional work activities in 2006 and 2007.

Consistent with the Additional Activities Work Plan, the following additional remedial activities were performed at the Site:

- Site preparation;
- Area of Concern (AOC) #3 excavation;
- Utilities installation;
- Waste material handling;
- Water treatment;
- Air monitoring; and
- Soil Boring Installation.

Each of these work efforts is described in the sections below.

11.1 Site Preparation

Prior to initiation of excavation activities within AOC #3 (described below) and utility installation activities, Earth Tech performed site preparation activities including, but not limited to, placement of protective barriers and signs around the perimeter of AOC #3 and along Water Street to limit access to these areas during construction activities.

11.2 AOC #3 Excavation Activities

As originally documented in a letter dated April 28, 2003 (received on April 28, 2004) from the NYSDEC to National Grid, a brick structure was identified in the area south of the existing brick warehouse during the utility corridor installation activities conducted by the City in August 2003 along Broad Street. The NYSDEC identified this brick structure as AOC #3. Following excavation of a test pit within AOC #3 (as described in Section 5 of this Final Report) and consistent with the NYSDEC-approved Additional Activities Work Plan, Earth Tech excavated a total of approximately 85 cy of soil and debris material from AOC #3 between April 10 and April 18, 2006. Earth Tech used a Liebherr excavator and ASV-Bobcat skid steer on-site to facilitate excavation activities.

Earth Tech initiated excavation activities in the center of AOC #3, within Broad Street, on April 10, 2006. Earth Tech excavated a portion of the brick structure to approximately 8 feet bgs. Material within the brick structure was observed to consist of the following (from top to bottom):

- approximately 6 feet of fill material;
- one layer of wood planks (encountered at approximately 6 feet bgs);
- approximately 2 feet of clay (extending approximately 6 feet bgs to approximately 8 feet bgs); and
- a second layer of wood planks.

The bottom of the brick structure was observed to be clean. As such, consistent with the NYSDEC-approved Additional Activities Work Plan, excavation activities were limited to 6 feet bgs for the remaining portions of the brick structure.

As discussed with, and concurred by, NYSDEC, the walls of the brick structure were not removed as identified in the NYSDEC-approved Additional Activities Work Plan to provide support during excavation activities. However, on April 12, 2006, a portion of the northern wall of the brick structure collapsed and was removed.

Existing utilities (e.g., active water and sewer lines located in the center of AOC #3) encountered during excavation activities were protected to the extent possible (e.g., hand tools were used during excavation activities near these existing utilities). A small hole in the sewer line was discovered during excavation activities within AOC #3. Earth Tech's subcontractor, Ayer Equipment, repaired the hole on April 13, 2006. The area was backfilled following inspection and approval of the repair by a City representative. In addition, Earth Tech encountered several apparently inactive pipes during excavation activities, including the following:

- 2-inch-diameter steel pipe located in the north wall of the brick structure was encountered on April 12, 2006; the 2-inch-diameter steel pipe was sealed with hydraulic cement.

- 4-inch-diamter pipe, encountered on April 12, 2006, extending from the southwest to the northeast; the section of pipe within the structure was removed and the ends of the pipe were sealed with hydraulic cement.

On April 14, 2006, the AOC #3 excavation area was backfilled (within 2 feet of final surface grade) with bank-run stone placed in 2-foot-thick lifts and compacted using a Liebherr excavator attached with a plate compactor. Earth Tech's subcontractor, SMT, performed field density tests to verify appropriate compaction. On April 17, 2006, Earth Tech completed backfill activities within AOC #3 with the placement and compaction of crusher-run stone in the remaining 2 feet of AOC #3.

11.3 Utilities Installation

At the request of the City, and consistent with the NYSDEC-approved Additional Activities Work Plan, Earth Tech (on behalf of National Grid) installed several utility lines (i.e., fire, water, and sewer) connecting the existing brick warehouse building located on Lot 15 to the existing utilities located beneath Water Street. Specifically, Earth Tech installed a new 2-inch-diameter copper water service line, a new 6-inch-diameter ductile iron fire service line, and a new 6-inch-diameter cast iron sanitary sewer lateral to the existing brick warehouse between April 18 and June 8, 2006, as described in this section.

As part of the utility installation activities, Earth Tech performed limited excavation activities, as necessary, along the west side of the existing brick warehouse and within Water Street. Earth Tech encountered impacted water and soil as well as several structures within the limits of the excavation area including the following:

- Several abandoned pipes were encountered adjacent to the exterior of the western wall of the existing brick warehouse. The pipes varied in size from 2 to 12 inches in diameter and, in general, ran parallel to the existing brick warehouse. Although one 2-inch-diamter pipe appeared to contain a dark viscous liquid, the majority of these pipes appeared to be dry. The 2-inch-diameter pipe was drained of the observed viscous liquid, was collected, and treated along with the water collected from the bottom of the excavation area.

- A "T" shaped obstruction was encountered in the center of the excavation area approximately 15 feet west of the west exterior wall of the existing brick warehouse. The obstruction appeared to be a large abandoned utility pipe filled with concrete. Earth Tech removed the obstruction on April 19, 2006.

- On April 19, 2006, Earth Tech uncovered a wood duct along the north side of the excavation area. The wood duct appeared to extend northwest towards the northeastern corner of the existing brick warehouse. Impacted material was observed within the wood duct. Earth Tech removed the contents and grouted the wooden duct using a mixture of Portland cement and bentonite on April 24, 2006.

- On April 20, 2006, Earth Tech encountered a 2-inch-diameter forced sewer main located along the west side of the excavation area and a 6-inch-diameter pipe located directly below the 2-inch-diameter forced sewer main. The 6-inch-diameter pipe was removed following confirmation by the City that the pipe was an abandoned water line.

- A large cast iron pipe (approximately 12 to 13 inches in diameter) was encountered along the exterior foundation of the existing brick warehouse. The cast iron pipe consisted of a "T" fitting on the exterior of the existing brick warehouse connected to a 90º fitting located within the existing brick warehouse. Earth Tech removed the "T" and 90º fittings to allow for the installation of the utility lines.

- Several abandoned pipes and a large cylindrical object (possibly a drum or manhole) filled with concrete were encountered adjacent to the west interior wall of the existing brick warehouse.

- On April 19, 2006, Earth Tech uncovered a concrete wall (approximately 1-foot-thick, 10 feet long, and 4 feet high) in the interior of, and running parallel to, the western wall of the existing brick warehouse. On May 5, 2006, upon further observation, the concrete wall was identified as a 6-foot-diameter octagon-shaped support structure located approximately 3 feet bgs. The octagon structure appeared to be part of a series of foundation structures running approximately 15 to 21 feet south of, and parallel to, the northern warehouse wall.

- On April 25, 2006 Earth Tech uncovered a second wooden duct (approximately 10 inches by 18 inches) extending from the northeast to the southwest approximately 6 feet bgs. The wooden duct contained impacted material. On April 26, 2006, Earth Tech cleaned and grouted the southwest portion of the wooden duct. Earth Tech removed the northeast portion of the wooden duct (including its contents) on May 4 and 31, 2006 during excavation activities for the sewer manhole (described below).

- On May 4, 2006, Earth Tech encountered a 12-inch-diameter pipe that ran parallel to the interior of the western foundation wall of the existing brick warehouse. Earth Tech removed the 12-inch-diameter pipe and a 90º fitting and shut-off valve that was attached to the pipe.

From April 26 to May 4, 2006, Earth Tech and Earth Tech's subcontractor, Farley Water Service (FWS), installed the 2-inch-diameter water service and 6-inch diameter fire service lines.

On April 26, 2006, Earth Tech's subcontractor, FWS initiated the connection of the 2-inch-diameter water service line to the existing 8-inch-diameter water main located on the west side of Water Street. A layer of HDPE liner was placed within the trench to separate the 2-inch-diameter water service line from impacted native material and water within the water service line trench. In addition, a concrete wall was placed at each end of the trench. A 6-inch-thick layer of stone was placed above the HDPE liner for bedding below the 2-inch-diameter water service line. The 2-inch-diameter water service line was encased within a 4-inch-diameter PVC pipe and placed on top of the stone. The NYSDEC-approved Additional Activities Work Plan indicated that the shut-off valve on the 2-inch-diameter water service line was to be placed in a Sono-Tube and filled with stone dust. However, per the City representative's request, the shut-off valve was placed within an 8-inch-diameter PVC "T" fitting to mitigate the possibility of stone dust hindering the movement of the valve.

Earth Tech installed the 6-inch diameter fire service line within the same trench as the 2-inch-diameter water service line (above the HDPE and stone bedding), and placed thrust blocks (consisting of concrete blocks set in a bed of poured concrete) behind the 6-inch diameter fire service line. On May 1, 2006, FWS pressure tested the 6-inch-diameter fire service line causing the 6-inch diameter fire service line to fail. The thrust blocks installed behind the 6-inch diameter fire service line were insufficient, and allowed the 6-inch diameter fire service line to shift and separate. Earth Tech replaced the thrust blocks with poured concrete and pressure tested the 6-inch diameter fire service line.

As documented in a May 8, 2006 letter (included in Appendix A) from FWS to the City of Hudson Water Department, successful chlorination and pressure testing were performed on the 6-inch-diameter fire service and 2-inch-diameter water service lines on May 3 and May 4, 2006. Following successful completion of these tests, Earth Tech placed a 6- to 10-inch-thick layer of stone over the service lines, followed by bank-run stone placed in 2-foot-thick lifts.

On May 4, 2006, Earth Tech initiated excavation activities related to the installation of a 6-inch-diameter cast iron sanitary sewer lateral to the existing brick warehouse, and a new manhole located within Water Street west of the existing brick warehouse. Meyers Construction, a subcontractor to Earth Tech, assisted Earth Tech in the installation of the 6-inch-diameter cast iron sanitary sewer line. On May 5, 2006, Earth Tech installed an 8-inch-diameter PVC conduit through the clay layer beneath the west wall of the existing brick warehouse to allow for the installation of the 6-inch-diameter cast iron sanitary sewer line. The Additional Activities Work Plan indicated that the 6-inch-diameter cast iron sanitary sewer line was to pass through the western foundation wall of the existing brick warehouse at 3 feet bgs; however, due to the instability of the foundation wall the 6-inch-diameter sanitary sewer line passed through the foundation wall at 6 feet bgs. As a result of the elevation difference between the design location and actual location of the 6-inch-diameter cast iron sanitary sewer line, Earth Tech was unable to run the 6-inch-diameter sanitary sewer line from the new manhole installed west of the

existing brick warehouse to the existing manhole located north of the existing brick warehouse. Instead, the 6-inch-diameter sanitary sewer line was run from the new manhole located west of the existing brick warehouse to an existing 8-inch-diameter sanitary sewer line (located north of the warehouse) connecting an existing manhole to an existing pumping station.

On May 15, 2006, Earth Tech installed the new manhole west of the existing brick warehouse. Earth Tech placed the pre-cast manhole section on top of 2 feet of compacted stone. On May 16, 2006, Earth Tech completed the connection between the 6-inch-diameter cast iron sanitary sewer line and the new manhole. On May 31, 2006, Frank's Masonry, a subcontractor to Earth Tech, grouted the bottom of the new sewer manhole. A sloped curve was poured inside the bottom of the manhole to allow waste to flow through the manhole. In addition, Earth Tech installed the upper two sections of the sewer manhole (sealing each section with a silicone gasket) and placing a steel cover on top.

From May 16 to May 31, 2006, Earth Tech installed a 6-inch-diameter PVC sanitary sewer line from the new manhole located west of the existing brick warehouse to the existing 8-inch-diameter PVC sanitary sewer line located north of the existing brick warehouse. Earth Tech placed a 12-inch-thick layer of ½-inch-diameter stone around the pipe for protection. On May 18, 2006, Earth Tech encountered and removed an isolated pocket of impacted material (approximately 15 feet long by 6 feet wide) during excavation activities related to the installation of the 6-inch-diameter PVC sanitary sewer line. The material consisted mainly of tar coated wood and timbers that produced a minor sheen on the groundwater. To connect the new manhole to the existing 8-inch-diameter PVC sanitary sewer line, Earth Tech installed an additional 22º fitting and cleanout within the alignment of the 6-inch-diameter PVC sanitary sewer line on May 22, 2006. From May 22 to 24, 2006, Earth Tech excavated portions of the 6-inch-diameter PVC sanitary sewer to identify and fix a leak that developed between the gasket connecting the 6-inch- and 8-inch-diameter sanitary sewer lines. However, following replacement of the gasket, water was still observed within the pump station. Earth Tech's subcontractor, ERS,

Inc., performed a video inspection of the sanitary sewer line on May 25, 2006. Following the video inspection, Earth Tech suspected that the leak was from the southern cleanout, located approximately 30 feet south of the connection between the 6-inch- and 8-inch-diameter sanitary sewer lines. On May 26, 2006, Earth Tech excavated along the northern end of the trench for the 6-inch-diameter sanitary sewer line. During the excavation activities, Earth Tech located a portion of the line that appeared broken (or may have been broken during the excavation activities) and may have caused the leak. From May 30 to 31, 2006, Earth Tech excavated and repaired the broken portions of the 6-inch diameter sanitary sewer line. Following completion of the installation and leak testing activities related to the 6-inch-diameter PVC sanitary sewer line, the trench was backfilled.

11.4 Waste Material Handling

Material generated during excavation activities associated with AOC #3 and utility installation activities was transported off-site by Fiacco and/or Hudson Bulk Transport to the Albany County Landfill for disposal. Copies of the waste manifests are included in Appendix K.

11.5 Water Treatment

Water encountered during construction activities was temporarily stored in frac tanks prior to treatment and discharge of treated effluent to the City's POTW. During the excavation activities associated with AOC #3 and utility installation activities, ARCADIS BBL collected a total of two rounds of TWTS effluent samples on April 27 and May 22, 2006, and sent the samples to SGS for analysis. TWTS analytical results are summarized in Table 2 and included in Appendix E.

11.6 Air Monitoring

ARCADIS BBL performed real-time air monitoring for VOCs and particulate matter consistent with the procedures identified in the CAMP. ARCADIS BBL's on-site representative's air sampling logs are included in Appendix H.

11.7 Soil Boring Installation

NAPL was observed immediately outside of the sheeting installed along the eastern perimeter of the site (i.e., between MW-2 and MW-3) during excavation activities in this area. Consistent with the Additional Activities Work Plan, three soil borings were drilled on March 13 and 14, 2007 to confirm the absence of coal tar DNAPL further east of the site (i.e., across the railroad tracks). A summary of these additional soil boring installation activities was submitted to NYSDEC in an April 2, 2007 letter, which is provided in Appendix A.

12. References

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Tables

BBL®
an ARCADIS company

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-10K-AIR STRIPPER #1-061404 4FOP313 6/14/04	WTS-10K-AIR STRIPPER #2-061404 4FOP313 6/14/04	WTS-10K-BAFFLE TANK #1-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	6.1	5.8	42 E
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	0.53	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	0.53	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
Naphthalene	µg/L	NA	NA	NA
Phenanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	NA
Lead	mg/L	NA	NA	NA
Magnesium	mg/L	NA	NA	NA
Manganese	mg/L	NA	NA	NA
Mercury	mg/L	NA	NA	NA
Sodium	mg/L	NA	NA	NA
Miscellaneous				
Alkalinity	mg/L	NA	NA	NA
Ammonia Nitrogen	mg/L	NA	NA	NA
BOD (five day)	mg/L	NA	NA	NA
COD	mg/L	NA	NA	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.83	7.79	7.72
Total Dissolved Solids	mg/L	140	140	140
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA
Total Organic Carbon	mg/L	NA	NA	NA
Total Suspended Solids	mg/L	62	60	64
Turbidity	NTU	54	48	51

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-10K-BAFFLE TANK #2-061404 4FOP313 6/14/04	WTS-10K-CARBON CANNISTER061404 4FOP313 6/14/04	WTS-10K-INF-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	6.7
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	8	3.7	100 E
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	ND [0.5]	0.54	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	5.3
Total BTEX	µg/L	ND	0.54	12
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
aphthalene	µg/L	NA	NA	NA
henanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	NA	0.76
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	26
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	1.5
Lead	mg/L	NA	NA	0.0092
Magnesium	mg/L	NA	NA	4.3
Manganese	mg/L	NA	NA	0.14
Mercury	mg/L	NA	NA	ND [0.0002]
Sodium	mg/L	NA	NA	12
Miscellaneous				
Alkalinity	mg/L	NA	NA	180
Ammonia Nitrogen	mg/L	NA	NA	ND [1]
BOD (five day)	mg/L	NA	NA	2.6
COD	mg/L	NA	NA	10
Oil & Grease	mg/L	ND [5]	ND [5]	5.4
pH	S.U.	7.68	7.82	7.74
Total Dissolved Solids	mg/L	140	140	160
Total Kjeldahl Nitrogen	mg/L	NA	NA	ND [2]
Total Organic Carbon	mg/L	NA	NA	5.3
Total Suspended Solids	mg/L	65	42	42
Turbidity	NTU	41	39	2000

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-10K-EFF-061404 4FOP313 6/14/04	WTS-25K-AIR STRIPPER #1-061404 4FOP313 6/14/04	WTS-25K-AIR STRIPPER #2-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	ND [0.5]	4.4	3.7
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	ND	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
Naphthalene	µg/L	NA	NA	NA
Phenanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	0.43	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	23	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	0.48	NA	NA
Lead	mg/L	0.0055	NA	NA
Magnesium	mg/L	4	NA	NA
Manganese	mg/L	0.023	NA	NA
Mercury	mg/L	0.00005 B	NA	NA
Sodium	mg/L	12	NA	NA
Miscellaneous				
Alkalinity	mg/L	88	NA	NA
Ammonia Nitrogen	mg/L	ND [1]	NA	NA
BOD (five day)	mg/L	ND [2]	NA	NA
COD	mg/L	ND [10]	NA	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	9.37	7.69	7.71
Total Dissolved Solids	mg/L	130	140	140
Total Kjeldahl Nitrogen	mg/L	ND [2]	NA	NA
Total Organic Carbon	mg/L	ND [5]	NA	NA
Total Suspended Solids	mg/L	5	50	43
Turbidity	NTU	10	41	49

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SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-25K-BAFFLE TANK #1-061404 4FOP313 6/14/04	WTS-25K-BAFFLE TANK #2-061404 4FOP313 6/14/04	WTS-25K-CARBON CANNISTER061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	4.9	2.9	2.9
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	ND	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
ɔhthalene	µg/L	NA	NA	NA
enanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	NA
Lead	mg/L	NA	NA	NA
Magnesium	mg/L	NA	NA	NA
Manganese	mg/L	NA	NA	NA
Mercury	mg/L	NA	NA	NA
Sodium	mg/L	NA	NA	NA
Miscellaneous				
Alkalinity	mg/L	NA	NA	NA
Ammonia Nitrogen	mg/L	NA	NA	NA
BOD (five day)	mg/L	NA	NA	NA
COD	mg/L	NA	NA	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.52	7.55	7.74
Total Dissolved Solids	mg/L	140	140	140
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA
Total Organic Carbon	mg/L	NA	NA	NA
Total Suspended Solids	mg/L	57	48	36
Turbidity	NTU	41	50	30

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-25K-INF-061404 4FOP313 6/14/04	WTS-25K-EFF-061404 4FOP313 6/14/04	WTS-40K-AIR STRIPPER #1-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	1.3	ND [0.5]	1.8
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	ND	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
[illegible]hthalene	µg/L	NA	NA	NA
[illegible]nanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	0.2	0.46	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	24	24	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	0.44	0.48	NA
Lead	mg/L	ND [0.005]	0.0058	NA
Magnesium	mg/L	4	4	NA
Manganese	mg/L	0.067	0.024	NA
Mercury	mg/L	ND [0.0002]	ND [0.0002]	NA
Sodium	mg/L	12	12	NA
Miscellaneous				
Alkalinity	mg/L	69	87	NA
Ammonia Nitrogen	mg/L	ND [1]	ND [1]	NA
BOD (five day)	mg/L	2.4	ND [2]	NA
COD	mg/L	ND [10]	ND [10]	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.77	9.34	7.75
Total Dissolved Solids	mg/L	140	140	140
Total Kjeldahl Nitrogen	mg/L	ND [2]	ND [2]	NA
Total Organic Carbon	mg/L	7.9	ND [5]	NA
Total Suspended Solids	mg/L	6	12	33
Turbidity	NTU	6.5	8.9	32

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: / SGS Lab No.: / Date Collected:	Units	WTS-40K-AIR STRIPPER #2-061404 4FOP313 6/14/04	WTS-40K-BAFFLE TANK #1-061404 4FOP313 6/14/04	WTS-40K-BAFFLE TANK #2-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	2.5	2.7	3.7
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	ND	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
aphthalene	µg/L	NA	NA	NA
enanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	NA
Lead	mg/L	NA	NA	NA
Magnesium	mg/L	NA	NA	NA
Manganese	mg/L	NA	NA	NA
Mercury	mg/L	NA	NA	NA
Sodium	mg/L	NA	NA	NA
Miscellaneous				
Alkalinity	mg/L	NA	NA	NA
Ammonia Nitrogen	mg/L	NA	NA	NA
BOD (five day)	mg/L	NA	NA	NA
COD	mg/L	NA	NA	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.76	7.54	7.47
Total Dissolved Solids	mg/L	150	150	150
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA
Total Organic Carbon	mg/L	NA	NA	NA
Total Suspended Solids	mg/L	33	38	40
Turbidity	NTU	32	29	29

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-40K-CARBON CANNISTER061404 4FOP313 6/14/04	WTS-40K-INF-061404 4FOP313 6/14/04	WTS-40K-EFF-061404 4FOP313 6/14/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	ND [0.5]
1,3,5-Trimethylbenzene	µg/L	NA	NA	ND [0.5]
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	ND [0.5]
Naphthalene	µg/L	2.5	0.81	ND [0.5]
p-Isopropyltoluene	µg/L	NA	NA	ND [0.5]
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]
Total BTEX	µg/L	ND	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
Naphthalene	µg/L	NA	NA	NA
Phenanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	0.2	0.36
Arsenic	mg/L	NA	NA	0.0062
Barium	mg/L	NA	NA	0.022
Cadmium	mg/L	NA	NA	ND [0.001]
Calcium	mg/L	NA	23	24
Chromium	mg/L	NA	NA	ND [0.005]
Iron	mg/L	NA	0.38	0.42
Lead	mg/L	NA	ND [0.005]	0.0053
Magnesium	mg/L	NA	3.7	4
Manganese	mg/L	NA	0.06	0.024
Mercury	mg/L	NA	ND [0.0002]	0.00004 B
Sodium	mg/L	NA	11	12
Miscellaneous				
Alkalinity	mg/L	NA	68	89
Ammonia Nitrogen	mg/L	NA	ND [1]	ND [1]
BOD (five day)	mg/L	NA	ND [2]	ND [2]
COD	mg/L	NA	ND [10]	ND [10]
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.62	7.75	9.31
Total Dissolved Solids	mg/L	140	140	140
Total Kjeldahl Nitrogen	mg/L	NA	ND [2]	ND [2]
Total Organic Carbon	mg/L	NA	6.2	ND [5]
Total Suspended Solids	mg/L	28	11	5
Turbidity	NTU	26	6.5	9.8

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-EFF-061604 6/16/04	WTS-RECONF-EFF-111004 4K0P252 11/10/04	WTS-RECONF-25KEFF-111804 4K0P486 11/18/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	NA	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	NA	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	NA	ND [0.5]	ND [0.5]
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	NA	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	NA	ND [1]	ND [1]
Total BTEX	µg/L	NA	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	ND [10]	NA	NA
Acenaphthene	µg/L	ND [6.2]	NA	NA
Acenaphthylene	µg/L	ND [6.2]	NA	NA
Anthracene	µg/L	ND [6.2]	NA	NA
Benzo(a)anthracene	µg/L	ND [6.2]	NA	NA
Benzo(a)pyrene	µg/L	ND [6.2]	NA	NA
Benzo(b)fluoranthene	µg/L	ND [6.2]	NA	NA
Benzo(g,h,i)perylene	µg/L	ND [0.062]	NA	NA
Benzo(k)fluoranthene	µg/L	ND [6.2]	NA	NA
Benzoic Acid	µg/L	ND [10]	NA	NA
Carbazole	µg/L	ND [10]	NA	NA
Chrysene	µg/L	ND [6.2]	NA	NA
Dibenz(a,h)anthracene	µg/L	ND [0.062]	NA	NA
Dibenzofuran	µg/L	ND [10]	NA	NA
Fluoranthene	µg/L	ND [6.2]	NA	NA
Fluorene	µg/L	ND [6.2]	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	ND [0.062]	NA	NA
Naphthalene	µg/L	7.8	NA	NA
Phenanthrene	µg/L	ND [6.2]	NA	NA
Phenol	µg/L	ND [10]	NA	NA
Pyrene	µg/L	ND [6.2]	NA	NA
Metals				
Aluminum	mg/L	NA	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	NA
Lead	mg/L	NA	NA	NA
Magnesium	mg/L	NA	NA	NA
Manganese	mg/L	NA	NA	NA
Mercury	mg/L	NA	NA	NA
Sodium	mg/L	NA	NA	NA
Miscellaneous				
Alkalinity	mg/L	NA	NA	NA
Ammonia Nitrogen	mg/L	NA	NA	NA
BOD (five day)	mg/L	NA	ND [2]	4.6
COD	mg/L	NA	NA	NA
Oil & Grease	mg/L	NA	ND [5]	ND [5]
pH	S.U.	NA	7.74	8.03
Total Dissolved Solids	mg/L	NA	NA	NA
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA
Total Organic Carbon	mg/L	NA	NA	NA
Total Suspended Solids	mg/L	NA	7	11
Turbidity	NTU	NA	NA	NA

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-RECONF-INF-112304 4K0P593 11/23/04	WTS-RECONF-40K-EFF-112304 4K0P593 11/23/04	WTS-RECONF-BCU-112304 4K0P593 11/23/04
VOCs				
1,2,4-Trimethylbenzene	µg/L	NA	NA	NA
1,3,5-Trimethylbenzene	µg/L	NA	NA	NA
Benzene	µg/L	75	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	59	ND [0.5]	ND [0.5]
n-Propylbenzene	µg/L	NA	NA	NA
Naphthalene	µg/L	690	ND [0.5]	ND [0.5]
p-Isopropyltoluene	µg/L	NA	NA	NA
Toluene	µg/L	75	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	170	ND [1]	ND [1]
Total BTEX	µg/L	379	ND	ND
SVOCs				
2-Methylnaphthalene	µg/L	NA	NA	NA
Acenaphthene	µg/L	NA	NA	NA
Acenaphthylene	µg/L	NA	NA	NA
Anthracene	µg/L	NA	NA	NA
Benzo(a)anthracene	µg/L	NA	NA	NA
Benzo(a)pyrene	µg/L	NA	NA	NA
Benzo(b)fluoranthene	µg/L	NA	NA	NA
Benzo(g,h,i)perylene	µg/L	NA	NA	NA
Benzo(k)fluoranthene	µg/L	NA	NA	NA
Benzoic Acid	µg/L	NA	NA	NA
Carbazole	µg/L	NA	NA	NA
Chrysene	µg/L	NA	NA	NA
Dibenz(a,h)anthracene	µg/L	NA	NA	NA
Dibenzofuran	µg/L	NA	NA	NA
Fluoranthene	µg/L	NA	NA	NA
Fluorene	µg/L	NA	NA	NA
Indeno(1,2,3-CD)pyrene	µg/L	NA	NA	NA
Naphthalene	µg/L	NA	NA	NA
Phenanthrene	µg/L	NA	NA	NA
Phenol	µg/L	NA	NA	NA
Pyrene	µg/L	NA	NA	NA
Metals				
Aluminum	mg/L	NA	NA	NA
Arsenic	mg/L	NA	NA	NA
Barium	mg/L	NA	NA	NA
Cadmium	mg/L	NA	NA	NA
Calcium	mg/L	NA	NA	NA
Chromium	mg/L	NA	NA	NA
Iron	mg/L	NA	NA	NA
Lead	mg/L	NA	NA	NA
Magnesium	mg/L	NA	NA	NA
Manganese	mg/L	NA	NA	NA
Mercury	mg/L	NA	NA	NA
Sodium	mg/L	NA	NA	NA
Miscellaneous				
Alkalinity	mg/L	NA	NA	NA
Ammonia Nitrogen	mg/L	NA	NA	NA
BOD (five day)	mg/L	17	5.1	4
COD	mg/L	NA	NA	NA
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.17	7.44	7.22
Total Dissolved Solids	mg/L	NA	NA	NA
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA
Total Organic Carbon	mg/L	NA	NA	NA
Total Suspended Solids	mg/L	230	25	39
Turbidity	NTU	NA	NA	NA

TABLE 1
SUMMARY OF TWTS START-UP SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: SGS Lab No.: Date Collected:	Units	WTS-RIVER-EFF-113004 4L0P014 11/30/04
VOCs		
1,2,4-Trimethylbenzene	µg/L	ND [0.5]
1,3,5-Trimethylbenzene	µg/L	ND [0.5]
Benzene	µg/L	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]
n-Propylbenzene	µg/L	ND [0.5]
Naphthalene	µg/L	ND [0.5]
p-Isopropyltoluene	µg/L	ND [0.5]
Toluene	µg/L	ND [0.5]
Xylenes (Total)	µg/L	ND [1]
Total BTEX	µg/L	ND
SVOCs		
2-Methylnaphthalene	µg/L	ND [10]
Acenaphthene	µg/L	ND [0.62]
Acenaphthylene	µg/L	ND [0.62]
Anthracene	µg/L	0.017 J
Benzo(a)anthracene	µg/L	0.099
Benzo(a)pyrene	µg/L	ND [0.062]
Benzo(b)fluoranthene	µg/L	ND [0.062]
Benzo(g,h,i)perylene	µg/L	0.36
Benzo(k)fluoranthene	µg/L	ND [0.031]
Benzoic Acid	µg/L	ND [10]
Carbazole	µg/L	ND [10]
Chrysene	µg/L	0.024 J
Dibenz(a,h)anthracene	µg/L	ND [0.062]
Dibenzofuran	µg/L	ND [10]
Fluoranthene	µg/L	0.32
Fluorene	µg/L	ND [0.62]
Indeno(1,2,3-CD)pyrene	µg/L	ND [0.062]
Naphthalene	µg/L	ND [0.62]
Phenanthrene	µg/L	ND [0.62]
Phenol	µg/L	ND [10]
Pyrene	µg/L	0.23
Metals		
Aluminum	mg/L	NA
Arsenic	mg/L	ND [0.005]
Barium	mg/L	0.048
Cadmium	mg/L	ND [0.001]
Calcium	mg/L	NA
Chromium	mg/L	ND [0.005]
Iron	mg/L	NA
Lead	mg/L	ND [0.005]
Magnesium	mg/L	NA
Manganese	mg/L	NA
Mercury	mg/L	ND [0.0002]
Sodium	mg/L	NA
Miscellaneous		
Alkalinity	mg/L	130
Ammonia Nitrogen	mg/L	0.76 B
BOD (five day)	mg/L	4.6
COD	mg/L	15
Oil & Grease	mg/L	ND [5]
pH	S.U.	7.58
Total Dissolved Solids	mg/L	220
Total Kjeldahl Nitrogen	mg/L	ND [2]
Total Organic Carbon	mg/L	2.5
Total Suspended Solids	mg/L	6
Turbidity	NTU	12

Notes:

1. Detection limit is shown in brackets.
2. NA - Not applicable.
3. ND - Not detected.
4. µg/L - micrograms per liter.
5. mg/L - milligrams per liter.
6. S.U. - Standard units.
7. NTU - Nephelometric turbidity unit.
8. B - Parameter detected in the method blank.
9. E - Estimated result; the result was above the instrument calibration range.
10. J - Estimated result; the result detected below the reporting limit.

TABLE 2
SUMMARY OF TWTS WEEKLY AND MONTHLY OPERATIONAL SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-INF-062904 4FOP689 6/29/04	WTS-POTW-EFF-062904 4FOP689 6/29/04	WTS-POTW-INF-070704 4G0P151 7/7/04	WTS-POTW-EFF-070704 4G0P151 7/7/04
VOCs					
Benzene	µg/L	18	ND [0.5] (ND [0.5])	38	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5] (ND [0.5])	14	ND [0.5]
Naphthalene	µg/L	0.72	ND [0.5] (ND [0.5])	39	ND [0.5]
Toluene	µg/L	8.2	ND [0.5] (ND [0.5])	38	ND [0.5]
Xylenes (Total)	µg/L	29	ND [1] [ND [1]]	100	ND [1]
Miscellaneous					
BOD (five day)	mg/L	3.8	ND [2] (ND [2])	8.1	ND [2]
Oil & Grease	mg/L	ND [5]	ND [5] [ND [5]]	ND [5]	ND [5]
pH	S.U.	7.34	7.76 [7.81]	7.44	7.95
Total Suspended Solids	mg/L	96	ND [5] [ND [5]]	12	ND [5]

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-INF-071404 4G0P324 07/14/04	WTS-POTW-EFF-071404 4G0P324 07/14/04	WTS-POTW-INF-072604 4G0P578 07/26/04	WTS-POTW-EFF-072604 4G0P578 07/26/04
VOCs					
Benzene	µg/L	94	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	25	ND [0.5]	ND [0.5]	ND [0.5]
Naphthalene	µg/L	160	ND [3]	ND [2]	ND [2]
Toluene	µg/L	78	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	120	ND [1]	ND [1]	ND [1]
Miscellaneous					
BOD (five day)	mg/L	10	ND [2]	2	ND [2]
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]	ND [5]
pH	S.U.	7.3	7.8	7.37	7.37
Total Suspended Solids	mg/L	24	ND [5]	6	ND [5]

SUMMARY OF TWTS WEEKLY AND MONTHLY OPERATIONAL SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-INF-081804 4H0P419 8/18/04	WTS-POTW-EFF-081804 4H0P419 8/18/04	WTS-POTW-INF-100404 4J0P085 10/4/04	WTS-POTW-EFF-100404 4J0P085 10/4/04
VOCs					
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5]
Naphthalene	µg/L	ND [5]	ND [5]	2.1	ND [0.5]
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	ND [1]	1.4	ND [1]
Miscellaneous					
BOD (five day)	mg/L	ND [2]	ND [2]	3.2	ND [2]
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]	ND [5]
pH	S.U.	7.27	7.55	7.27	7.62
Total Suspended Solids	mg/L	15	ND [5]	10	6

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-EFF-101904 4J0P419 10/19/04	WTS-POTW-INF-101904 4J0P419 10/19/04	WTS-POTW-INF-121504 4L0P412 12/15/04	WTS-POTW-BCU-121504 4L0P412 12/15/04
VOCs					
Benzene	µg/L	ND [0.5]	57	130	0.73
Ethylbenzene	µg/L	ND [0.5]	18	260	ND [0.5]
Naphthalene	µg/L	1.4	61	2,900	4.7
Toluene	µg/L	ND [0.5]	34	190	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	59	660	2.2
Miscellaneous					
BOD (five day)	mg/L	ND [2]	8.1	6.6	9.4
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]	ND [5]
pH	S.U.	7.28	7.17	6.88	6.75
Total Suspended Solids	mg/L	ND [5]	96	1,500	170

T. _E 2
SUMMARY OF TWTS WEEKLY AND MONTHLY OPERATIONAL SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-EFF-121504 4L0P412 12/15/04	WTS-POTW-INF-122904-2 4L0P575 12/29/04	WTS-POTW-EFF-122904-2 4L0P575 12/29/04	WTS-POTW-INF-032805 4L0P575 3/28/05
VOCs					
Benzene	µg/L	ND [0.5]	NA	NA	2,300
Ethylbenzene	µg/L	ND [0.5]	NA	NA	580
Naphthalene	µg/L	1	NA	NA	5,800
Toluene	µg/L	ND [0.5]	NA	NA	1,900
Xylenes (Total)	µg/L	ND [1]	NA	NA	2,200
Miscellaneous					
BOD (five day)	mg/L	4.7	NA	NA	NA
Oil & Grease	mg/L	ND [5]	NA	NA	4.9 B
pH	S.U.	6.99	NA	NA	7.43
Total Suspended Solids	mg/L	68	820	5	60

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-BCU-032805 4L0P575 03/28/05	WTS-POTW-EFF-032805 4L0P575 03/28/05	WTS-POTW-INF-042705 5D0P562 04/27/05	WTS-POTW-BCU-042705 5D0P562 04/27/05
VOCs					
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5] (ND [0.5])
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5] (ND [0.5])
Naphthalene	µg/L	ND [0.5]	ND [0.5]	1	ND [0.5] (ND [0.5])
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.5] (ND [0.5])
Xylenes (Total)	µg/L	ND [1]	ND [1]	1.5	ND [1] [ND [1]]
Miscellaneous					
BOD (five day)	mg/L	NA	NA	7.5	ND [2] (ND [2])
Oil & Grease	mg/L	2.1 B	ND [5]	ND [5]	ND [5] [ND [5]]
pH	S.U.	9.51	9.65	7.52	7.19 [7.41]
Total Suspended Solids	mg/L	ND [5]	ND [5]	14	ND [5] [ND [5]]

TABLE 2
SUMMARY OF TWTS WEEKLY AND MONTHLY OPERATIONAL SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-EFF-042705 5D0P562 4/27/05	WTS-POTW-INF-052505 5E0P538 5/25/05	WTS-POTW-BCU-052505 5E0P538 5/25/05
VOCs				
Benzene	µg/L	ND [0.5]	24,000	ND [0.5]
Ethylbenzene	µg/L	ND [0.5]	2,200	ND [0.5]
Naphthalene	µg/L	ND [0.5]	8,200	0.95
Toluene	µg/L	ND [0.5]	11,000	ND [0.5]
Xylenes (Total)	µg/L	ND [1]	3,600	ND [1]
Miscellaneous				
BOD (five day)	mg/L	ND [2]	67	4.7
Oil & Grease	mg/L	ND [5]	6.2	ND [5]
pH	S.U.	7.12	7.27	6.98
Total Suspended Solids	mg/L	14	34	ND [5]

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-BCU-062905 5F0P558 06/29/05	WTS-POTW-EFF-062905 5F0P558 06/29/05	WTS-POTW-INF-062905 5F0P558 06/29/05
VOCs				
Benzene	µg/L	ND [0.5]	ND [0.5]	15
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	10
Naphthalene	µg/L	ND [0.5]	ND [0.5]	120
Toluene	µg/L	ND [0.5]	ND [0.5]	23
Xylenes (Total)	µg/L	ND [1]	ND [1]	26
Miscellaneous				
BOD (five day)	mg/L	2.2	ND [2]	ND [5]
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]
pH	S.U.	7.23	6.68	7.98
Total Suspended Solids	mg/L	11	8	490

TABLE 2
SUMMARY OF TWTS WEEKLY AND MONTHLY OPERATIONAL SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-EFF-052505 5E0P538 5/25/05	WTS-POTW-EFF-072505 5G0P452 7/25/05	WTS-POTW-BCU-072505 5G0P452 07/25/05	WTS-POTW-INF-072505 5G0P452 07/25/05
VOCs					
Benzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	1,200
Ethylbenzene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	140
Naphthalene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	1,000
Toluene	µg/L	ND [0.5]	ND [0.5]	ND [0.5]	580
Xylenes (Total)	µg/L	ND [1]	ND [1]	ND [1]	820
Miscellaneous					
BOD (five day)	mg/L	2.3	ND [2]	ND [2]	13
Oil & Grease	mg/L	ND [5]	ND [5]	ND [5]	ND [5]
pH	S.U.	7.12	7.03	7.21	7.24
Total Suspended Solids	mg/L	6	9	6	14

Sample ID: Lab No.: Date Collected:	Units	WTS-POTW-EFF-042706 560P452 4/27/06	WTS-POTW-INF-042706 560P452 4/27/06	WTS-POTW-EFF-052206 460P324 5/22/06	WTS-POTW-INF-052206 460P324 5/22/06
VOCs					
Benzene	µg/L	ND [5]	58	ND [5]	ND [5]
Ethylbenzene	µg/L	ND [5]	12	ND [5]	ND [5]
Naphthalene	µg/L	ND [5]	160	ND [5]	ND [5]
Toluene	µg/L	ND [5]	220	ND [5]	ND [5]
Xylenes (Total)	µg/L	ND [5]	490	ND [10]	ND [10]
Miscellaneous					
BOD (five day)	mg/L	ND [5]	4 B	ND [5]	ND [42]
Oil & Grease	mg/L	ND [5]	1.3 B	ND [5]	ND [5]
pH	S.U.	6.95	7.22	8.36	7.71
Total Suspended Solids	mg/L	1 J	79	ND [10]	17

Notes:
1. Detection limit is shown in brackets.
2. Duplicates shown in parenthesis.
3. ND - Not detected.
4. NA - Not applicable.
5. µg/L - micrograms per liter.
6. S.U. - Standard units.
7. B - Parameter detected in the method blank.
8. J - Above detection limit but below reporting limit.

TABLE 3A
TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-13 - PAHs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-82763			LIMS-83031			LIMS-83327		
Field Sample ID:			UW1-SE-1	DW1-NE-1	DW2-N-1	DW1-NE-2	DW2-N-2	UW1-SE-2	DW1-SE-3	DW-2-S-3	UW1-N-3
Laboratory ID:			04B32388	04B32389	04B32390	04B33632	04B33633	04B33631	04B35395	04B35396	04B35394
Sample Date:	Units	SGCs	10/6/2004	10/6/2004	10/6/2004	10/14/2004	10/14/2004	10/14/2004	10/22/2004	10/22/2004	10/22/2004
Acenaphthene	µg/m^3	---	0.013	0.058	0.092	0.0841	0.112	0.0326	0.0597	0.0567	1.54
Acenaphthylene	µg/m^3	---	ND[0.0008]	0.0125	0.0205	0.0430	0.0529	0.0156	0.0191	0.0151	0.0119
Anthracene	µg/m^3	---	0.0011	0.004	0.003	0.0047	0.0056	0.0020	0.0029	0.0017	0.0008
Benzo(a)anthracene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Benzo(a)pyrene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Benzo(b)fluoranthene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Benzo(g,h,i)perylene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Chrysene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Dibenz(a,h)anthracene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
Fluoranthene	µg/m^3	---	0.002	0.002	0.002	0.0035	0.0029	0.0022	0.0017	0.0015	0.0010
Fluorene	µg/m^3	---	0.007	0.02	0.028	0.0398	0.0398	0.0179	0.0282	0.0237	0.0062
Indeno(1,2,3-cd)pyrene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0008]	ND[0.0008]	ND[0.0009]
1-Methylnaphthalene	µg/m^3	---	0.012	0.155	0.245	0.0909	0.704	0.0643	0.307	0.149	0.0403
2-Methylnaphthalene	µg/m^3	---	0.015	0.384	0.415	0.116	0.823	0.0809	0.329	0.203	0.0552
Naphthalene	µg/m^3	7,900.0	0.044	3.645	4.592	1.98	11.7	1.56	4.44	1.9	1.41
Phenanthrene	µg/m^3	---	0.021	0.035	0.033	0.0416	0.0420	0.0284	0.0238	0.0188	0.0112
Pyrene	µg/m^3	---	0.001	0.002	0.002	0.0028	0.0025	0.0016	ND[0.0008]	0.0015	ND[0.0009]

TABLE 3A
TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-13 - PAHs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-83459			LIMS-83874			LIMS-84117		
Field Sample ID:			DW1-SE-4	DW2-S-4	UW1-N-4	DW1-NE-5	DW2-N-5	UW1-SE-5	DW1-NE-6	DW2-N-6	UW1-SE-6
Laboratory ID:			04B36026	04B36027	04B36025	04B38439	04B38440	04B38438	04B39945	04B39946	04B39944
Sample Date:	Units	SGCs	10/28/2004	10/28/2004	10/28/2004	11/10/2004	11/10/2004	11/10/2004	11/23/2004	11/23/2004	11/23/2004
Acenaphthene	µg/m^3	---	0.0548	0.0392	0.0256	0.0124	0.0527	0.0061	0.0519	0.0844	0.0286
Acenaphthylene	µg/m^3	---	0.0235	0.0181	0.0101	0.0025	0.0114	0.0008	0.0139	0.0242	0.0063
Anthracene	µg/m^3	---	0.0036	0.0016	0.0011	ND[0.0008]	0.0009	ND[0.0008]	0.0023	0.0041	0.0017
Benzo(a)anthracene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	ND[0.0010]	ND[0.0009]
Benzo(a)pyrene	µg/m^3	---	ND[0.0008]	0.0014	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	ND[0.0010]	ND[0.0009]
Benzo(b)fluoranthene	µg/m^3	---	ND[0.0008]	0.0008	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	ND[0.0010]	ND[0.0009]
Benzo(g,h,i)perylene	µg/m^3	---	ND[0.0008]	0.0024	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	0.0016	ND[0.0009]
Chrysene	µg/m^3	---	ND[0.0008]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	ND[0.0010]	ND[0.0009]
Dibenz(a,h)anthracene	µg/m^3	---	ND[0.0008]	0.0013	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	0.0012	ND[0.0009]
Fluoranthene	µg/m^3	---	0.0024	0.0011	0.0010	ND[0.0008]	0.0021	ND[0.0008]	0.0025	0.0024	0.0015
Fluorene	µg/m^3	---	0.0264	0.0165	0.0106	0.0060	0.0181	0.0029	0.0217	0.0327	0.0127
Indeno(1,2,3-cd)pyrene	µg/m^3	---	ND[0.0008]	0.0012	ND [0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]	ND[0.0010]	0.0016	ND[0.0009]
1-Methylnaphthalene	µg/m^3	---	0.135	0.121	0.0621	0.0161	0.0943	0.0054	0.158	0.473	0.0622
2-Methylnaphthalene	µg/m^3	---	0.185	0.168	0.0880	0.0235	0.124	0.0059	0.0975	0.138	0.0387
Naphthalene	µg/m^3	7,900.0	4.39	3.91	1.3	0.303	4.49	0.0315	2.12	4.12	0.644
Phenanthrene	µg/m^3	---	0.0274	0.0126	0.0099	0.0071	0.0235	0.0058	0.0196	0.0259	0.0132
Pyrene	µg/m^3	---	0.0017	0.0010	ND[0.0009]	ND[0.0008]	0.0012	ND[0.0008]	0.0020	0.0017	0.0011

TABLE 3A
TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-13 - PAHs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-85023			LIMS-88517			LIMS-88974		
Field Sample ID:			DW1-NE-7	DW2-N-7	UW1-SE-7	DW1-NW-8	DW2-N-8	UW1-SE-8	DW1-SE-9	DW2-S-9	UW1-NW-9
Laboratory ID:			04B45210	04B45211	04B45209	05B18089	05B18090	05B18088	05B20936	05B20937	05B20935
Sample Date:	Units	SGCs	12/22/2004	12/22/2004	12/22/2004	5/10/2005	5/10/2005	5/10/2005	5/25/2005	5/25/2005	5/25/2005
Acenaphthene	µg/m^3	---	0.0162	0.0507	0.0092	0.0839	0.675	0.0296	0.116	0.0124	ND[0.0008]
Acenaphthylene	µg/m^3	---	0.0114	0.0206	0.0096	0.038	0.288	ND[0.0009]	0.0052	ND[0.0009]	ND[0.0008]
Anthracene	µg/m^3	---	0.0014	0.0043	0.0027	0.0383	0.0261	0.004	0.0255	0.0027	ND[0.0008]
Benzo(a)anthracene	µg/m^3	---	ND[0.0009]	0.0009	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Benzo(a)pyrene	µg/m^3	---	0.0013	0.0015	0.0014	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Benzo(b)fluoranthene	µg/m^3	---	0.0011	0.0014	0.0010	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Benzo(g,h,i)perylene	µg/m^3	---	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Chrysene	µg/m^3	---	0.0008	0.0014	0.0010	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Dibenz(a,h)anthracene	µg/m^3	---	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
Fluoranthene	µg/m^3	---	0.0038	0.0046	0.0045	0.0162	0.0137	0.0203	0.0059	0.0015	0.0012
Fluorene	µg/m^3	---	0.0127	0.0260	0.0090	0.0503	0.3650	0.0197	0.0680	0.0062	ND[0.0008]
Indeno(1,2,3-cd)pyrene	µg/m^3	---	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0009]	ND[0.0008]	ND[0.0009]	ND[0.0008]
1-Methylnaphthalene	µg/m^3	---	0.0770	0.194	0.0388	3.9100	3.81	0.0297	2.8100	0.33	0.0062
2-Methylnaphthalene	µg/m^3	---	0.0502	0.117	0.0256	1.97	1.92	0.0232	1.66	0.16	0..0062
Naphthalene	µg/m^3	7,900.0	1.03	3.65	0.526	31.6	16.4	0.0644	26	1.94	0.0261
Phenanthrene	µg/m^3	---	0.0226	0.0366	0.0204	0.234	0.155	0.0852	0.124	0.0162	0.0057
Pyrene	µg/m^3	---	0.0031	0.0036	0.0035	0.0135	0.0102	0.0093	0.0062	0.0015	0.0009

TABLE 3A
TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-13 - PAHs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-89371			LIMS-89614		
Field Sample ID:			DW1-SE-10	DW2-S-10	UW1-NW-10	DW1-NW-11	DW2-N-11	UW1-SE-11
Laboratory ID:			05B23250	05B23251	05B23249	05B24760	05B24761	05B24757
Sample Date:	Units	SGCs	6/9/2005	6/9/2005	6/9/2005	6/21/2005	6/21/2005	6/21/2005
Acenaphthene	µg/m^3	---	1.94	0.57	0.126	0.0179	0.0132	0.0511
Acenaphthylene	µg/m^3	---	0.0424	0.0076	0.0592	0.0063	0.0115	0.0046
Anthracene	µg/m^3	---	0.15	0.0344	0.0211	0.0027	0.0017	0.0085
Benzo(a)anthracene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Benzo(a)pyrene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Benzo(b)fluoranthene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Benzo(g,h,i)perylene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Chrysene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Dibenz(a,h)anthracene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
Fluoranthene	µg/m^3	---	0.544	0.0975	0.0471	0.0078	0.0029	0.0206
Fluorene	µg/m^3	---	1.5800	0.2250	0.1170	0.0205	0.0151	0.0526
Indeno(1,2,3-cd)pyrene	µg/m^3	---	ND[0.0009]	ND[0.001]	ND[0.0009]	ND[0.001]	ND[0.001]	ND[0.0011]
1-Methylnaphthalene	µg/m^3	---	1.0600	0.155	0.958	0.0470	0.105	0.0511
2-Methylnaphthalene	µg/m^3	---	0.785	0.122	0.598	0.0301	0.0649	0.0329
Naphthalene	µg/m^3	7,900.0	2.58	0.542	2.75	0.187	0.605	0.119
Phenanthrene	µg/m^3	---	3.72	0.964	0.578	0.0443	0.0204	0.14
Pyrene	µg/m^3	---	0.191	0.0446	0.0233	0.004	0.0015	0.0103

Notes:

1. Method Detection Limit is shown in brackets.
2. ND - Not detected.
3. µg/m^3 - micrograms per cubic meter.
4. Only those compounds that were detected in one or more sample are displayed.
5. Short-term guideline concentrations [SGCs] were obtained from the New York State Department of Environmental Conservation's official DAR-1 [Air Guide-1] SGC Tables.
6. --- = An SGC value was not identified for this compound.
7. SDG - Sample delivery group.

T. 3B

TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-82763			LIMS-83031		
Field Sample ID:			UW1-SE-1	DW1-NE-1	DW2-N-1	DW1-NE-2	DW2-N-2	UW1-SE-2
Laboratory ID:			04B32391	04B32392	04B32393	04B33632	04B33633	04B33631
Sample Date:	Units	SGCs	10/6/2004	10/6/2004	10/6/2004	10/14/2004	10/14/2004	10/14/2004
Acetone	µg/m^3	180,000.0	10.7	16.9	46.8	51.6	81.0	32.6
Benzene	µg/m^3	1,300.0	ND[1.6]	4.5	8.8	ND[1.6]	ND[4.0]	5.6
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	ND[1.5]	ND[1.5]	2.9	5.5	ND[3.8]	ND[1.5]
Chloromethane	µg/m^3	22,000.0	ND[1.0]	ND[1.0]	ND[1.0]	ND[1.0]	ND[2.6]	1.1
Dichlorodifluoromethane	µg/m^3	---	2.6	2.7	2.6	2.8	ND[6.2]	3.1
Ethanol	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[2.2]	ND[0.9]
Ethylbenzene	µg/m^3	54,000.0	ND[2.2]	3.4	6.0	ND[2.2]	ND[5.4]	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[6.2]	ND[2.5]
Hexane	µg/m^3	---	2.1	ND[1.8]	5.6	3.8	ND[4.5]	2.3
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	ND[1.2]	32	110	25.8
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]	4.6	ND[1.7]
Propene (Propylene)	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	2.6	ND[2.2]	2.5
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[8.5]	ND[3.4]
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[3.8]	ND[1.5]
Toluene	µg/m^3	37,000.0	1.9	5.0	8.8	4.6	7.1	7.6
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[6.8]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	7.3	73.4	27.8	83.0	28.3
1,2,4-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[6.2]	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[6.2]	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[4.5]	ND[1.8]
m/p-Xylene	µg/m^3	4,300.0	ND[2.2]	3.4	5.3	6.3	ND[5.4]	2.6
o-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	2.2	ND[2.2]	ND[5.4]	ND[2.2]

T . 3B

TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-83327			LIMS-83459		
Field Sample ID:			DW1-SE-3	DW-2-S-3	UW1-N-3	DW1-SE-4	DW2-S-4	UW1-N-4
Laboratory ID:			04B35395	04B35396	04B35394	04B36026	04B36027	04B36025
Sample Date:	Units	SGCs	10/22/2004	10/22/2004	10/22/2004	10/28/2004	10/28/2004	10/28/2004
Acetone	µg/m^3	180,000.0	15.5	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]
Benzene	µg/m^3	1,300.0	3.8	7.5	ND[1.6]	2.1	1.9	ND[1.6]
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	2.7	ND[1.5]	3.9	ND[1.5]	ND[1.5]	ND[1.5]
Chloromethane	µg/m^3	22,000.0	ND[1.0]	1.1	ND[1.0]	ND[1.0]	ND[1.0]	ND[1.0]
Dichlorodifluoromethane	µg/m^3	---	2.9	3.0	2.8	2.6	2.7	ND[2.5]
Ethanol	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]
Ethylbenzene	µg/m^3	54,000.0	ND[2.2]	2.3	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Hexane	µg/m^3	---	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]
Propene (Propylene)	µg/m^3	---	1.4	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]
Toluene	µg/m^3	37,000.0	4.0	6.6	2.2	ND[1.9]	ND[1.9]	ND[1.9]
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
1,2,4-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
m/p-Xylene	µg/m^3	4,300.0	ND[2.2]	2.7	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]
o-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]

T. 3B

TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-83874			LIMS-84117		
Field Sample ID:			DW1-NE-5	DW2-N-5	UW1-SE-5	DW1-NE-6	DW2-N-6	UW1-SE-6
Laboratory ID:			04B38436	04B38437	04B38435	04B39945	04B39946	04B39944
Sample Date:	Units	SGCs	11/10/2004	11/10/2004	11/10/2004	11/23/2004	11/23/2004	11/23/2004
Acetone	µg/m^3	180,000.0	17.5	41.9	18.6	ND[1.2]	9.7	ND[1.2]
Benzene	µg/m^3	1,300.0	ND[1.6]	3.3	ND[1.6]	1.9	2.7	ND[1.6]
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	ND[1.5]	11.9	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]
Chloromethane	µg/m^3	22,000.0	ND[1.0]	ND[1.0]	ND[1.0]	ND[1.0]	ND[1.0]	ND[1.0]
Dichlorodifluoromethane	µg/m^3	---	3.0	2.9	3.1	3.0	2.9	3.0
Ethanol	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]
Ethylbenzene	µg/m^3	54,000.0	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Hexane	µg/m^3	---	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]	ND[1.7]
Propene (Propylene)	µg/m^3	---	ND[0.9]	1.8	ND[0.9]	1.8	2.0	ND[0.9]
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]
Toluene	µg/m^3	37,000.0	ND[1.9]	3.5	ND[1.9]	2.4	2.7	ND[1.9]
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	3.5	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
1,2,4-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
m/p-Xylene	µg/m^3	4,300.0	ND[2.2]	2.3	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]
o-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]	ND[2.2]

T. 3B

TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG: / Field Sample ID: / Laboratory ID: / Sample Date:	Units	SGCs	LIMS-85023			LIMS-88517		
			DW1-NE-7 04B45213 12/22/2004	DW2-N-7 04B45214 12/22/2004	UW1-SE-7 04B45212 12/22/2004	DW1-NW-8 05B18092 5/10/2005	DW2-N-8 05B18093 5/10/2005	UW1-SE-8 05B18091 5/10/2005
Acetone	µg/m^3	180,000.0	32.4	16.3	22.5	41.3	22.4	22.5
Benzene	µg/m^3	1,300.0	ND[1.6]	ND[1.6]	ND[1.6]	27.3	26.6	ND[1.6]
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	4.9	ND[1.5]	ND[1.5]	5	ND[1.5]	2.1
Chloromethane	µg/m^3	22,000.0	ND[1.0]	ND[1.0]	ND[1.0]	1.2	1.5	1.1
Dichlorodifluoromethane	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	2.7	2.8	2.5
Ethanol	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	57.9	6.2	6.7
Ethylbenzene	µg/m^3	54,000.0	ND[2.2]	ND[2.2]	ND[2.2]	35.2	33.8	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	5.8	6.2	ND[2.5]
Hexane	µg/m^3	---	ND[1.8]	ND[1.8]	ND[1.8]	2	ND[1.8]	ND[1.8]
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	ND[1.2]	5.9	ND[1.2]	ND[1.2]
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	ND[1.7]	3.4	ND[1.7]	ND[1.7]
Propene (Propylene)	µg/m^3	---	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]	ND[0.9]
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	4.8
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]	ND[1.5]
Toluene	µg/m^3	37,000.0	ND[1.9]	ND[1.9]	ND[1.9]	54.5	26.4	ND[1.9]
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
1,2,4-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	7.9	10.5	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]	6.3	7.5	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
m/p-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]	24.8	24.4	ND[2.2]
o-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]	11.9	12.1	ND[2.2]

T. 3B

TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG:			LIMS-88974			LIMS-89371		
Field Sample ID:			DW1-SE-9	DW2-S-9	UW1-NW-9	DW1-SE-10	DW2-S-10	UW1-NW-10
Laboratory ID:			05B20939	05B20940	05B20938	05B23247	05B23248	05B23246
Sample Date:	Units	SGCs	5/25/2005	5/25/2005	5/25/2005	6/9/2005	6/9/2005	6/9/2005
Acetone	µg/m^3	180,000.0	12.8	18.3	5.3	42.3	144	45.7
Benzene	µg/m^3	1,300.0	204	31.6	ND[1.6]	16.6	ND[1.6]	10.1
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	ND[1.5]	4.4	ND[1.5]	6.7	12.2	5.4
Chloromethane	µg/m^3	22,000.0	ND[1.0]	ND[1.0]	1.1	ND[1.0]	1.7	1.4
Dichlorodifluoromethane	µg/m^3	---	2.6	2.5	ND[2.5]	2.7	3.2	3.2
Ethanol	µg/m^3	---	ND[0.9]	ND[0.9]	7.3	2.6	10.2	16.8
Ethylbenzene	µg/m^3	54,000.0	67.4	5.3	ND[2.2]	3.9	ND[2.2]	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	9.5	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Hexane	µg/m^3	---	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]	ND[1.8]
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]	ND[1.2]
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	3.1	ND[1.7]	2.7	5
Propene (Propylene)	µg/m^3	---	1.2	ND[0.9]	ND[0.9]	2.1	ND[0.9]	ND[0.9]
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]	ND[3.4]
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	1.8	ND[1.5]	ND[1.5]	ND[1.5]
Toluene	µg/m^3	37,000.0	130	15.1	2.1	15.3	4.1	11.1
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]	ND[2.7]
1,2,4-Trimethylbenzene	µg/m^3	---	20.2	ND[2.5]	ND[2.5]	2.6	ND[2.5]	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	6.8	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	6.2	ND[1.8]	3.7	3.3	2.7
m/p-Xylene	µg/m^3	4,300.0	87.7	7.6	ND[2.2]	5.9	ND[2.2]	ND[2.2]
o-Xylene	µg/m^3	4,300.0	36.6	2.7	ND[2.2]	2.8	ND[2.2]	ND[2.2]

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TIME-INTEGRATED AIR SAMPLING ANALYTICAL RESULTS - USEPA METHOD TO-15 - VOCs

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

SDG: / Field Sample ID: / Laboratory ID: / Sample Date:	Units	SGCs	LIMS-89614 DW1-NW-11 05B24765 6/21/2005	DW2-N-11 05B24767 6/21/2005	UW1-SE-11 05B24762 6/21/2005
Acetone	µg/m^3	180,000.0	10.8	8.6	22.5
Benzene	µg/m^3	1,300.0	ND[1.6]	4.8	ND[1.6]
2-Butanone (Methyl Ethyl Ketone)	µg/m^3	59,000.0	2.2	ND[1.5]	5.6
Chloromethane	µg/m^3	22,000.0	ND[1.0]	ND[1.0]	ND[1.0]
Dichlorodifluoromethane	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]
Ethanol	µg/m^3	---	9.3	13.5	18.1
Ethylbenzene	µg/m^3	54,000.0	ND[2.2]	ND[2.2]	ND[2.2]
4-Ethyl Toluene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]
Hexane	µg/m^3	---	ND[1.8]	ND[1.8]	ND[1.8]
Isopropanol (Isopropyl Alcohol)	µg/m^3	98,000.0	ND[1.2]	ND[1.2]	2.1
Methylene Chloride (Dichloromethane)	µg/m^3	14,000.0	ND[1.7]	ND[1.7]	ND[1.7]
Propene (Propylene)	µg/m^3	---	ND[0.9]	ND[0.9]	1.2
Tetrachloroethylene	µg/m^3	1,000.0	ND[3.4]	ND[3.4]	ND[3.4]
Tetrahydrofuran	µg/m^3	74,000.0	ND[1.5]	ND[1.5]	ND[1.5]
Toluene	µg/m^3	37,000.0	ND[1.9]	4.7	ND[1.9]
1,1,1-Trichloroethane	µg/m^3	---	ND[2.7]	ND[2.7]	ND[2.7]
Trichloroethylene	µg/m^3	54,000.0	ND[2.7]	ND[2.7]	ND[2.7]
1,2,4-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]
1,3,5-Trimethylbenzene	µg/m^3	---	ND[2.5]	ND[2.5]	ND[2.5]
Vinyl Acetate	µg/m^3	5,300.0	ND[1.8]	ND[1.8]	1.9
m/p-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]
o-Xylene	µg/m^3	4,300.0	ND[2.2]	ND[2.2]	ND[2.2]

Notes:

1. Method Detection Limit is shown in brackets.
2. ND - Not detected.
3. µg/m^3 - micrograms per cubic meter.
4. Only those compounds that were detected in one or more sample are displayed.
5. Short-term guideline concentrations [SGCs] were obtained from the New York State Department of Environmental Conservation's official DAR-1 [Air Guide-1] SGC Tables.
6. --- = An SGC value was not identified for this compound.
7. SDG - Sample delivery group.

SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
3/24/04	Upstream	18:10	3	12	-1	Yes	Samplers installed today.
3/24/04	Downstream	18:00	4	11			
3/25/04	Upstream	16:30	9	8	0	Yes	None
3/25/04	Downstream	16:35	9	8			
3/26/04	Upstream	15:15	7	8	-1	Yes	None
3/26/04	Downstream	15:20	7	7			
3/29/04	Upstream	17:00	9	12	1	Yes	None
3/29/04	Downstream	17:05	9	13			
3/30/04	Upstream	16:45	9	37	7	Yes	None
3/30/04	Downstream	16:50	10	44			
3/31/04	Upstream	16:30	9	50	0	Yes	None
3/31/04	Downstream	16:35	9	50			
4/1/04	Upstream	16:30	9	36	1	Yes	None
4/1/04	Downstream	16:35	9	37			
4/2/04	Upstream	14:30	6	100	4	Yes	Water in river highly turbid today.
4/2/04	Downstream	14:35	6	104			
4/5/04	Upstream	16:05	Grab	37	3	Yes	Samplers were frozen due to strong winds and below freezing temperatures; BBL collected grab samples; no work was performed in the embayment today.
4/5/04	Downstream	16:10	Grab	40			
4/6/04	Upstream	16:30	Grab	20	3	Yes	Samplers were frozen due to strong winds and below freezing temperatures; BBL collected grab samples.
4/6/04	Downstream	16:35	Grab	23			
4/7/04	Upstream	16:30	8	15	3	Yes	Samplers resumed proper function.
4/7/04	Downstream	16:35	8	18			
4/8/04	Upstream	17:00	9	12	2	Yes	None
4/8/04	Downstream	17:05	9	14			
4/9/04	Upstream	14:30	7	14	4	Yes	None
4/9/04	Downstream	14:35	8	18			
4/12/04	Upstream	17:00	9	9	2	Yes	None
4/12/04	Downstream	17:05	9	11			
4/13/04	Upstream	17:00	10	11	0	Yes	None
4/13/04	Downstream	17:05	10	11			
4/14/04	Upstream	17:00	10	13	0	Yes	None
4/14/04	Downstream	17:05	10	13			
4/15/04	Upstream	16:15	9	13	0	Yes	None
4/15/04	Downstream	16:20	9	13			
4/16/04	Upstream	14:00	7	14	2	Yes	None
4/16/04	Downstream	14:05	7	16			
4/19/04	Upstream	17:00	10	8	5	Yes	None
4/19/04	Downstream	17:05	10	13			
4/20/04	Upstream	17:00	10	13	4	Yes	None
4/20/04	Downstream	17:05	10	17			
4/21/04	Upstream	16:45	7	15	4	Yes	The upstream turbidity sampler had a blown fuse this morning; the fuse was replaced in mid-morning and normal sampling operations were resumed.
4/21/04	Downstream	16:50	9	19			

TABLE 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
4/22/04	Upstream	17:30	11	13	1	Yes	None
4/22/04	Downstream	17:35	10	14			
4/23/04	Upstream	12:00	5	15	2	Yes	None
4/23/04	Downstream	12:05	5	17			
4/26/04	Upstream	16:30	9	12	3	Yes	None
4/26/04	Downstream	16:35	9	15			
4/27/04	Upstream	16:30	9	15	5	Yes	None
4/27/04	Downstream	16:35	9	20			
4/28/04	Upstream	17:30	11	11	3	Yes	None
4/28/04	Downstream	17:35	11	14			
4/29/04	Upstream	17:30	10	14	3	Yes	None
4/29/04	Downstream	17:35	9	17			
4/30/04	Upstream	14:30	8	13	4	Yes	None
4/30/04	Downstream	14:35	8	17			
5/3/04	Upstream	16:15	9	11	6	Yes	A large amount of sheen was in the vicinity of the downstream sampler, which was due to a non-site related diesel fuel spill as a riverboat docked in the City Park capsized and sank.
5/3/04	Downstream	16:20	9	17			
5/4/04	Upstream	17:00	9	9	4	Yes	None
5/4/04	Downstream	17:05	9	13			
5/5/04	Upstream	17:30	11	8	2	Yes	None
5/5/04	Downstream	17:35	11	10			
5/6/04	Upstream	17:00	10	8	4	Yes	None
5/6/04	Downstream	17:05	10	12			
5/7/04	Upstream	14:30	8	18	-4	Yes	Slightly more turbid at upstream location today due to increased boat activity at the dock area.
5/7/04	Downstream	14:35	8	14			
5/10/04	Upstream	16:30	9	11	7	Yes	None
5/10/04	Downstream	16:35	9	18			
5/11/04	Upstream	17:00	9	11	0	Yes	None
5/11/04	Downstream	17:05	9	11			
5/12/04	Upstream	15:45	8	15	3	Yes	None
5/12/04	Downstream	15:50	8	18			
5/13/04	Upstream	17:00	9	8	3	Yes	None
5/13/04	Downstream	17:05	9	11			
5/14/04	Upstream	14:30	7	14	7	Yes	None
5/14/04	Downstream	14:35	7	21			
5/17/04	Upstream	17:30	11	9	5	Yes	None
5/17/04	Downstream	17:35	11	14			
5/18/04	Upstream	16:00	9	10	7	Yes	None
5/18/04	Downstream	16:05	9	17			
5/19/04	Upstream	16:00	9	12	4	Yes	None
5/19/04	Downstream	16:05	9	16			
5/20/04	Upstream	16:30	9	13	1	Yes	None
5/20/04	Downstream	16:35	9	14			

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SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
6/21/04	Upstream	14:30	1	14	1	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	14:30	1	15			
6/21/04	Upstream	15:30	1	10	6	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	15:30	1	16			
6/21/04	Upstream	16:30	1	11	4	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	16:30	1	15			
6/21/04	Upstream	17:30	1	17	1	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	17:30	1	18			
6/21/04	Upstream	18:30	1	19	-5	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	18:30	1	14			
6/21/04	Upstream	19:30	1	12	2	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	19:30	1	14			
6/21/04	Upstream	20:30	1	7	7	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	20:30	1	14			
6/21/04	Upstream	21:30	1	9	0	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	21:30	1	9			
6/21/04	Upstream	22:30	1	8	1	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	22:30	1	9			
6/21/04	Upstream	23:30	1	5	3	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/21/04	Downstream	23:30	1	8			
6/22/04	Upstream	0:30	1	7	5	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	0:30	1	12			
6/22/04	Upstream	1:30	1	5	8	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	1:30	1	13			
6/22/04	Upstream	2:30	1	4	7	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	2:30	1	11			
6/22/04	Upstream	3:30	1	5	4	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	3:30	1	9			
6/22/04	Upstream	4:30	1	5	6	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	4:30	1	11			
6/22/04	Upstream	5:30	1	7	5	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	5:30	1	12			
6/22/04	Upstream	6:30	1	9	5	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	6:30	1	14			
6/22/04	Upstream	7:30	1	8	4	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/22/04	Downstream	7:30	1	12			
6/22/04	Upstream	11:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	11:00	1	5			
6/22/04	Upstream	12:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	12:00	1	5			

TABLE 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
6/22/04	Upstream	13:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	13:00	1	5			
6/22/04	Upstream	14:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	14:00	1	4			
6/22/04	Upstream	15:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	15:00	1	4			
6/22/04	Upstream	16:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	16:00	1	5			
6/22/04	Upstream	17:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	17:00	1	4			
6/22/04	Upstream	18:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	18:00	1	4			
6/22/04	Upstream	19:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	19:00	1	4			
6/22/04	Upstream	20:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	20:00	1	3			
6/22/04	Upstream	21:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	21:00	1	3			
6/22/04	Upstream	22:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	22:00	1	3			
6/22/04	Upstream	23:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/22/04	Downstream	23:00	1	3			
6/23/04	Upstream	0:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	0:00	1	3			

TABLE 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
6/23/04	Upstream	1:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	1:00	1	3			
6/23/04	Upstream	2:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	2:00	1	4			
6/23/04	Upstream	3:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	3:00	1	4			
6/23/04	Upstream	4:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	4:00	1	4			
6/23/04	Upstream	5:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	5:00	1	5			
6/23/04	Upstream	6:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	6:00	1	4			
6/23/04	Upstream	7:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	7:00	1	3			
6/23/04	Upstream	8:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	8:00	1	3			
6/23/04	Upstream	9:00	--	--	NA	Yes	Hourly samples collected during initial dewatering of Embayment #1; no upstream sample collected at this time due to battery malfunction.
6/23/04	Downstream	9:00	1	2			
6/23/04	Upstream	10:00	1 (Grab Sample)	8	-5	Yes	Hourly samples collected during initial dewatering of Embayment #1; a grab sample was collected at this time at the upstream location to provide a general comparison for the most recent 24-hour hourly samples.
6/23/04	Downstream	10:00	1	3			
6/23/04	Upstream	13:00	1	21	0	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/23/04	Downstream	13:00	1	21			
6/23/04	Upstream	14:00	1	19	-4	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/23/04	Downstream	14:00	1	15			
6/23/04	Upstream	15:00	1	18	1	Yes	Hourly samples collected during initial dewatering of Embayment #1.
6/23/04	Downstream	15:00	1	19			

TABLE 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
6/24/04	Upstream	12:00	21	10	-3	Yes	Composite sample of 21 hourly samples collected during the 6/23-6/24/04 24-hour sampling round.
6/24/04	Downstream	12:10	21	7			
6/25/04	Upstream	12:15	24	11	-6	Yes	Composite sample of 24 hourly samples collected over a 24-hour period.
6/25/04	Downstream	12:25	24	6			
7/16/04	Upstream	11:30	23	11	31	Yes	Composite samples collected over an approx. 24-hour period from 7/15-7/16/04; Highest delta to date; these results were not consistent with all previous data; turbidity levels were more applicable to current river conditions than to any activities associated with the site.
7/16/04	Downstream	11:40	23	42			
7/20/04	Upstream	11:00	23	12	-2	Yes	Composite samples collected over an approx. 24-hour period from 7/19-7/20/04.
7/20/04	Downstream	11:10	23	10			
7/21/04	Upstream	11:00	24	12	-6	Yes	Composite samples collected over an approx. 24-hour period from 7/20-7/21/04.
7/21/04	Downstream	11:10	24	6			
7/22/04	Upstream	11:00	24	11	-4	Yes	Composite samples collected over an approx. 24-hour period from 7/21-7/22/04.
7/22/04	Downstream	11:10	24	7			
7/23/04	Upstream	11:00	24	10	-1	Yes	Composite samples collected over an approx. 24-hour period from 7/22-7/23/04.
7/23/04	Downstream	11:10	24	9			
7/27/04	Upstream	12:15	24	7	0	Yes	Composite samples collected over an approx. 24-hour period from 7/26-7/27/04.
7/27/04	Downstream	12:25	24	7			
7/28/04	Upstream	12:00	24	10	-5	Yes	Composite samples collected over an approx. 24-hour period from 7/27-7/28/04.
7/28/04	Downstream	12:10	24	5			
7/29/04	Upstream	12:00	24	9	-4	Yes	Composite samples collected over an approx. 24-hour period from 7/28-7/29/04.
7/29/04	Downstream	12:10	24	5			
7/30/04	Upstream	12:00	24	14	-8	Yes	Composite samples collected over an approx. 24-hour period from 7/29-7/30/04.
7/30/04	Downstream	12:10	24	6			
8/3/04	Upstream	12:30	24	14	-4	Yes	Composite samples collected over an approx. 24-hour period from 8/2-8/3/04.
8/3/04	Downstream	12:40	24	10			
8/4/04	Upstream	12:00	24	13	-3	Yes	Composite samples collected over an approx. 24-hour period from 8/3-8/4/04.
8/4/04	Downstream	12:10	24	10			
8/5/04	Upstream	12:00	24	15	-6	Yes	Composite samples collected over an approx. 24-hour period from 8/4-8/5/04.
8/5/04	Downstream	12:10	24	9			
8/6/04	Upstream	11:30	24	14	-3	Yes	Composite samples collected over an approx. 24-hour period from 8/5-8/6/04.
8/6/04	Downstream	11:40	24	11			

SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
8/10/04	Upstream	12:00	24	71	8	Yes	Composite samples collected over an approx. 24-hour period from 8/9-8/10/04; BBL observed overall turbidity in the river was higher than normal today; the NYSDEC informed BBL that it would be acceptable to temporarily discontinue turbidity sampling as of 8/10/04.
8/10/04	Downstream	12:10	24	79			
12/3/04	Upstream	13:15	1	112	-78	Yes	Hourly turbidity samples during discharge to the Hudson River (through the TWTS).
12/3/04	Downstream	13:15	1	34			
12/3/04	Upstream	14:15	1	46	-13	Yes	Hourly turbidity samples during discharge to the Hudson River (through the TWTS).
12/3/04	Downstream	14:15	1	33			
12/3/04	Upstream	15:15	1	48	34	Yes	Hourly turbidity samples during discharge to the Hudson River (through the TWTS).
12/3/04	Downstream	15:15	1	82			
12/4/04	Upstream	15:00	12	20	6	Yes	Composite samples collected over a 24-hour period from 12/3/04-12/4/04 during discharge to the Hudson River; BBL was only able to collect 12 hourly samples per location as the samplers froze up during the overnight hours.
12/4/04	Downstream	15:10	12	26			
4/15/05	Upstream	15:00	7	29	-2	Yes	Background composite samples (7-hour period) for Embayment #2 restoration activities.
4/15/05	Downstream	15:10	7	27			
4/18/05	Upstream	16:00	8	17	-4	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/18/05	Downstream	16:10	8	13			
4/19/05	Upstream	16:00	8	14	1	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/19/05	Downstream	16:10	8	15			
4/20/05	Upstream	15:30	9	15	0	Yes	Composite samples collected (9-hour period) during Embayment #2 restoration activities.
4/20/05	Downstream	15:40	9	15			
4/21/05	Upstream	15:30	8	16	-2	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/21/05	Downstream	15:40	8	14			
4/22/05	Upstream	14:45	8	19	6	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/22/05	Downstream	15:00	8	25			
4/25/05	Upstream	15:30	8	18	3	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/25/05	Downstream	15:40	8	21			
4/26/05	Upstream	15:30	8	24	5	Yes	Composite samples collected (8-hour period) during Embayment #2 restoration activities.
4/26/05	Downstream	15:40	8	29			
4/27/05	Upstream	15:30	9	21	6	Yes	Composite samples collected (9-hour period) during Embayment #2 restoration activities.
4/27/05	Downstream	15:40	9	27			
4/28/05	Upstream	8:00	16	16	1	Yes	Composite sample of 16 hourly samples collected during the overnight 4/28-4/29/05 sampling round during nightly Embayment #2 restoration activities.
4/28/05	Downstream	8:10	16	17			

T. ..E 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
4/29/05	Upstream	8:00	24	10	-3	Yes	Composite sample of 24 hourly samples collected during the overnight 4/29-4/30/05 sampling round during nightly Embayment #2 restoration activities; samples collected on Monday (5/2/05).
4/29/05	Downstream	8:10	24	7			
5/2/05	Upstream	8:00	24	12	-4	Yes	Composite sample of 24 hourly samples collected from 5/2/05-5/3/05 during Embayment #2 restoration activities and river wall cutting activities; samples collected on Tuesday (5/3/05).
5/2/05	Downstream	8:10	24	8			
5/3/05	Upstream	8:00	24	15	0	Yes	Composite sample of 24 hourly samples collected from 5/3/05-5/4/05 during Embayment #2 restoration activities and river wall cutting activities; samples collected on Wednesday (5/4/05).
5/3/05	Downstream	8:10	24	15			
5/4/05	Upstream	8:00	24	14	0	Yes	Composite sample of 24 hourly samples collected from 5/4/05-5/5/05 during Embayment #2 restoration activities; samples collected on Thursday (5/5/05).
5/4/05	Downstream	8:10	24	14			
5/5/05	Upstream	8:00	24	14	-1	Yes	Composite sample of 24 hourly samples collected from 5/4/05-5/5/05 during Embayment #2 restoration activities; samples collected on Friday (5/6/05).
5/5/05	Downstream	8:10	24	13			
8/18/05	Upstream	8:30	24	11	-3	Yes	Composite sample of 24 hourly samples collected from 8/17/05-8/18/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/18/05	Downstream	8:45	24	8			
8/19/05	Upstream	8:30	24	14	-2	Yes	Composite sample of 24 hourly samples collected from 8/18/05-8/19/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/19/05	Downstream	8:45	24	12			
8/24/05	Upstream	10:30	24	16	6	Yes	Composite sample of 24 hourly samples collected from 8/23/05-8/24/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/24/05	Downstream	10:45	24	22			
8/25/05	Upstream	10:30	24	7	-1	Yes	Composite sample of 24 hourly samples collected from 8/24/05-8/25/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/25/05	Downstream	10:45	24	6			
8/26/05	Upstream	9:30	24	15	-7	Yes	Composite sample of 24 hourly samples collected from 8/25/05-8/26/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/26/05	Downstream	9:40	24	8			
8/26/05	Upstream	15:30	7	17	-6	Yes	Composite sample of 7 hourly samples collected on 8/26/05 (during the workday) during sheet cutting activities along the south bank of Embayment #1 for restoration purposes.
8/26/05	Downstream	15:45	7	11			

TABLE 4
SUMMARY OF TURBIDITY MONITORING RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Location	Time	Number of Samples (Composite)	Results (NTUs)	Downstream Delta (NTUs)	Acceptable Criteria	Comments
8/30/05	Upstream	8:30	24	21	-3	Yes	Composite sample of 24 hourly samples collected from 8/29/05-8/30/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/30/05	Downstream	8:40	24	18			
8/31/05	Upstream	9:30	24	14	0	Yes	Composite sample of 24 hourly samples collected from 8/30/05-8/31/05 during excavation along the south bank of Embayment #1 for restoration purposes.
8/31/05	Downstream	9:40	24	14			
9/1/05	Upstream	9:00	24	15	-2	Yes	Composite sample of 24 hourly samples collected from 8/31/05-9/1/05 during stone installation along the south bank of Embayment #1 for restoration.
9/1/05	Downstream	9:15	24	13			
9/2/05	Upstream	10:00	24	9	-1	Yes	Composite sample of 24 hourly samples collected from 9/1/05-9/2/05 during stone installation along the south bank of Embayment #1 for restoration.
9/2/05	Downstream	10:10	24	8			

Notes:
1. NA - Not available.
2. NTU - Nephelometric turbidity unit.

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1	31.87	5/7/04			
2	37.09	5/7/04			
3	33.92	5/7/04			
4	31.82	5/7/04			
5	25.57	5/10/04			
6	30.71	5/10/04			
7	31.15	5/11/04			
8	29.10	5/11/04	251.23	TAGM 4061-Regulated Waste	
9	32.01	6/30/04			
10	32.39	6/30/04	64.40	Nonhazardous Waste	
11	17.45	7/1/04			
12	16.10	7/7/04			
13	22.26	7/7/04			
14	25.57	7/7/04			
15	35.17	7/7/04			
16	39.21	7/7/04			
17	24.99	7/7/04			
18	32.76	7/7/04			
19	34.16	7/7/04			
20	37.90	7/7/04			
21	32.30	7/7/04			
22	35.81	7/7/04			
23	33.07	7/7/04			
24	32.56	7/8/04			
25	24.37	7/8/04			
26	31.78	7/8/04			
27	32.90	7/8/04			
28	32.87	7/8/04			
29	33.67	7/8/04			
30	30.44	7/8/04			
31	35.93	7/8/04			
32	35.56	7/9/04			
33	33.76	7/9/04			
34	32.38	7/9/04			
35	34.81	7/9/04			
36	36.92	7/9/04			
37	36.22	7/9/04			
38	35.41	7/9/04			
39	34.41	7/9/04			
40	34.90	7/9/04			
41	30.10	7/9/04			
42	32.19	7/12/04			
43	32.75	7/12/04			
44	33.54	7/12/04			
45	30.36	7/12/04			
46	30.79	7/12/04			
47	32.88	7/12/04			
48	33.44	7/12/04			
49	27.15	7/12/04			
50	31.82	7/12/04			
51	38.75	7/13/04			
52	34.02	7/13/04			
53	37.94	7/13/04			
54	36.41	7/13/04			
55	30.85	7/13/04			
56	32.92	7/13/04			
57	32.78	7/13/04			
58	35.44	7/13/04			
59	38.00	7/13/04			
60	34.98	7/14/04			
61	33.18	7/14/04			
62	33.74	7/14/04			
63	31.04	7/14/04			
64	33.33	7/14/04			
65	34.05	7/14/04			
66	38.32	7/14/04			
67	31.89	7/14/04			
68	26.04	7/14/04			
69	35.38	7/15/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
70	33.91	7/15/04			
71	39.44	7/15/04			
72	38.13	7/15/04			
73	31.58	7/15/04			
74	34.40	7/15/04			
75	40.19	7/15/04			
76	36.83	7/15/04			
77	31.55	7/15/04			
78	36.34	7/16/04			
79	36.59	7/16/04			
80	36.00	7/16/04			
81	35.58	7/16/04			
82	34.55	7/16/04			
83	35.72	7/16/04			
84	35.84	7/16/04			
85	34.26	7/16/04			
86	20.17	7/16/04			
87	33.05	7/19/04			
88	32.75	7/19/04			
89	36.73	7/20/04	2,613.33	Nonhazardous Waste	
90	22.66	9/29/04			
91	32.18	9/29/04	54.84	TAGM 4061-Regulated Waste	
92	36.22	10/4/04			
93	31.70	10/4/04			
94	31.05	10/4/04			
95	32.72	10/5/04			
96	29.09	10/5/04			
97	28.16	10/5/04			
98	30.89	10/5/04			
99	27.92	10/5/04			
100	33.91	10/5/04			
101	28.82	10/5/04			
102	25.75	10/5/04			
103	31.89	10/5/04			
104	28.58	10/5/04			
105	33.24	10/6/04			
106	29.65	10/6/04			
107	29.89	10/6/04			
108	35.50	10/6/04			
109	31.50	10/6/04			
110	31.88	10/6/04			
111	29.45	10/6/04			
112	27.05	10/7/04			
113	21.23	10/6/04			
114	24.93	10/7/04			
115	25.15	10/7/04			
117	23.89	10/7/04			
118	24.11	10/7/04			
119	30.84	10/7/04			
121	23.66	10/12/04			
122	25.31	10/12/04			
123	25.41	10/12/04			
124	29.59	10/12/04			
125	24.80	10/12/04			
126	23.88	10/12/04			
127	26.33	10/12/04			
128	26.47	10/13/04			
129	20.71	10/13/04			
130	29.19	10/13/04			
131	21.75	10/13/04			
132	25.06	10/13/04			
133	24.90	10/13/04			
134	22.03	10/13/04			
135	21.15	10/13/04			
136	25.08	10/13/04			
137	29.46	10/14/04			
138	22.68	10/14/04			
139	21.87	10/14/04			
140	25.32	10/14/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
141	25.88	10/14/04			
142	22.32	10/14/04			
143	28.47	10/14/04			
144	26.86	10/15/04			
145	25.24	10/15/04			
146	30.89	10/15/04			
147	23.88	10/15/04			
148	27.59	10/15/04			
149	29.52	10/15/04			
150	33.33	10/15/04			
151	21.86	10/15/04			
152	32.21	10/18/04			
153	34.62	10/18/04			
154	23.65	10/18/04			
155	28.95	10/18/04			
156	28.52	10/18/04			
157	25.02	10/18/04			
158	22.28	10/19/04			
159	25.89	10/19/04			
160	28.20	10/19/04			
161	24.54	10/19/04			
162	20.92	10/19/04			
163	19.79	10/19/04			
164	20.55	10/19/04			
166	24.53	10/20/04			
167	21.79	10/20/04			
169	22.05	10/20/04			
170	24.41	10/20/04			
172	18.49	10/20/04			
173	20.04	10/20/04			
174	19.49	10/20/04			
175	20.19	10/20/04			
177	20.26	10/20/04			
178	24.50	10/20/04			
179	20.44	10/20/04			
180	22.03	10/20/04			
181	20.04	10/21/04			
182	21.95	10/21/04			
183	22.43	10/21/04			
184	23.55	10/21/04			
185	21.35	10/21/04			
186	21.68	10/21/04			
187	21.80	10/21/04			
188	22.25	10/21/04			
189	23.30	10/22/04			
190	24.14	10/22/04			
191	22.25	10/22/04			
192	25.32	10/22/04			
195	27.04	10/22/04			
196	23.61	10/22/04			
197	24.90	10/22/04			
198	21.41	10/22/04			
200	23.01	10/22/04			
201	21.83	10/22/04			
202	23.47	10/22/04			
203	23.47	10/22/04			
204	19.01	10/25/04			
205	21.98	10/25/04			
206	24.98	10/25/04			
207	24.60	10/25/04			
208	26.56	10/25/04			
209	17.67	10/25/04			
210	22.19	10/25/04			
211	23.42	10/25/04			
213	26.78	10/26/04			
214	23.26	10/26/04			
215	21.79	10/26/04			
216	26.17	10/26/04			
218	25.35	10/26/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
219	22.63	10/26/04			
220	22.59	10/26/04			
221	24.25	10/26/04			
223	27.08	10/26/04			
224	22.64	10/26/04			
225	26.55	10/26/04			
226	26.51	10/27/04			
227	24.64	10/27/04			
228	21.49	10/27/04			
229	25.44	10/27/04			
230	23.24	10/27/04			
231	22.76	10/27/04			
232	22.66	10/27/04			
233	20.46	10/27/04			
234	23.84	10/28/04			
235	23.57	10/28/04			
236	21.46	10/28/04			
237	30.14	10/28/04			
238	23.92	10/28/04			
239	25.78	10/28/04			
240	28.24	10/28/04			
241	26.04	10/28/04			
242	22.22	10/28/04			
243	25.09	10/28/04			
244	23.96	10/28/04			
245	19.88	10/28/04			
246	23.89	10/29/04			
247	22.26	10/29/04			
248	24.44	10/29/04			
249	25.67	10/29/04			
250	22.08	10/29/04			
251	26.82	10/29/04	3,713.68	TAGM 4061-Regulated Waste	
116	28.46	10/7/04			
120	33.89	10/7/04			
161A	30.77	10/19/04			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
165	34.43	10/19/04			
168	35.60	10/20/04			
171	34.28	10/20/04			
176	34.86	10/20/04			
193	35.56	10/22/04			
194	36.21	10/22/04			
199	37.39	10/22/04			
212	38.57	10/26/04			
217	29.17	10/26/04			
222	37.12	10/26/04	446.31	Nonhazardous Waste	
252	20.25	11/1/04			
253	23.75	11/1/04			
254	27.03	11/1/04			
255	27.5	11/1/04			
256	26.16	11/1/04			
257	24.93	11/1/04			
258	21.24	11/1/04			
259	25.07	11/1/04			
260	24.43	11/2/04			
261	26.76	11/2/04			
262	24.09	11/2/04			
263	26.07	11/2/04			
264	21.7	11/2/04			
265	27	11/2/04			
266	26.53	11/2/04			
267	21.52	11/2/04			
268	21.33	11/2/04			
269	20.32	11/2/04			
270	26.13	11/2/04			
271	22.42	11/3/04			
273	33.71	11/3/04			
274	27.5	11/3/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
275	27.63	11/3/04			
277	32.92	11/3/04			
278	22.7	11/3/04			
279	31.78	11/3/04			
280	27.22	11/3/04			
282	36.04	11/4/04			
283	27.72	11/4/04			
284	27.04	11/4/04			
285	31.9	11/4/04			
286	29.2	11/4/04			
287	32.62	11/4/04			
288	38.89	11/4/04			
289	35.57	11/4/04			
290	26.73	11/4/04			
291	34.67	11/4/04			
292	30.92	11/5/04			
293	35.78	11/5/04			
294	29.69	11/5/04			
295	25.58	11/5/04			
296	30.82	11/5/04			
297	32.58	11/5/04			
298	26.6	11/5/04			
299	24.54	11/8/04			
300	25.4	11/8/04			
301	30.57	11/8/04			
302	29.06	11/8/04			
303	38.16	11/8/04			
304	31.18	11/8/04			
305	41.12	11/8/04			
306	35.15	11/8/04			
307	35.5	11/8/04			
308	28.48	11/9/04			
309	33.22	11/9/04			
310	35.58	11/9/04			
311	37.06	11/9/04			
312	38.49	11/9/04			
313	35.59	11/9/04			
314	23.52	11/9/04			
315	27.04	11/9/04			
316	33.09	11/9/04			
317	36.94	11/9/04			
318	25.32	11/10/04			
319	34.77	11/10/04			
320	38.79	11/10/04			
321	26.08	11/10/04			
322	30.53	11/10/04			
323	32.08	11/10/04			
324	34.27	11/10/04			
325	31.02	11/10/04			
326	35.63	11/10/04			
327	33.36	11/10/04			
328	37.38	11/10/04			
333	28.93	11/12/04			
334	27.85	11/12/04			
335	24.98	11/12/04			
336	33.43	11/12/04			
337	26.97	11/12/04			
338	29.32	11/12/04			
339	35.23	11/12/04			
340	30.54	11/12/04			
341	33	11/12/04			
342	27.31	11/12/04			
343	36.17	11/12/04			
344	30.29	11/15/04			
345	26.15	11/15/04			
346	35.21	11/15/04			
347	23.2	11/15/04			
348	31.38	11/15/04			
349	18.57	11/15/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
350	33.49	11/15/04			
351	27.57	11/15/04			
352	35.65	11/16/04			
353	31.3	11/16/04			
354	32.17	11/16/04			
355	26.83	11/16/04			
357	24.82	11/16/04			
358	35.32	11/16/04			
359	26.96	11/16/04			
361	32.27	11/16/04			
362	28.41	11/16/04			
363	36.61	11/16/04			
364	27.99	11/16/04			
366	34.42	11/23/04			
368	29.36	11/23/04			
369	33.08	11/23/04			
370	25.08	11/23/04			
371	31.28	11/23/04			
372	28.73	11/24/04			
373	24.01	11/24/04			
374	25.95	11/24/04			
375	35.66	11/24/04			
376	27.79	11/24/04			
377	26.55	11/24/04			
378	26.80	11/29/04			
379	33.64	11/29/04			
380	33.56	11/29/04			
381	26.09	11/29/04			
382	27.50	11/29/04			
383	30.92	11/29/04			
384	37.12	11/29/04			
385	25.06	11/29/04	3,661.48	TAGM 4061-Regulated Waste	
272	31.05	11/3/04			
276	12.19	11/16/04			
281	37.04	11/3/04			
329	16.86	11/11/04			
330	20.83	11/11/04			
331	25.97	11/11/04			
332	23.55	11/12/04			
356	24.36	11/16/04			
360	20.95	11/16/04			
365	23.87	11/17/04			
367	39.53	11/3/04	276.22	Nonhazardous Waste	
406	24.32	12/9/04			
407	34.62	12/9/04			
408	24.24	12/9/04			
409	26.10	12/9/04			
410	37.73	12/9/04			
411	28.36	12/9/04			
412	38.59	12/10/04			
413	28.16	12/10/04			
414	33.43	12/10/04			
415	30.36	12/10/04			
416	32.08	12/10/04			
417	32.52	12/13/04			
418	28.53	12/13/04			
419	29.51	12/13/04			
420	30.99	12/13/04			
421	28.96	12/13/04			
422	27.49	12/13/04			
423	28.40	12/14/04			
424	27.33	12/14/04			
425	27.49	12/14/04			
426	34.64	12/14/04			
427	33.35	12/14/04			
428	32.56	12/14/04			
429	28.77	12/14/04			
430	28.81	12/15/04			
431	23.98	12/15/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
432	39.06	12/15/04			
433	26.18	12/15/04			
435	25.92	12/15/04			
436	20.44	12/15/04			
437	38.90	12/15/04			
440	24.70	12/16/04			
442	27.79	12/16/04			
444	31.50	12/16/04			
447	36.60	12/16/04			
448	32.67	12/17/04			
449	24.94	12/17/04			
451	22.85	12/20/04			
452	26.44	12/20/04			
453	28.84	12/20/04			
454	26.06	12/20/04			
456	23.41	12/21/04			
457	24.46	12/21/04			
458	26.54	12/21/04			
459	29.18	12/21/04			
460	25.18	12/21/04			
461	25.27	12/21/04			
462	26.86	12/21/04			
463	21.77	12/21/04			
464	25.16	12/21/04			
465	25.14	12/21/04			
466	26.03	12/22/04			
467	24.95	12/22/04			
468	25.92	12/22/04			
471	28.70	12/22/04			
472	28.85	12/22/04			
473	29.54	12/22/04			
474	39.22	12/23/04			
475	35.98	12/23/04			
476	37.33	12/23/04			
477	39.22	12/23/04			
478	34.79	12/27/04			
479	39.15	12/27/04			
480	34.07	12/27/04			
481	32.89	12/27/04			
482	42.77	12/27/04			
483	26.79	12/27/04			
484	30.56	12/27/04			
485	33.74	12/27/04			
486	41.18	12/27/04			
487	24.17	12/28/04			
488	29.25	12/28/04			
489	31.35	12/28/04			
490	34.43	12/28/04			
491	29.85	12/28/04			
492	28.43	12/28/04			
493	27.95	12/28/04			
494	25.07	12/28/04			
495	44.10	12/28/04			
496	34.62	12/28/04			
497	23.69	12/29/04			
498	31.41	12/29/04			
499	36.00	12/29/04			
500	34.47	12/29/04			
501	45.39	12/29/04			
502	29.39	12/29/04			
503	37.95	12/29/04			
504	32.72	12/29/04			
505	27.82	12/29/04			
506	46.20	12/29/04			
507	34.97	12/30/04			
508	29.94	12/30/04			
509	38.54	12/30/04			
510	46.20	12/30/04			
511	37.29	12/30/04			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
513	37.71	12/31/04			
514	29.98	12/30/04			
515	48.94	12/30/04	3,058.71	TAGM 4061-Regulated Waste	
386	21.55	12/1/04			
387	21.11	12/1/04			
388	20.75	12/1/04			
389	23.80	12/2/04			
390	23.17	12/2/04			
391	24.94	12/2/04			
392	21.49	12/3/04			
393	22.07	12/3/04			
394	24.82	12/3/04			
395	23.56	12/6/04			
396	26.46	12/6/04			
397	27.29	12/6/04			
398	37.10	12/7/04			
399	27.24	12/7/04			
400	35.68	12/7/04			
401	27.81	12/7/04			
402	38.26	12/8/04			
403	34.34	12/8/04			
404	40.66	12/8/04			
405	33.09	12/8/04			
434	42.70	12/15/04			
438	41.72	12/15/04			
439	19.82	12/15/04			
441	39.36	12/16/04			
443	29.52	12/16/04			
445	43.23	12/16/04			
446	31.28	12/16/04			
450	17.87	12/20/04			
455	17.52	12/20/04			
469	28.58	12/22/04			
470	28.82	12/22/04			
512	36.42	12/30/04	932.05	Nonhazardous Waste	
516	33.24	1/5/05			
517	31.87	1/5/05			
518	32.01	1/5/05			
519	42.76	1/5/05			
520	38.28	1/5/05			
521	41.00	1/5/05			
522	38.66	1/5/05			
523	45.81	1/6/05			
524	39.24	1/6/05			
525	41.80	1/7/05			
526	37.43	1/7/05			
527	39.57	1/7/05			
528	32.34	1/7/05			
529	45.77	1/7/05			
530	36.21	1/11/05			
531	40.14	1/11/05			
532	41.98	1/12/05			
533	46.45	1/13/05			
534	41.61	1/13/05			
535	37.91	1/14/05			
536	36.27	1/14/05			
537	38.96	1/17/05			
538	41.24	1/17/05			
539	40.15	1/17/05			
540	38.05	1/17/05			
541	40.71	1/17/05			
542	35.55	1/17/05			
543	34.47	1/18/05			
544	36.80	1/18/05			
545	35.07	1/18/05			
546	39.07	1/18/05			
547	38.49	1/18/05			
548	41.81	1/18/05			
549	38.16	1/19/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
550	34.15	1/19/05			
551	35.56	1/19/05			
552	35.97	1/19/05			
553	32.76	1/19/05			
554	33.70	1/19/05			
555	38.84	1/20/05	1,530.86	Nonhazardous Waste	
556	36.35	2/9/05			
557	36.47	2/9/05			
558	35.99	2/9/05			
559	35.79	2/9/05			
560	43.11	2/9/05			
561	36.71	2/10/05			
562	34.32	2/10/05			
563	39.18	2/10/05			
564	18.55	2/10/05			
565	35.30	2/10/05			
566	41.41	2/10/05			
567	21.02	2/10/05			
568	39.57	2/10/05			
569	39.70	2/11/05			
570	38.34	2/11/05			
571	18.53	2/11/05			
572	41.37	2/11/05			
573	37.02	2/11/05			
574	38.65	2/11/05			
575	19.08	2/11/05			
576	33.37	2/11/05			
577	37.51	2/14/05			
578	32.94	2/14/05			
579	21.10	2/14/05			
580	33.34	2/14/05			
581	37.96	2/14/05			
582	37.31	2/14/05			
583	19.37	2/14/05			
584	41.45	2/14/05			
585	20.68	2/15/05			
586	38.94	2/15/05			
587	34.03	2/15/05			
588	35.29	2/15/05			
589	37.42	2/15/05			
590	34.20	2/15/05			
591	37.31	2/15/05			
592	29.32	2/15/05			
593	38.47	2/17/05			
594	38.14	2/17/05			Number not shown on manifest.
595	38.94	2/17/05			
596	36.10	2/18/05			
597	34.83	2/18/05			
598	40.17	2/18/05			
599	38.70	2/18/05			
600	37.17	2/22/05			
601	38.69	2/22/05			
602	41.10	2/22/05			
603	37.76	2/22/05			
604	37.22	2/23/05			
605	40.52	2/23/05			
606	40.65	2/23/05			
607	34.68	2/23/05			
608	22.72	2/23/05	1,843.86	Nonhazardous Waste	
615	37.35	3/14/05			
616	35.68	3/11/05			
617	33.75	3/14/05			This material was transported to American Ref-Fuel Co.,
618	35.77	3/16/05	142.55	Nonhazardous Waste	which directly billed Niagara Mohawk for disposal costs.
609	29.15	3/3/05			
610	32.43	3/3/05			
611	28.42	3/4/05			
612	31.12	3/4/05			
613	29.97	3/7/05			
614	30.24	3/7/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
619	31.07	3/17/05			
620	30.33	3/17/05			
621	29.01	3/17/05			
622	40.41	3/17/05			
623	38.62	3/17/05			
624	31.04	3/17/05			
625	39.91	3/18/05	421.72	Nonhazardous Waste	
626	42.06	3/28/05			
627	31.71	3/28/05			
628	27.59	3/28/05			
629	38.30	3/28/05			
630	27.95	3/29/05			
631	34.22	3/29/05			
632	32.79	3/29/05			
633	31.80	3/29/05			
634	29.65	3/29/05			
635	31.33	3/29/05			
636	28.54	3/29/05			
637	28.45	3/29/05			
638	30.60	3/30/05			
639	33.32	3/30/05			
640	27.16	3/30/05			
641	36.25	3/30/05			
642	35.33	3/30/05			
643	29.15	3/30/05			
644	29.15	3/30/05			
645	37.01	3/31/05			
646	35.11	3/31/05			
647	31.15	3/31/05			
648	27.84	3/31/05			
649	37.86	4/1/05			
650	30.86	4/1/05			
651	25.21	4/1/05			
652	30.08	4/1/05			
653	37.65	4/1/05			
654	33.38	4/1/05			
655	28.45	4/1/05			
656	30.49	4/1/05			
657	37.23	4/4/05			
658	30.23	4/4/05			
659	24.89	4/4/05			
660	29.20	4/5/05			
661	31.76	4/5/05			
662	38.39	4/5/05			
663	29.46	4/5/05			
664	28.20	4/5/05			
665	34.39	4/5/05			
666	32.20	4/6/05			
667	28.49	4/6/05			
669	31.26	4/6/05			
670	30.60	4/6/05			
671	30.88	4/6/05			
673	37.04	4/6/05			
674	32.36	4/7/05			
675	39.60	4/7/05			
676	34.17	4/7/05			
677	34.24	4/7/05			
678	28.88	4/7/05			
679	32.67	4/7/05			
680	33.79	4/8/05			
681	34.05	4/8/05			
682	32.83	4/8/05			
683	19.67	4/8/05			
684	27.03	4/8/05			
685	29.69	4/8/05			
686	30.35	4/8/05			
687	26.57	4/8/05			
688	29.88	4/11/05			
689	34.31	4/11/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
690	33.50	4/11/05			
691	36.98	4/11/05			
692	31.43	4/11/05			
693	34.31	4/11/05			
694	27.30	4/11/05			
695	35.60	4/11/05			
696	30.02	4/12/05			
697	24.84	4/12/05			
698	32.35	4/12/05			
699	36.55	4/12/05			
700	35.36	4/12/05			
701	33.92	4/12/05			
702	32.92	4/12/05			
703	38.73	4/12/05			
704	34.84	4/13/05			
705	38.63	4/13/05			
706	40.34	4/13/05			
707	41.95	4/13/05			
708	38.30	4/13/05			
709	32.92	4/13/05			
710	36.22	4/14/05			
711	37.77	4/14/05			
712	29.38	4/14/05			
713	36.67	4/14/05			
714	38.12	4/14/05			
715	35.39	4/14/05			
716	31.00	4/15/05			The associated manifest incorrectly indicated the disposal facility as the Albany County Landfill. This material was transported to the RESOIL Facility.
717	39.28	4/15/05			
718	38.87	4/15/05			
720	36.71	4/15/05			
721	34.95	4/15/05			
722	37.85	4/15/05			
724	31.40	4/18/05			
725	37.25	4/18/05			
727	33.54	4/18/05			
728	38.75	4/18/05			
730	39.26	4/19/05			
731	31.07	4/19/05			
732	36.98	4/19/05			
733	35.98	4/19/05			
734	33.28	4/20/05			
735	32.68	4/20/05			
736	33.74	4/20/05			
737	30.60	4/20/05			
738	35.51	4/21/05			
739	36.59	4/21/05			
740	33.51	4/21/05			
741	38.26	4/21/05			
742	34.94	4/21/05			
743	35.40	4/22/05			
744	35.36	4/22/05			
745	36.49	4/22/05			
746	33.46	4/22/05			
747	33.98	4/22/05			
748	34.72	4/22/05			
749	30.37	4/25/05			
750	34.41	4/25/05			
751	33.05	4/25/05			
754	31.17	4/25/05			
755	32.10	4/25/05			
756	34.89	4/25/05			
757	40.20	4/26/05			
758	34.94	4/26/05			
759	35.41	4/26/05			
761	39.32	4/26/05			
762	37.89	4/26/05			
763	38.92	4/26/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
765	37.59	4/27/05			
766	36.34	4/27/05			
767	37.34	4/27/05			
769	35.71	4/27/05			
770	32.91	4/27/05			
771	34.18	4/27/05			
772	37.27	4/28/05			
773	31.11	4/28/05			
775	35.69	4/28/05			
776	38.58	4/28/05	4,669.90	TAGM 4061-Regulated Waste	
668	29.92	4/6/05			
672	29.69	4/6/05			
719	35.14	4/15/05			
723	37.93	4/15/05			
726	36.14	4/18/05			
729	37.21	4/18/05			
752	26.84	4/25/05			
753	36.51	4/26/05			
760	43.40	4/26/05			
764	37.24	4/26/05			
768	33.16	4/27/05			
774	27.29	4/28/05			
777	36.16	4/28/05			
778	43.93	4/29/05			
779	37.77	4/29/05	528.33	Nonhazardous Waste	
780 B	31.16	5/10/05			The associated manifest number was inadvertently repeated; a B label was added to the manifest for tracking purposes.
781 B	33.08	5/10/05			The associated manifest number was inadvertently repeated; a B label was added to the manifest for tracking purposes.
787	36.92	5/9/05			
788	30.06	5/9/05			
789	35.19	5/9/05			
790	40.06	5/9/05			
791	30.37	5/9/05			
792	39.45	5/9/05			
793	31.36	5/9/05			
794	32.36	5/9/05			
795	28.16	5/9/05			
796	34.36	5/9/05			
797	34.68	5/10/05			
798	32.74	5/10/05			
799	29.87	5/10/05			
800	33.35	5/10/05			
801	32.52	5/10/05			
802	34.08	5/10/05			
803	36.50	5/10/05			
804	31.07	5/10/05			
805	32.35	5/11/05			
806	32.02	5/11/05			
807	33.66	5/11/05			
808	33.28	5/11/05			
809	28.71	5/11/05			
810	35.09	5/11/05			
811	31.67	5/11/05			
812	31.87	5/11/05			
813	33.21	5/11/05			
814	43.14	5/11/05			
815	33.16	5/12/05			
816	28.55	5/12/05			
817	34.34	5/12/05			
818	34.56	5/12/05			
819	34.07	5/12/05			
820	28.44	5/12/05			
821	32.73	5/12/05			
822	32.70	5/12/05			
823	30.67	5/13/05			
824	33.77	5/13/05			
825	34.43	5/13/05			
826	33.79	5/13/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
827	35.78	5/13/05			
828	31.81	5/13/05			
829	33.05	5/13/05			
830	33.56	5/16/05			
831	31.14	5/16/05			
832	37.97	5/16/05			
833	33.15	5/16/05			
834	34.14	5/16/05			
835	34.53	5/16/05			
836	34.32	5/16/05			
837	33.98	5/16/05			
838	32.71	5/17/05			
839	33.74	5/17/05			
840	33.60	5/17/05			
841	34.90	5/17/05			
842	34.37	5/17/05			
843	35.72	5/17/05			
844	37.99	5/17/05			
845	34.56	5/18/05			
847	37.22	5/18/05			
849	33.57	5/18/05			
850	32.75	5/19/05			
851	33.59	5/23/05			
852	34.23	5/23/05			
853	33.82	5/23/05			
854	38.57	5/23/05			
855	31.80	5/23/05			
856	34.06	5/23/05			
857	34.62	5/23/05			
858	35.29	5/23/05			
859	34.26	5/23/05			
860	35.08	5/23/05			
861	35.56	5/23/05			
862	33.05	5/23/05			
863	33.82	5/24/05			
864	34.37	5/24/05			
865	33.19	5/24/05			
866	32.99	5/24/05			
867	30.24	5/24/05			
868	33.24	5/24/05			
869	36.24	5/24/05			
870	30.37	5/24/05			
871	36.54	5/24/05			
872	35.76	5/24/05			
873	35.38	5/24/05			
874	34.21	5/24/05			
875	37.60	5/25/05			
876	36.16	5/25/05			
877	33.97	5/25/05			
878	33.64	5/25/05			
879	34.85	5/25/05			
880	35.92	5/25/05			
881	35.70	5/25/05			
882	31.94	5/25/05			
883	37.62	5/25/05			
884	34.52	5/25/05			
885	34.81	5/26/05			
886	35.37	5/26/05			
887	31.57	5/26/05			
888	33.34	5/26/05			
889	37.30	5/26/05			
890	36.50	5/26/05			
891	37.85	5/26/05			
892	34.63	5/26/05			
893	35.12	5/26/05			
894	38.00	5/26/05			
895	33.48	5/27/05			
896	37.38	5/27/05			
897	30.99	5/27/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
898	34.53	5/27/05			
899	31.50	5/27/05			
900	36.26	5/27/05			
901	33.91	5/27/05			
902	41.92	5/27/05			
903	35.49	5/27/05			
904	32.50	5/27/05			
905	35.34	5/31/05			
906	40.89	5/31/05			
907	31.71	5/31/05			
908	33.34	5/31/05			
909	34.23	5/31/05			
910	32.60	5/31/05			
911	34.29	5/31/05			
912	28.68	5/31/05			
913	32.14	5/31/05			
914	33.81	5/31/05			
915	33.01	5/31/05			
916	35.02	5/31/05	4,427.82	TAGM 4061-Regulated Waste	
780	39.00	5/2/05			
781	38.20	5/2/05			
782	34.19	5/3/05			
783	34.24	5/3/05			
784	39.59	5/5/05			
785	34.98	5/5/05			
786	39.91	5/6/05			
846	35.58	5/18/05			
848	24.48	5/18/05	320.17	Nonhazardous Waste	
917	39.58	6/1/05			
918	30.74	6/1/05			
919	32.48	6/1/05			
920	34.72	6/1/05			
921	35.29	6/1/05			
922	34.70	6/1/05			
923	32.25	6/1/05			
924	35.72	6/1/05			
925	34.31	6/1/05			
926	38.23	6/1/05			
927	37.62	6/1/05			
928	35.12	6/1/05			
929	38.36	6/2/05			
930	37.81	6/2/05			
931	36.30	6/2/05			
932	29.79	6/2/05			
933	33.94	6/2/05			
934	33.45	6/2/05			
935	33.93	6/2/05			
936	29.56	6/2/05			
937	34.31	6/2/05			
938	35.68	6/2/05			
939	31.88	6/2/05			
940	34.36	6/2/05			
941	39.22	6/3/05			
942	37.13	6/3/05			
943	31.55	6/3/05			
944	35.51	6/3/05			
945	36.65	6/3/05			
946	29.30	6/3/05			
947	35.88	6/3/05			
948	37.59	6/3/05			
949	34.30	6/3/05			
950	32.54	6/3/05			
951	37.15	6/3/05			
952	35.82	6/3/05			
953	33.11	6/3/05			
954	34.45	6/3/05			
955	38.60	6/6/05			
956	32.86	6/6/05			
957	34.70	6/6/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
958	37.44	6/6/05			
959	38.52	6/6/05			
960	36.84	6/6/05			
961	34.15	6/6/05			
962	33.30	6/6/05			
963	31.26	6/6/05			
964	35.73	6/6/05			
965	34.66	6/6/05			
966	37.90	6/6/05			
967	34.24	6/7/05			
968	37.58	6/7/05			
970	34.73	6/7/05			
971	37.15	6/7/05			
972	30.18	6/7/05			
973	35.99	6/7/05			
975	36.13	6/7/05			
976	31.89	6/7/05			
977	34.64	6/7/05			
978	37.02	6/7/05			
979	30.09	6/7/05			
981	32.46	6/7/05			
982	36.24	6/8/05			
983	32.30	6/8/05			
985	35.77	6/8/05			
986	36.63	6/8/05			
987	30.32	6/8/05			
989	35.16	6/8/05			
990	33.98	6/8/05			
991	37.08	6/8/05			
992	33.94	6/8/05			
994	36.06	6/8/05			
995	39.24	6/9/05			
996	32.99	6/9/05			
998	27.60	6/9/05			
999	34.62	6/9/05			
1,001	36.16	6/9/05			
1,002	32.92	6/9/05			
1,003	30.97	6/9/05			
1,004	26.60	6/9/05			
1,005	30.71	6/9/05			
1,006	34.24	6/9/05			
1,008	38.34	6/10/05			
1,009	32.08	6/10/05			
1,011	35.85	6/10/05			
1,012	33.67	6/10/05			
1,014	37.35	6/10/05			
1,015	31.72	6/10/05			
1,016	35.17	6/10/05			
1,017	36.35	6/10/05			
1,018	36.41	6/10/05			
1,019	32.50	6/10/05			
1,022	37.67	6/13/05			
1,023	33.52	6/13/05			
1,024	31.08	6/13/05			
1,025	35.49	6/13/05			
1,027	36.79	6/13/05			
1,028	28.12	6/13/05			
1,029	37.17	6/13/05			
1,030	34.80	6/13/05			
1,032	28.23	6/13/05			
1,033	33.66	6/13/05			
1,034	37.14	6/14/05			
1,035	38.18	6/14/05			
1,036	29.79	6/14/05			
1,037	30.73	6/14/05			
1,038	31.60	6/14/05			
1,039	36.26	6/14/05			
1,040	37.09	6/14/05			
1,041	35.92	6/14/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1,042	32.27	6/14/05			
1,043	30.83	6/14/05			
1,044	37.69	6/15/05			
1,045	35.49	6/15/05			
1,046	28.01	6/15/05			
1,047	37.91	6/15/05			
1,048	34.93	6/15/05			
1,049	36.46	6/15/05			
1,050	34.51	6/15/05			
1,051	40.65	6/16/05			
1,052	31.15	6/16/05			
1,053	39.96	6/16/05			
1,054	34.63	6/16/05			
1,055	36.02	6/16/05			
1,056	33.66	6/16/05			
1,057	30.18	6/16/05			
1,058	34.98	6/16/05			
1,059	30.85	6/16/05			
1,060	36.73	6/16/05			
1,061	35.10	6/16/05			
1,062	37.69	6/17/05			
1,063	37.60	6/16/05			
1,064	38.10	6/16/05			
1,065	43.06	6/17/05			
1,066	35.78	6/17/05			
1,067	33.10	6/17/05			
1,068	31.15	6/17/05			
1,069	31.26	6/17/05			
1,070	35.07	6/17/05			
1,071	36.24	6/17/05			
1,072	28.19	6/17/05			
1,073	34.77	6/17/05			
1,074	27.99	6/17/05			
1,075	35.49	6/17/05			
1,076	36.77	6/17/05			
1,077	40.96	6/17/05			
1,078	35.15	6/20/05			
1,079	36.70	6/20/05			
1,080	33.03	6/20/05			
1,081	32.45	6/20/05			
1,082	39.79	6/20/05			
1,083	34.95	6/20/05			
1,084	32.18	6/20/05			
1,085	38.42	6/20/05			
1,086	36.54	6/20/05			
1,087	30.47	6/20/05			
1,088	39.60	6/20/05			
1,089	37.89	6/20/05			
1,090	34.01	6/20/05			
1,091	33.46	6/20/05			
1,092	42.27	6/21/05			
1,093	--	--			This manifest number was omitted inadvertently.
1,094	36.55	6/21/05			
1,095	35.63	6/21/05			
1,096	35.93	6/21/05			
1,097	39.15	6/21/05			
1,098	34.90	6/21/05			
1,099	36.65	6/21/05			
1,100	33.95	6/21/05			
1,101	39.82	6/21/05			
1,102	33.96	6/21/05			
1,103	36.71	6/22/05			
1,104	38.80	6/22/05			
1,105	36.61	6/22/05			
1,106	32.55	6/22/05			
1,107	35.07	6/22/05			
1,108	34.22	6/22/05			
1,109	34.43	6/22/05			
1,110	33.02	6/22/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1,111	38.22	6/23/05			
1,112	35.90	6/23/05			
1,113	34.11	6/24/05			
1,114	28.49	6/24/05			
1,115	36.36	6/24/05			
1,116	37.69	6/24/05			
1,117	40.66	6/24/05			
1,118	41.43	6/24/05			
1,119	37.10	6/24/05	6,524.69	TAGM 4061-Regulated Waste	
969	34.87	6/7/2005			
974	34.72	6/7/2005			
980	34.39	6/7/2005			
984	30.77	6/8/2005			
988	36.49	6/8/2005			
993	32.24	6/8/2005			
997	37.13	6/9/2005			
1,000	32.95	6/9/2005			
1,007	39.08	6/9/2005			
1,010	33.33	6/10/05			
1,013	34.38	6/10/05			
1,020	29.29	6/10/05			
1,021	36.28	6/13/05			
1,026	34.07	6/13/05			
1,031	37.89	6/13/05	517.88	Nonhazardous Waste	
1,120	36.01	6/24/05			
1,120A	38.15	6/24/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,121	35.93	6/24/05			
1,122	36.71	6/27/05			
1,123	35.30	6/27/05			
1,124	37.43	6/27/05			
1,125	35.93	7/6/05			
1,126	37.09	7/6/05			
1,127	40.18	7/6/05			
1,128	36.54	7/6/05			
1,129	37.12	7/7/05			
1,129A	38.00	7/7/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,130	32.62	7/7/05			
1,131	38.68	7/7/05			
1,132	34.45	7/8/05			
1,133	37.59	7/8/05			
1,134	35.25	7/11/05			
1,135	35.17	7/11/05			
1,136	42.03	7/11/05			
1,137	32.28	7/11/05			
1,138	36.26	7/12/05			
1,139	37.47	7/12/05			
1,140	37.53	7/13/05			
1,141	29.09	7/13/05			
1,141A	35.90	7/14/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,142	33.99	7/14/05			
1,143	29.80	7/14/05			
1,144	34.48	7/14/05			
1,145	33.95	7/15/05			
1,146	39.96	7/15/05			
1,147	35.32	7/15/05			
1,148	40.00	7/15/05			
1,148A	32.95	7/18/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,149	30.66	7/18/05			
1,150	36.15	7/18/05			
1,151	32.63	7/18/05			
1,151A	37.29	7/20/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1,152	34.03	7/20/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,153	39.38	7/21/05			
1,154	38.73	7/21/05			
1,155	39.55	7/22/05			
1,156	36.85	7/22/05			
1,157	37.91	7/25/05			
1,158	38.97	7/25/05			
1,159	36.43	7/25/05			
1,160	37.85	7/25/05			
1,161	38.43	7/26/05			
1,162	38.98	7/26/05			
1,163	32.91	7/27/05	1,775.91	TAGM 4061-Regulated Waste	
1,164	36.01	8/18/05			
1,165	39.55	8/18/05			
1,166	37.27	8/18/05			
1,167	17.62	8/19/05			
1,167A	38.31	8/19/05			The associated manifest number was inadvertently repeated; an A label was added to the manifest number for tracking purposes.
1,168	39.50	8/19/05			
1,169	36.38	8/22/05			
1,170	32.95	8/22/05			
1,171	36.31	8/23/05			
1,172	36.46	8/24/05			
1,173	36.47	8/24/05			
1,174	36.58	8/24/05			
1,175	35.37	8/25/05			
1,176	35.96	8/25/05			
1,177	33.24	8/29/05			
1,178	37.54	8/29/05			
1,179	28.48	8/30/05			
1,180	37.19	8/30/05			
1,181	34.86	8/31/05			
1,182	30.11	8/31/05	696.16	Nonhazardous Waste	
1,183	33.67	9/2/05			
1,184	38.69	9/2/05			
1,185	39.67	9/6/05			
1,186	36.69	9/6/05			
1,187	34.83	9/7/05			
1,188	34.34	9/7/05			
1,189	40.69	9/7/05			
1,190	35.98	9/7/05			
1,191	38.67	9/8/05			
1,192	37.56	9/8/05			
1,193	37.82	9/8/05			
1,194	40.13	9/9/05			
1,195	32.87	9/9/05			
1,196	36.76	9/9/05			
1,197	34.84	9/9/05			
1,198	38.82	9/9/05			
1,199	38.28	9/12/05			
1,200	32.53	9/12/05			
1,201	38.26	9/12/05			
1,202	35.30	9/12/05			
1,203	38.04	9/13/05			
1,204	34.45	9/13/05			
1,205	31.57	9/13/05			
1,206	41.64	9/13/05			
1,207	36.48	9/13/05			
1,208	40.49	9/13/05			
1,209	41.12	9/14/05			
1,210	33.86	9/14/05			
1,211	35.50	9/14/05			
1,212	35.45	9/14/05			
1,213	37.01	9/14/05			
1,214	38.65	9/14/05			
1,215	38.53	9/15/05			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1,216	36.53	9/15/05			
1,217	39.63	9/15/05			
1,218	38.74	9/15/05			
1,219	39.82	9/15/05			
1,220	35.40	9/15/05			
1,221	41.10	9/16/05			
1,222	35.38	9/16/05			
1,223	37.86	9/16/05			
1,224	36.12	9/16/05			
1,225	38.44	9/16/05			
1,226	35.32	9/16/05			
1,227	--	--			This manifest number was omitted inadvertently.
1,228	--	--			This manifest number was omitted inadvertently.
1,229	--	--			This manifest number was omitted inadvertently.
1,230	40.18	9/19/05			
1,231	33.65	9/19/05			
1,232	--	--			This manifest number was omitted inadvertently.
1,233	39.84	9/19/05			
1,234	36.80	9/19/05			
1,235	39.53	9/20/05			
1,236	37.53	9/20/05			
1,237	37.21	9/21/05			
1,238	36.40	9/29/05			
1,239	34.50	9/29/05	1,969.17	Nonhazardous Waste	
1,240	40.65	10/3/05			
1,241	38.94	10/3/05			
1,242	30.84	10/4/05			
1,243	39.44	10/4/05			
1,244	40.12	10/5/05			
1,245	42.82	10/5/05			
1,246	37.75	10/6/05			
1,247	37.01	10/6/05			
1,248	42.21	10/6/05			
1,249	39.68	10/7/05			
1,250	39.62	10/7/05			
1,251	37.46	10/7/05			
1,252	34.45	10/7/05			
1,253	37.38	10/11/05			
1,254	40.39	10/11/05			
1,255	38.70	10/13/05			
1,256	33.84	10/13/05			
1,257	33.48	10/13/05	684.78	Nonhazardous Waste	
1,258	--	--			This manifest number was omitted inadvertently.
1,259	35.38	4/11/06			
1,260	31.26	4/11/06			
1,261	34.01	4/11/06			
1,262	37.36	4/11/06			
1,263	31.89	4/11/06			
1,264	38.38	4/11/06			
1,265	34.44	4/12/06			
1,266	36.37	4/12/06			
1,267	37.30	4/12/06			
1,268	36.74	4/12/06			
1,269	33.58	4/12/06			
1,270	38.85	4/12/06			
1,271	37.74	4/13/06			
1,272	36.64	4/13/06			
1,273	33.53	4/13/06			
1,274	34.17	4/13/06			
1,275	36.45	4/14/06			
1,275	18.54	4/18/06			This manifest number was inadvertently used twice
1,276	17.99	4/18/06			
1,277	--	--			This manifest number was omitted inadvertently.
1,278	19.19	4/19/06			
1,279	18.86	4/19/06			
1,280	32.98	4/19/06			
1,281	39.91	4/20/06			
1,282	38.56	4/20/06			
1,283	18.17	4/24/06			
1,284	20.64	4/24/06			
1,285	17.83	4/25/06			

TABLE 5
WASTE MANIFEST SUMMARY

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Bill of Lading/ Manifest Number	Weight (tons)	Date	Total Per Month/Waste Stream (tons)	Waste Stream	Comments
1,286	17.32	4/25/06			
1,287	16.87	4/26/06	880.95	Nonhazardous Waste	
1,288	34.51	5/4/06			
1,289	22.54	5/4/06			
1,290	18.93	5/4/06			
1,291	18.27	5/4/06			
1,292	20.47	5/5/06			
1,293	21.95	5/5/06			
1,294	21.40	5/5/06			
1,295	41.58	5/11/06			
1,296	39.27	5/12/06			
1,297	35.92	5/12/06			
1,298	38.40	5/16/06			
1,299	41.24	5/16/06			
1,300	42.71	5/17/06			
1,301	36.48	5/17/06			
1,302	35.85	5/17/06			
1,303	38.31	5/18/06			
1,304	36.05	5/18/06			
1,305	38.38	5/18/06			
1,306	40.08	5/26/06			
1,307	30.82	5/26/06			
1,308	41.77	5/26/06			
1,309	37.47	5/26/06			
1,310	38.69	5/30/06			
1,311	32.55	5/30/06			
1,312	39.47	5/30/06			
1,313	26.86	5/30/06	869.97	Nonhazardous Waste	
			28,138.26	Total Weight (TAGM 4061-Regulated Waste)	
			14,738.71	Total Weight (Nonhazardous Waste)	
			42,876.97	Total Weight	

TABLE 6

OFFSITE TRANSPORTATION AND TREATMENT/DISPOSAL SUMMARY

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Total Mass Transported Offsite (Tons)	Cumulative Total (Tons)	Notes
TAGM 4061-Regulated Waste			
March 2004	0	0	
April 2004	0	0	
May 2004	251	251	Transported to RESOIL Facility.
June 2004	0	0	
July 2004	0	0	
August 2004	0	0	
September 2004	55	306	Transported to RESOIL Facility.
October 2004	3,714	4,020	Transported to RESOIL Facility.
November 2004	3,661	7,681	Transported to RESOIL Facility.
December 2004	3,059	10,740	Transported to RESOIL Facility.
January 2005	0	10,740	
February 2005	0	10,740	
April 2005	4,670	15,410	Transported to RESOIL Facility. Please note, 736 tons of material invoiced in April 2005 was disposed of during late March 2005 (manifest Nos.626-648).
May 2005	4,428	19,838	Transported to RESOIL Facility.
June 2005	6,525	26,363	Transported to RESOIL Facility and ESMI Facility.
July 2005	1,776	28,139	Transported to RESOIL Facility.
August 2005	0	28,139	
September 2005	0	28,139	
October 2005	0	28,139	
November 2005	0	28,139	
	Total to Date:	**28,139**	

TABLE 6

OFFSITE TRANSPORTATION AND TREATMENT/DISPOSAL SUMMARY

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Total Mass Transported Offsite (Tons)	Cumulative Total (Tons)	Notes
Nonhazardous Waste			
March 2004	0	0	
April 2004	0	0	
May 2004	0	0	
June 2004	64	64	Transported to Town of Colonie Landfill.
July 2004	2,613	2,678	Transported to Albany County Landfill.
August 2004	0	0	
September 2004	0	0	
October 2004	446	3,124	Transported to Albany County Landfill.
November 2004	276	3,400	Transported to Albany County Landfill.
December 2004	932	4,332	Transported to Albany County Landfill.
January 2005	1,531	5,863	Transported to Albany County Landfill.
38384.00	1,844	7,707	Transported to Albany County Landfill.
March 2005	565	8,272	-143 cy Transported to American Ref-Fuel Co. -422 cy Transported to Albany County Landfill.
April 2005	528	8,800	Transported to Albany County Landfill.
May 2005	320	9,120	Transported to Albany County Landfill.
June 2005	518	9,638	Transported to Albany County Landfill.
July 2005	0	9,638	
August 2005	696	10,334	Transported to Albany County Landfill.
September 2005	1,969	12,303	Transported to Albany County Landfill.
October 2005	685	12,988	Transported to Albany County Landfill.
November 2005 through March 2006	0	12,988	
April 2006	881	13,869	Transported to Albany County Landfill.
May 2006	870	14,739	Transported to Albany County Landfill.
	Total:	**14,739**	

TABLE 6

OFFSITE TRANSPORTATION AND TREATMENT/DISPOSAL SUMMARY

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Total Mass Transported Offsite (Tons)	Cumulative Total (Tons)	Notes
NAPL			
March 2004	0	0	
April 2004	0	0	
May 2004	0	0	
June 2004	0	0	
July 2004	0	0	
August 2004	0	0	
September 2004	0	0	
October 2004	0	0	
November 2004	0	0	
December 2004	8	8	Transported to United Industrial Services, Inc.
January 2005	0	8	
February 2005	0	8	
March 2005	0	8	
April 2005	7	15	Transported to United Industrial Services, Inc.
May 2005	0	15	
June 2005	0	15	
July 2005	0	15	
August 2005	10	25	Transported to United Industrial Services, Inc.
September 2005	5	30	Transported to United Industrial Services, Inc.
October 2005	0	30	
November 2005	0	30	
	Total:	**30**	

TABLE 7
LIQUIDS HANDLING AND TREATMENT SUMMARY

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Date	Actual Volume Treated (Gallons)	Cumulative Total (Gallons)	Notes
March 2004	0	0	None Treated.
April 2004	0	0	None Treated.
May 2004	0	0	None Treated.
June 2004	747,000	747,000	The first 500,000 gallons was discharged to the Hudson River and then discharge to the POTW commenced.
July 2004	369,711	1,116,711	Discharged to POTW.
August 2004	275,384	1,392,095	Discharged to POTW.
September 2004	283,835	1,675,930	Discharged to POTW.
October 2004	115,965	1,791,895	Discharged to POTW.
November 2004	263,170	2,055,065	The majority of this water was attributed to the overtopping of the embayment sheeting due to a flood event.
December 2004	967,183	3,022,248	The majority of this water was attributed to the overtopping of the embayment sheeting due to a flood event. Approximately 605,704 gallons of water was discharged to the Hudson River. The remainder was discharged to the POTW.
January 2005	95,452	3,117,700	Discharged to POTW.
February 2005	0	3,117,700	None Treated.
March 2005	83,197	3,200,897	Discharged to POTW.
April 2005	79,855	3,280,752	Discharged to POTW.
May 2005	23,760	3,304,512	Discharged to POTW.
June 2005	38,797	3,343,309	Discharged to POTW.
July 2005	37,237	3,380,546	Discharged to POTW.
August 2005	0	3,380,546	None Treated. The temporary water treatment system was demobilized in August 2005.

TABLE 8
SUMMARY OF POST-RESTORATION AND POST-EXCAVATION CONFIRMATION SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Lab Number:		5AOP358	5AOP358	5AOP358	5AOP358
Sample ID:		EMB1-IL-012105-1	EMB1-IL-012105-2	EMB1-IL-012105-3	EMB1-IL-012105-4
Sample Depth (Feet):		0 - 3	0 - 3	0 - 3	0 - 3
Date Collected:	Units	01/21/05	01/21/05	01/21/05	01/21/05
VOCs					
Benzene	mg/kg	--	--	--	--
Ethylbenzene	mg/kg	--	--	--	--
Toluene	mg/kg	--	--	--	--
Xylenes (Total)	mg/kg	--	--	--	--
SVOCs					
Acenaphthene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Acenaphthylene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Anthracene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Benzo(a)anthracene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Benzo(a)pyrene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Benzo(b)fluoranthene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Benzo(g,h,i)perylene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Benzo(k)fluoranthene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Chrysene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Dibenz(a,h)anthracene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Fluoranthene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Fluorene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Indeno(1,2,3-CD)pyrene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.39]
Naphthalene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Phenanthrene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Pyrene	mg/kg	ND [0.4] (ND[0.4])	ND [0.45]	ND [0.4]	ND [0.4]
Other					
Percent Solids	%	83	74	83	84

T. _E 8
SUMMARY OF POST-RESTORATION AND POST-EXCAVATION CONFIRMATION SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Lab Number: / Sample ID: / Sample Depth (Feet): / Date Collected:	Units	5D0P155 TSA-14-NW-1 14 - 14.5 04/07/05	5D0P155 TSA-14-SE-2 14 - 14.5 04/07/05	5D0P155 TSA-14-COMPOSITE 14 - 14.5 04/07/05	5D0P253 TSA-10-NE-1 13 - 13.5 04/11/05
VOCs					
Benzene	mg/kg	**0.0054 J**	ND [0.016]	NA	ND [0.0066]
Ethylbenzene	mg/kg	**0.064**	**0.019**	NA	ND [0.0066]
Toluene	mg/kg	ND [0.016]	**0.0099 J**	NA	ND [0.0066]
Xylenes (Total)	mg/kg	**0.084**	**0.034**	NA	ND [0.013]
SVOCs					
Acenaphthene	mg/kg	NA	NA	ND [0.44]	NA
Acenaphthylene	mg/kg	NA	NA	ND [0.44]	NA
Anthracene	mg/kg	NA	NA	ND [0.44]	NA
Benzo(a)anthracene	mg/kg	NA	NA	ND [0.43]	NA
Benzo(a)pyrene	mg/kg	NA	NA	ND [0.43]	NA
Benzo(b)fluoranthene	mg/kg	NA	NA	ND [0.43]	NA
Benzo(g,h,i)perylene	mg/kg	NA	NA	ND [0.43]	NA
Benzo(k)fluoranthene	mg/kg	NA	NA	ND [0.43]	NA
Chrysene	mg/kg	NA	NA	ND [0.44]	NA
Dibenz(a,h)anthracene	mg/kg	NA	NA	ND [0.43]	NA
Fluoranthene	mg/kg	NA	NA	ND [0.44]	NA
Fluorene	mg/kg	NA	NA	ND [0.44]	NA
Indeno(1,2,3-CD)pyrene	mg/kg	NA	NA	ND [0.43]	NA
Naphthalene	mg/kg	NA	NA	ND [0.44]	NA
Phenanthrene	mg/kg	NA	NA	ND [0.44]	NA
Pyrene	mg/kg	NA	NA	ND [0.44]	NA
Other					
Percent Solids	%	78	77	76	76

TABLE 8
SUMMARY OF POST-RESTORATION AND POST-EXCAVATION CONFIRMATION SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Lab Number:		5D0P253	5D0P253	5E0P337	5E0P337
Sample ID:		TSA-10-SE-2	TSA-10-COMPOSITE-2	FGHA-13-WEST-CELL-1	FGHA-13-WEST-CELL-COMP
Sample Depth (Feet):		13 - 13.5	13 - 13.5	13 - 13.5	13 - 13.5
Date Collected:	Units	04/11/05	04/11/05	05/13/05	05/13/05
VOCs					
Benzene	mg/kg	ND [0.0072]	NA	**2.3**	NA
Ethylbenzene	mg/kg	ND [0.0072]	NA	**1.8**	NA
Toluene	mg/kg	ND [0.0072]	NA	ND [0.4]	NA
Xylenes (Total)	mg/kg	ND [0.014]	NA	**3.0**	NA
SVOCs					
Acenaphthene	mg/kg	NA	ND [0.46]	NA	**0.19 J**
Acenaphthylene	mg/kg	NA	ND [0.46]	NA	ND [0.43]
Anthracene	mg/kg	NA	ND [0.46]	NA	**0.042 J**
Benzo(a)anthracene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Benzo(a)pyrene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Benzo(b)fluoranthene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Benzo(g,h,i)perylene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Benzo(k)fluoranthene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Chrysene	mg/kg	NA	ND [0.46]	NA	ND [0.43]
Dibenz(a,h)anthracene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Fluoranthene	mg/kg	NA	ND [0.46]	NA	**0.052 J**
Fluorene	mg/kg	NA	ND [0.46]	NA	**0.055 J**
Indeno(1,2,3-CD)pyrene	mg/kg	NA	ND [0.45]	NA	ND [0.42]
Naphthalene	mg/kg	NA	ND [0.46]	NA	**4.8**
Phenanthrene	mg/kg	NA	ND [0.46]	NA	**0.15 J**
Pyrene	mg/kg	NA	ND [0.46]	NA	**0.077 J**
Other					
Percent Solids	%	69	73	78	78

TABLE 8

SUMMARY OF POST-RESTORATION AND POST-EXCAVATION CONFIRMATION SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Lab Number: Sample ID: Sample Depth (Feet): Date Collected:	Units	5F0P119 FGHA-20-SOUTH HOLDER-1 20 - 20.5 06/06/05	5F0P119 FGHA-20-SOUTH HOLDER-COMP 20 - 20.5 06/06/05	5F0P300 FGHA-14-NORTH HOLDER-1 14 - 14.5 06/14/05
VOCs				
Benzene	mg/kg	26	NA	0.012
Ethylbenzene	mg/kg	18	NA	0.081
Toluene	mg/kg	52	NA	0.048
Xylenes (Total)	mg/kg	46	NA	0.3
SVOCs				
Acenaphthene	mg/kg	NA	ND [4.2]	NA
Acenaphthylene	mg/kg	NA	18	NA
Anthracene	mg/kg	NA	11	NA
Benzo(a)anthracene	mg/kg	NA	6.8	NA
Benzo(a)pyrene	mg/kg	NA	6.1	NA
Benzo(b)fluoranthene	mg/kg	NA	ND [4.2]	NA
Benzo(g,h,i)perylene	mg/kg	NA	ND [4.2]	NA
Benzo(k)fluoranthene	mg/kg	NA	ND [4.2]	NA
Chrysene	mg/kg	NA	6.6	NA
Dibenz(a,h)anthracene	mg/kg	NA	ND [4.2]	NA
Fluoranthene	mg/kg	NA	14	NA
Fluorene	mg/kg	NA	9.5	NA
Indeno(1,2,3-CD)pyrene	mg/kg	NA	ND [4.2]	NA
Naphthalene	mg/kg	NA	60	NA
Phenanthrene	mg/kg	NA	36	NA
Pyrene	mg/kg	NA	21	NA
Other				
Percent Solids	%	78	79	75

TABLE 8

SUMMARY OF POST-RESTORATION AND POST-EXCAVATION CONFIRMATION SAMPLING ANALYTICAL RESULTS

FINAL ENGINEERING REPORT
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

Lab Number: / Sample ID: / Sample Depth (Feet): / Date Collected:	Units	5F0P300 FGHA-14-NORTH HOLDER-COMP 14 - 14.5 06/14/05	5F0P516 FGHA-20-EAST CELL-1 20 - 20.5 06/24/05	5F0P516 FGHA-20-EAST CELL-COMP 20 - 20.5 06/24/05
VOCs				
Benzene	mg/kg	NA	**4.5**	NA
Ethylbenzene	mg/kg	NA	**1.4**	NA
Toluene	mg/kg	NA	**5.8**	NA
Xylenes (Total)	mg/kg	NA	**3.1**	NA
SVOCs				
Acenaphthene	mg/kg	ND [0.44]	NA	ND [4.4]
Acenaphthylene	mg/kg	ND [0.44]	NA	**16**
Anthracene	mg/kg	ND [0.44]	NA	**7.8**
Benzo(a)anthracene	mg/kg	ND [0.43]	NA	**4.0**
Benzo(a)pyrene	mg/kg	ND [0.43]	NA	ND [4.0]
Benzo(b)fluoranthene	mg/kg	ND [0.43]	NA	ND [4.0]
Benzo(g,h,i)perylene	mg/kg	ND [0.43]	NA	ND [4.0]
Benzo(k)fluoranthene	mg/kg	ND [0.43]	NA	ND [4.0]
Chrysene	mg/kg	ND [0.44]	NA	ND [4.4]
Dibenz(a,h)anthracene	mg/kg	ND [0.43]	NA	ND [4.0]
Fluoranthene	mg/kg	**0.88**	NA	**13**
Fluorene	mg/kg	ND [0.44]	NA	**6.3**
Indeno(1,2,3-CD)pyrene	mg/kg	ND [0.43]	NA	ND [4.0]
Naphthalene	mg/kg	**1.2**	NA	**52**
Phenanthrene	mg/kg	**0.88**	NA	**26**
Pyrene	mg/kg	**0.77**	NA	**14**
Other				
Percent Solids	%	**76**	**75**	**75**

Notes:
1. Detected constituents are shown in bold.
2. J - Estimated result; the result was detected below the reporting limit.
3. Reporting limits are shown in brackets.
4. ND - Not detected.
5. NA - Not applicable.
6. mg/kg - milligrams per kilogram.

Figures

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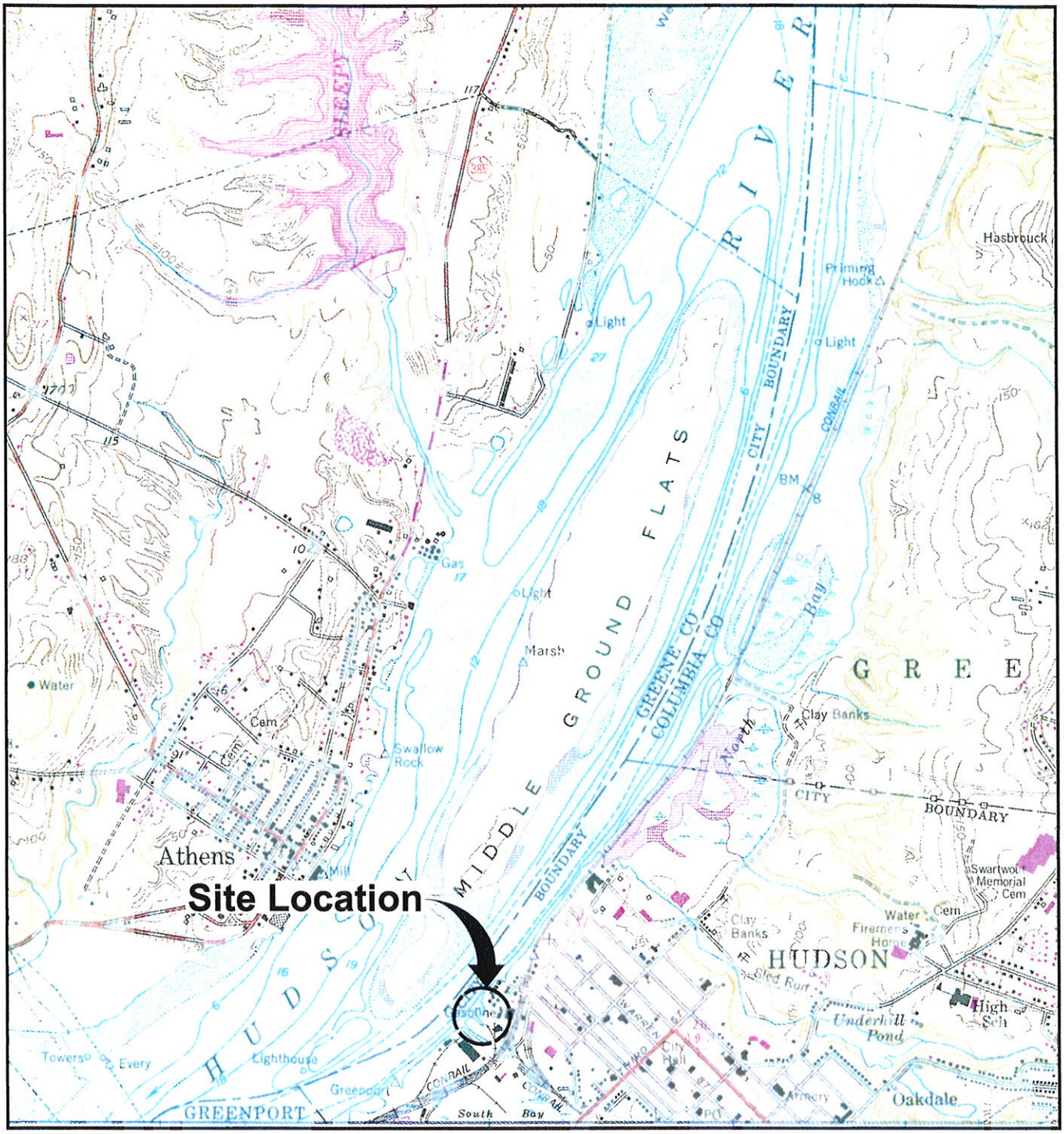
GENERAL NOTE

Certain figures presented herein display as-built construction information. This as-built construction information was obtained from as-built survey drawings, which were prepared, reviewed, signed, and sealed by a Licensed Land Surveyor (C.T. Male Associates, P.C.) under subcontract to Earth Tech, Inc. ARCADIS BBL has developed these figures for presentation purposes only (i.e., to facilitate NYSDEC review of this Final Report). The original, signed and sealed as-built drawings may be found in Appendix M.



REFERENCE: Base Map Source: USGS 7.5 Min. Topo. Quad., Hudson North, NY.

Approximate Scale: 1" = 2000'

Quadrangle Location

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

SITE LOCATION MAP

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engineers, scientists, economists

FIGURE 1

04/02/07 SYR-D85-DJH LJP, DJH
36651010/36651N03.CDR

LEGEND:

- PROPERTY LINE
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- APPROXIMATE EDGE OF WATER (VARIES WITH TIDE)
- EXISTING UTILITY LINE
- EXISTING CHAIN-LINK FENCE
- EXISTING IRON FENCE
- RAILROAD LINE
- RAILROAD TIE RETAINING WALL
- CONCRETE RETAINING WALL
- SEWER MANHOLE
- BOLLARD
- VEGETATION/TREES
- RIPRAP

NOTES:

1. BASE MAP INFORMATION WAS COMPILED FROM A COMBINATION OF A PLAN PREPARED BY ROBERT J. IHLENBERG, LAND SURVEYOR ENTITLED "AREA SITE MAP WATER STREET AND BROAD STREET" PERFORMED AUGUST 2001 AND A LIMITED SURVEY PERFORMED BY BLASLAND, BOUCK & LEE IN OCTOBER AND NOVEMBER 2001.
2. PROPERTY LINES SHOWN WERE ESTABLISHED FROM DEEDS OF RECORD AND EXISTING MONUMENTATION.
3. ELEVATIONS SHOWN ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 1988).

0 40' 80'
GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

PRE-REMEDIATION SITE CONDITIONS

BBL BLASLAND, BOUCK & LEE, INC.
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FIGURE 2

X: 36657X00, X06.DWG
L: ON=*, OFF=REF*, |*TEST_ |005-XS-BORING, |ASPHALT, |FENCE-OLD
P: PAGESET/PLT-DL
4/2/07 SYR-BS-LJP RCA PGL
36651010/FINAL-ER/36651B04.DWG

LEGEND:

- EXISTING CONTOUR LINE (OUTSIDE AS-BUILT SURVEY AREA) – 5-FOOT INTERVALS SHOWN IN BOLD
- UTILITY LINE
- CHAIN-LINK FENCE
- IRON FENCE
- RAILROAD TIE RETAINING WALL
- CONCRETE RETAINING WALL
- EDGE OF WATER
- RIPRAP
- IRON PIPE
- DESIGN SHEETPILE
- ASBUILT SHEETPILE
- PRESSURE RELIEF WELL (VERTICAL DRAIN) – ASBUILT LOCATION
- PIEZOMETER (ASBUILT LOCATION)
- PRESSURE RELIEF WELL (VERTICAL DRAIN) (APPROX. LOCATION)
- PIEZOMETER (APPROX. LOCATION)
- EXCAVATION DEPTH

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEYS BY: C.T. MALE ASSOCIATES, P.C., DATED MARCH 3, 2005, DRAWING FILE HUD-CUT.DWG; AND EARTH TECH INC., DATED NOVEMBER 2, 2004, DRAWING FILE 75257.AB1.

0 20' 40'
GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

EMBAYMENT #1 AND EAST BANK SOIL EXCAVATION AREA - FINAL EXCAVATION LIMITS

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FIGURE 3

X: 36657X00, X01, X02.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL
4/18/07 SYR-85-LJP RCA PGL
36651010/FINAL-ER/36651B02.DWG

LEGEND:

- EXISTING CONTOUR LINE (OUTSIDE AS-BUILT SURVEY AREA) – 5-FOOT INTERVALS SHOWN IN BOLD
- UTILITY LINE
- CHAIN-LINK FENCE
- IRON FENCE
- RAILROAD TIE RETAINING WALL
- CONCRETE RETAINING WALL
- EDGE OF WATER
- RIPRAP
- IRON PIPE
- ENGINEERED CONTAINMENT SYSTEM
- ASBUILT SHEETPILE
- SAND LAYER DEPTH

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEYS BY: C.T. MALE ASSOCIATES, P.C., DATED MARCH 3, 2005, DRAWING FILES HUD-LINER.DWG AND HUD-SAND.

0 20' 40'
GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

EMBAYMENT #1 EXCAVATION AREA - SAND LAYER AND ENGINEERED CONTAINMENT SYSTEMS

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FIGURE 4

X: 36657X00, X01, X03.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL
4/18/07 SYR-85-LJP RCA PGL
36651010/FINAL-ER/36651B01.DWG

LEGEND:

- EXISTING CONTOUR LINE (SURROUNDING AREAS) – 5-FOOT INTERVALS SHOWN IN BOLD
- UTILITY LINE
- CHAIN-LINK FENCE
- IRON FENCE
- RAILROAD TIE RETAINING WALL
- CONCRETE RETAINING WALL
- EDGE OF WATER
- RIPRAP
- IRON PIPE
- ASBUILT SHEETPILE
- EMB1-IL-012105-2 Δ APPROXIMATE LOCATION OF POST-RESTORATION SOIL SAMPLE
- (-5) ISOLATION LAYER DEPTH

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEY BY: C.T. MALE ASSOCIATES, P.C., DATED MARCH 3, 2005, DRAWING FILE HUD-CLAY.DWG.

0 20' 40'
GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

EMBAYMENT #1 EXCAVATION AREA - ISOLATION LAYER

BBL BLASLAND, BOUCK & LEE, INC. engineers, scientists, economists

FIGURE 5

X: 36657X00, X01, X04.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL
4/18/07 SYR-85-LJP RCA PGL
36651010/FINAL-ER/36651B03.DWG

LEGEND:

- EXISTING CONTOUR LINE – 5-FOOT INTERVALS SHOWN IN BOLD
- IRON FENCE
- RAILROAD LINE
- CONCRETE RETAINING WALL
- BOLLARD
- MW-1 — ASBUILT MONTORING WELL LOCATION
- OW-01 — MONITORING/OBSERVATION WELL
- APPROXIMATE DESIGN LOCATION OF FORMER GAS HOLDER
- APPROXIMATE DESIGN LOCATION OF EXISTING MAT FOUNDATION FOR FORMER GAS HOLDER
- DESIGN SHEETPILE
- ASBUILT SHEETPILE
- TB-57 — ASBUILT TEST PIT LOCATION
- PZ-A4 — ASBUILT PEIZOMETER LOCATION
- TSA-14-SE-2 — APPROXIMATE LOCATION OF POST-EXCAVATION CONFIRMATION SOIL SAMPLE LOCATION
- EXCAVATION DEPTH

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEY BY: C.T. MALE ASSOCIATES, P.C., DATED JUNE 6, 2005, DRAWING FILE EAST-CUT.DWG.

0 30' 60'

GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK

FINAL ENGINEERING REPORT

FORMER GAS HOLDER SOIL EXCAVATION AREA - FINAL (AS-BUILT) EXCAVATION LIMITS

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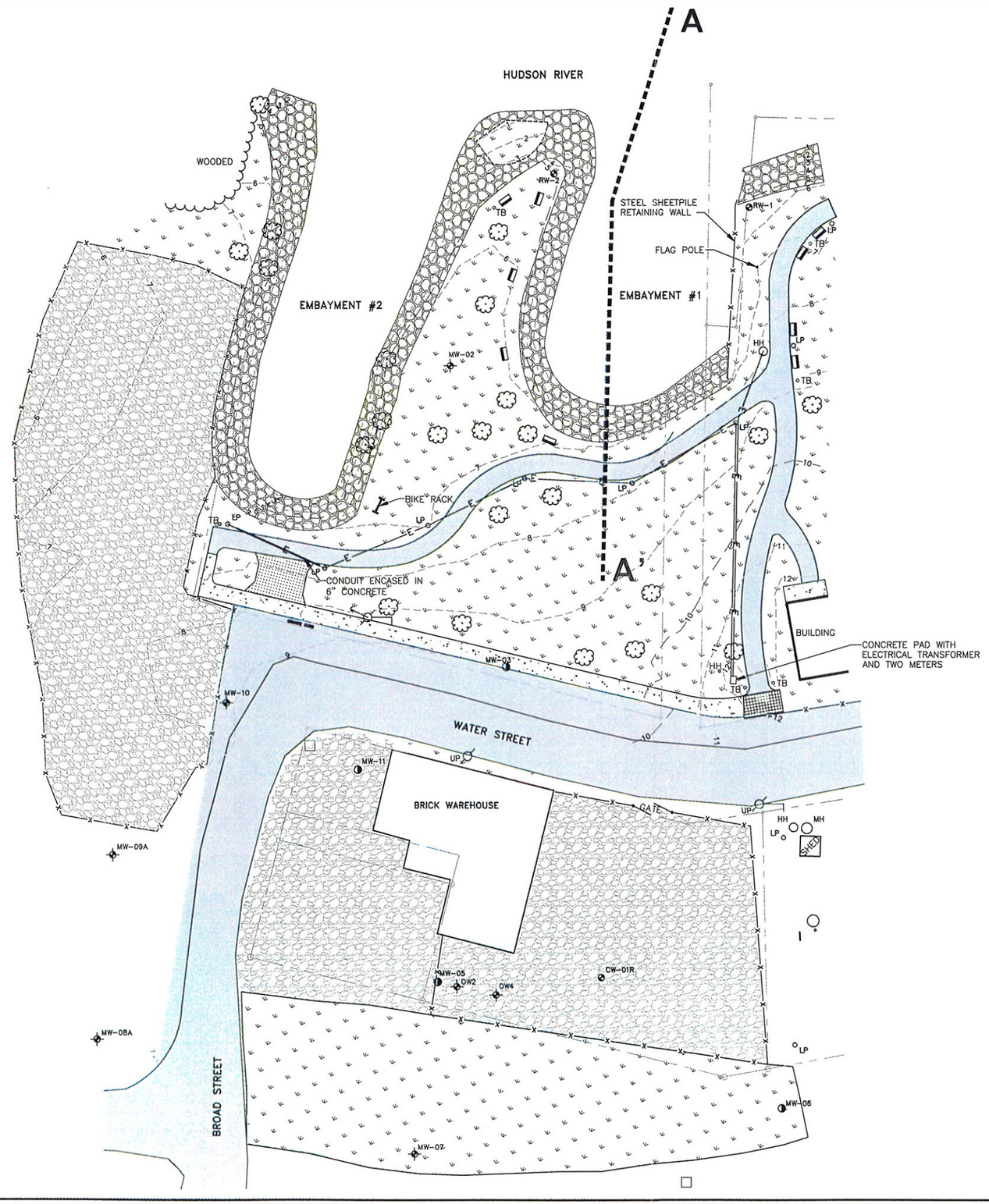
FIGURE 6

X: 36657X00, X06, X08.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL2B1
4/18/07 SYR-85-L.P RCA PCL
36651010/FINAL-ER/36651B06.DWG



LEGEND:

- PROPERTY LINE
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- APPROXIMATE EDGE OF WATER (VARIES WITH TIDE)
- CHAIN-LINK FENCE
- IRON FENCE
- ELECTRICAL LINE
- RIPRAP
- CRUSHED STONE
- CONCRETE
- ASPHALT/PAVEMENT
- VEGETATED AREA
- STAMPED CONCRETE
- GRASSCRETE PAVING
- DECIDUOUS TREE
- MW-02 GROUNDWATER WATER-LEVEL MONITORING WELL
- MW-05 GROUNDWATER QUALITY MONITORING WELL
- RW-1 NAPL COLLECTION/RECOVERY WELL
- BENCH
- TB TRASH BIN
- HH HANDHOLE
- MH MANHOLE
- UP UTILITY POLE
- LP LIGHT POLE
- A' APPROXIMATE CROSS SECTION LOCATION

NOTE:

1. SURVEY DATA WAS OBTAINED FROM SURVEYS BY C.T. MALE ASSOCIATES, P.C. DATED AUGUST 23, 2005 AND NOVEMBER 15, 2005, DRAWING FILES E-ASBUILT.DWG AND W-ASBUILT.DWG, RESPECTIVELY.

0 30' 60'
GRAPHIC SCALE

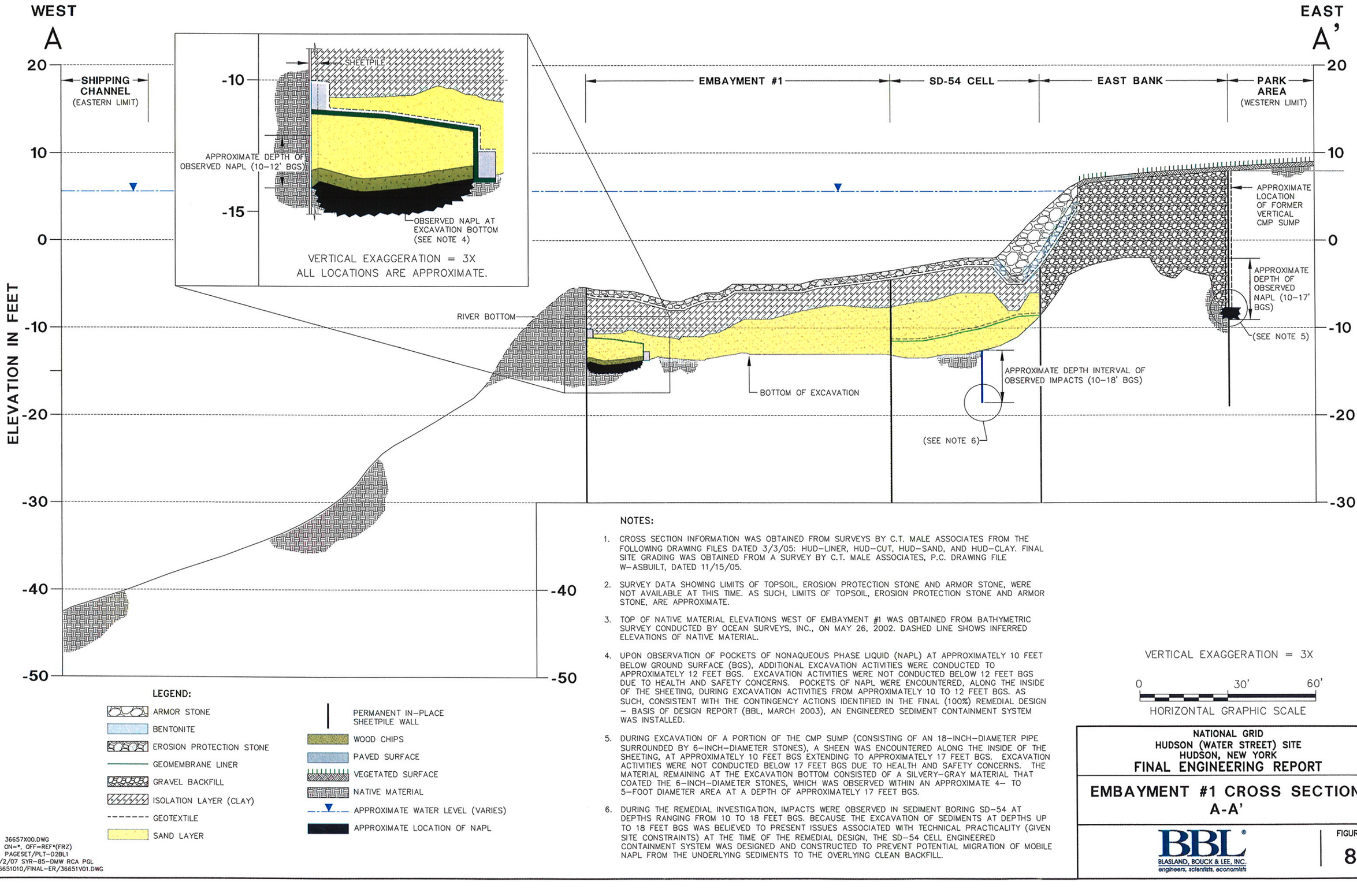
NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

RESTORATION SITE PLAN

BBL BLASLAND, BOUCK & LEE, INC. engineers, scientists, economists

FIGURE 7

X: 36657X00, X05, X07.DWG
L: ON=*, OFF=REF*
P: PAGESET/PLT-DL
4/18/07 SYR-BS-BGP RCA PGL
36651010/FINAL-ER/36651B05.DWG



X: 36657X00.DWG
L: ON=*, OFF=REF*(FRZ)
P: PAGESET/PLT-D2BL1
4/2/07 SYR-85-DMW RCA PGL
36651010/FINAL-ER/36651V01.DWG

NOTES:

1. CROSS SECTION INFORMATION WAS OBTAINED FROM SURVEYS BY C.T. MALE ASSOCIATES FROM THE FOLLOWING DRAWING FILES DATED 3/3/05: HUD-LINER, HUD-CUT, HUD-SAND, AND HUD-CLAY. FINAL SITE GRADING WAS OBTAINED FROM A SURVEY BY C.T. MALE ASSOCIATES, P.C. DRAWING FILE W-ASBUILT, DATED 11/15/05.
2. SURVEY DATA SHOWING LIMITS OF TOPSOIL, EROSION PROTECTION STONE AND ARMOR STONE, WERE NOT AVAILABLE AT THIS TIME. AS SUCH, LIMITS OF TOPSOIL, EROSION PROTECTION STONE AND ARMOR STONE, ARE APPROXIMATE.
3. TOP OF NATIVE MATERIAL ELEVATIONS WEST OF EMBAYMENT #1 WAS OBTAINED FROM BATHYMETRIC SURVEY CONDUCTED BY OCEAN SURVEYS, INC., ON MAY 26, 2002. DASHED LINE SHOWS INFERRED ELEVATIONS OF NATIVE MATERIAL.
4. UPON OBSERVATION OF POCKETS OF NONAQUEOUS PHASE LIQUID (NAPL) AT APPROXIMATELY 10 FEET BELOW GROUND SURFACE (BGS), ADDITIONAL EXCAVATION ACTIVITIES WERE CONDUCTED TO APPROXIMATELY 12 FEET BGS. EXCAVATION ACTIVITIES WERE NOT CONDUCTED BELOW 12 FEET BGS DUE TO HEALTH AND SAFETY CONCERNS. POCKETS OF NAPL WERE ENCOUNTERED, ALONG THE INSIDE OF THE SHEETING, DURING EXCAVATION ACTIVITIES FROM APPROXIMATELY 10 TO 12 FEET BGS. AS SUCH, CONSISTENT WITH THE CONTINGENCY ACTIONS IDENTIFIED IN THE FINAL (100%) REMEDIAL DESIGN – BASIS OF DESIGN REPORT (BBL, MARCH 2003), AN ENGINEERED SEDIMENT CONTAINMENT SYSTEM WAS INSTALLED.
5. DURING EXCAVATION OF A PORTION OF THE CMP SUMP (CONSISTING OF AN 18-INCH-DIAMETER PIPE SURROUNDED BY 6-INCH-DIAMETER STONES), A SHEEN WAS ENCOUNTERED ALONG THE INSIDE OF THE SHEETING, AT APPROXIMATELY 10 FEET BGS EXTENDING TO APPROXIMATELY 17 FEET BGS. EXCAVATION ACTIVITIES WERE NOT CONDUCTED BELOW 17 FEET BGS DUE TO HEALTH AND SAFETY CONCERNS. THE MATERIAL REMAINING AT THE EXCAVATION BOTTOM CONSISTED OF A SILVERY-GRAY MATERIAL THAT COATED THE 6-INCH-DIAMETER STONES, WHICH WAS OBSERVED WITHIN AN APPROXIMATE 4– TO 5-FOOT DIAMETER AREA AT A DEPTH OF APPROXIMATELY 17 FEET BGS.
6. DURING THE REMEDIAL INVESTIGATION, IMPACTS WERE OBSERVED IN SEDIMENT BORING SD-54 AT DEPTHS RANGING FROM 10 TO 18 FEET BGS. BECAUSE THE EXCAVATION OF SEDIMENTS AT DEPTHS UP TO 18 FEET BGS WAS BELIEVED TO PRESENT ISSUES ASSOCIATED WITH TECHNICAL PRACTICALITY (GIVEN SITE CONSTRAINTS) AT THE TIME OF THE REMEDIAL DESIGN, THE SD-54 CELL ENGINEERED CONTAINMENT SYSTEM WAS DESIGNED AND CONSTRUCTED TO PREVENT POTENTIAL MIGRATION OF MOBILE NAPL FROM THE UNDERLYING SEDIMENTS TO THE OVERLYING CLEAN BACKFILL.

VERTICAL EXAGGERATION = 3X

0 30' 60'

HORIZONTAL GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

EMBAYMENT #1 CROSS SECTION A-A'

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FIGURE 8

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEY BY: C.T. MALE ASSOCIATES, P.C., BASED ON FIELD SURVEYS CONDUCTED DURING THE MONTHS OF JULY THROUGH SEPTEMBER (NO DATE GIVEN), DRAWING FILE SITE-EXTRA.DWG.

0 30' 60'

GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

ADDITIONAL EXCAVATION EMBAYMENT #1

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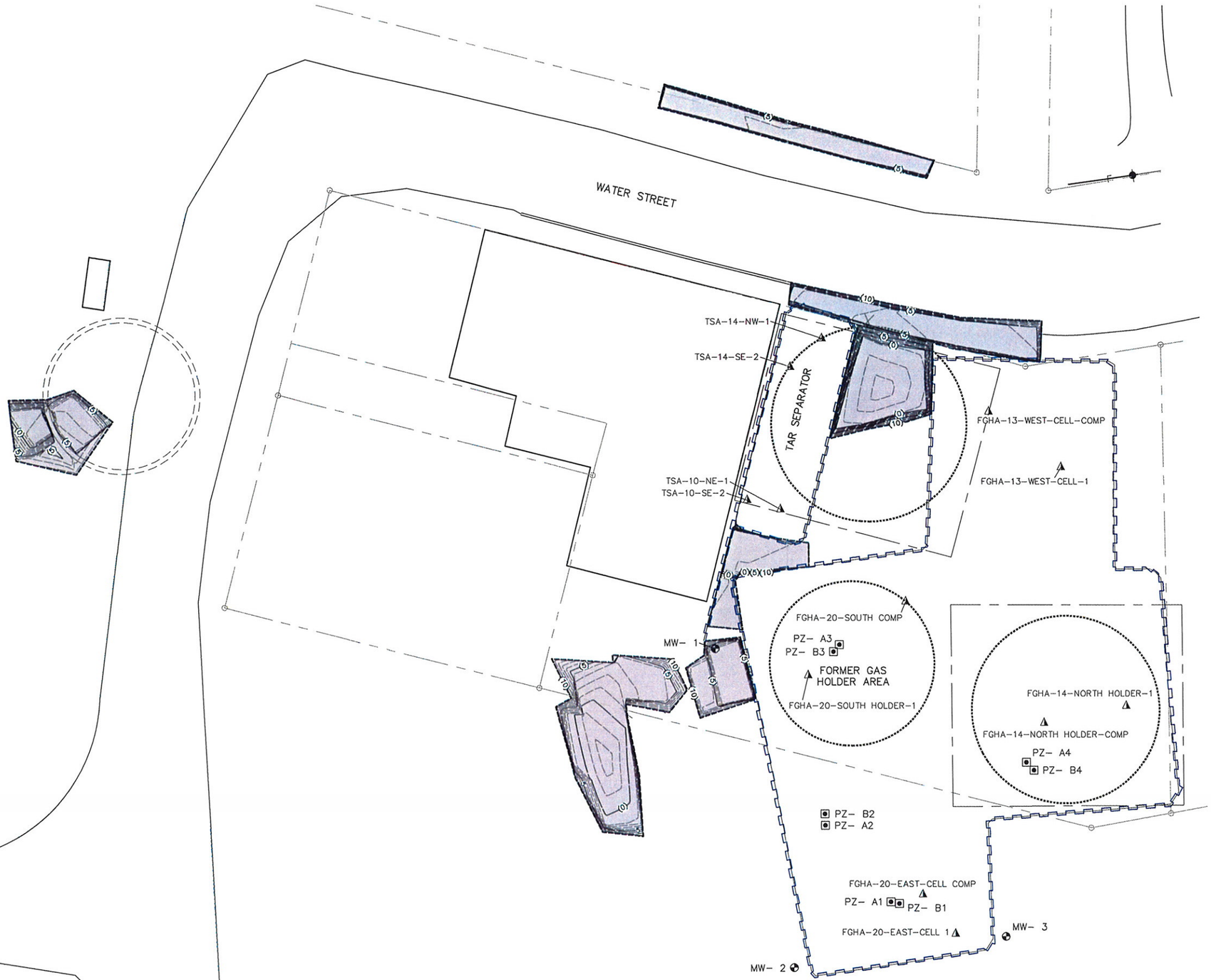
FIGURE 9

X: 36657X00, X09.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL2B1
4/18/07 SYR-85-LJP RCA PGL
36651010/FINAL-ER/36651B08.DWG



LEGEND:

- APPROXIMATE LOCATION OF FORMER GAS HOLDER
- APPROXIMATE LOCATION OF ENCOUNTERED BRICK STRUCTURE
- AS-BUILT SHEETPILE
- TB-57 ▲ AS-BUILT TEST BORING LOCATION
- PZ-A4 ▣ AS-BUILT PEIZOMETER LOCATION
- TSA-14-SE-2 ◭ APPROXIMATE LOCATION OF POST-EXCAVATION CONFIRMATION SOIL SAMPLE LOCATION
- AREA OF ADDITIONAL EXCAVATION (DURING RA – NOT INCLUDING SPRING 2006 EXCAVATION ACTIVITIES)
- (5) ADDITIONAL EXCAVATION DEPTH

NOTES:

1. REFER TO FIGURE 2 FOR GENERAL NOTES PERTAINING TO BASE MAPPING.
2. SURVEY DATA WAS OBTAINED FROM SURVEY BY: C.T. MALE ASSOCIATES, P.C., BASED ON FIELD SURVEYS CONDUCTED DURING THE MONTHS OF JULY THROUGH SEPTEMBER (NO DATE GIVEN), DRAWING FILE SITE-EXTRA.DWG.

0 30' 60'

GRAPHIC SCALE

NATIONAL GRID
HUDSON (WATER STREET) SITE
HUDSON, NEW YORK
FINAL ENGINEERING REPORT

ADDITIONAL EXCAVATION FORMER GAS HOLDER AREA

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FIGURE 10

X: 36657X00, X09.DWG
L: ON=*, OFF=REF
P: PAGESET/PLT-DL2B1
4/18/07 SYR-85-L&P RCA PGL
36651010/FINAL-ER/36651B07.DWG

Appendices

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